HOW CAREGIVERS OF CHILDREN IN EARLY INTERVENTION FEEL ABOUT SIMPLIFIED LANGUAGE INPUT: A SURVEY STUDY

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ABSTRACT

HOW CAREGIVERS OF CHILDREN IN EARLY INTERVENTION FEEL ABOUT SIMPLIFIED LANGUAGE INPUT: A SURVEY STUDY

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There is some disagreement regarding how adults should simplify their utterances when speaking to young children with language delays. One type of simplification that has come into question is telegraphic input, a style of speaking that involves removing grammatical aspects of phrases, such as function words and grammatical markers (e.g., *All done snack, Cookie yummy*). In the current study, we utilized survey data collected by Andary (2020) surveying caregivers of children in early intervention about their views on different types of simplified language. Specifically, we asked: How do caregivers' beliefs about telegraphic input relate to how comfortable they are producing different types of simplified utterances? Results were also analyzed for correlations between demographics and beliefs of simplification. Additionally, the survey provided space for caregivers to share recommendations they gained through Early On resources. Results show caregivers with a positive view of telegraphic input felt significantly less comfortable producing full, grammatical utterances than caregivers with a negative or neutral view of telegraphic input. Demographic analysis revealed caregivers with higher education levels preferred more grammatical utterances. These findings emphasize the importance of understanding caregiver perspectives in caregiver-mediated intervention approaches.

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Introduction

A collection of services, known as Early Intervention (EI), exist to support children, ages birth to three, with developmental disabilities (Douglas et al., 2020; Hebbeler et al., 2011). The children are connected with resources and specialists to help support their development across a number of domains, including self-help skills, cognitive skills, communication skills, physical development, and social-emotional development (Early On Michigan, 2021). Services provided under EI include occupational therapy, speech therapy, physical therapy, social work, nursing, psychological services, among many others. As an integral part of service provision, EI places a strong emphasis on the relationship created with the caregivers. Practitioners train the caregivers to work alongside them in order to teach the caregivers how to support their child in everyday interactions. As a result, caregivers are encouraged to utilize techniques learned from practitioners beyond the therapy sessions (Bottema-Beutel & Kim, 2020; Douglas et al., 2020; Meadan et al., 2018; Michigan Department of Education, 2021; Roberts et al., 2016).

Through the caregivers, strategies are implemented in day-to-day life to encourage skills to be practiced by children. Research has analyzed the specific teaching methods utilized with caregivers (Douglas et al., 2020; Meadan et al., 2018; Roberts et al., 2016); however, there is a gap in our knowledge regarding the caregivers' perspectives about the strategies they are asked to use. We know very little about how the caregivers feel regarding the individual teaching tactics and implementation styles, such as the type and amount of simplification as well as other input provided to them from specialists. My thesis focuses on caregiver perspectives regarding language input techniques.

EI Overview

The EI program was created in 1986 as an amendment to the Individuals with Disabilities Education Act (IDEA). This amendment created Part C of IDEA, allowing EI services to be established. This program provides services to infants with developmental disabilities, as well as places a large emphasis on providing caregivers the opportunity to play a major role in their child's development (Woodman et al., 2018). Specifically, parents and other caregivers are the primary agents of intervention (Adams et al., 2013; Hebbeler et al., 2011; Woodman et al., 2018). Therefore, caregivers of the children work closely alongside EI providers to support their child's development (Douglas et al., 2020). EI services provide the family with a support team designed to help the child, as well as the caregivers to increase their capacity to care for their child and navigate their child's developmental stages (Woodman et al., 2018).

In contrast with other programs run through IDEA for older children, Part C services for infants with disabilities include the explicit goal of building relationships with the families. Services for older children do not have these same relational goals. Hebbeler and colleagues (Hebbeler et al., 2011) describe that the overall goal of EI is aimed towards building up the child's support system within the home environment to be able to meet their child's individualized special needs.

As a result of such support systems, EI services are constructed based around the Individualized Family Service Plan (IFSP). The IFSP outlines goals set by the family for the child but are aimed at helping the entire family. Specifically, the goals address the caregivers' concerns that may not be directly related to the child's disability (Roberts et al., 2016). Goal setting targets familial involvement, which encourages caregivers to take part in their child's services, and overall development (Douglas et al., 2020). Thus, a major aim within EI is to teach

parents and caregivers strategies that effectively support their child's development. Through explicit instruction, feedback from the practitioner, and other methods, caregiver coaching is established.

Practitioners are learning more about caregivers' views on different teaching strategies and protocols within EI. Numerous studies have investigated caregivers' views about the format of teaching (e.g., direct teaching, modeling, coaching, feedback, reflection). However, very few studies have investigated caregiver perspectives on the strategies being taught to caregivers. This is important, especially in relation to language development, because how a caregiver communicates with their child is highly personal (Bottema-Beutel & Kim, 2020; Yu, 2013). Furthermore, caregiver and familial perspectives are an integral part of providing evidence-based practice, which gives equal weight to external scientific evidence, family perspectives, and clinical expertise (ASHA, 2021).

One common strategy taught to caregivers pertains to modifying of their language, often through shortening their utterances (Hebbeler et al., 2011; Roberts et al., 2016). According to studies (Hebbeler et al., 2011; Roberts et al., 2016), this is a suggested recommendation as the majority of the children participating in EI experience delays in speech, language, and communication. This study will address the various types of language modifications that can be used for input, as well as analyze caregiver viewpoints of the different types of language input.

Importance of Early Language Learning

Young children learn language through everyday interactions. It is essential to consider the environment that they are gaining language input from, as this usually includes their caregivers. As such, it is important to incorporate caregivers into the research and implementation because they are the ones providing language input to the child on a day-to-day

basis. Indeed, caregivers are considered ‘agents of change’ within the context of EI services (Adams et al., 2013; Hebbeler et al., 2011; Woodman et al., 2018).

An important consideration regarding the input children receive from caregivers stems from research conducted by Hart & Risley (1995) in analyzing the word gap noted between different socio-economic statuses (SES) in the United States. Specifically noting a significant difference in word acquisition based on children stemming from higher SES as opposed to those raised in lower SES conditions (Hart & Risley, 1995) With this, Logan and colleagues (2019) further supported the original research. They utilized weekly shared reading experiences between adults and their children to measure the level of word exposure children received annually (Logan et al., 2019). Children who had the least amount of shared reading experiences were exposed to 738 words per year with board books and 1178 words per year in using picture books (Logan et al., 2019). In comparison, children who were read to at least once per day were exposed to 46,956 words per year with board books and 77,896 words per year with picture books (Logan et al., 2019). As a result, children entering kindergarten with limited reading exposure were familiar with around 4662 words while those being read to daily were familiar with about 296, 660 words (Logan et al., 2019). Conversely, adults who provided their children with multiple reading sessions per day had children who entered kindergarten with the exposure of about 1.5 million words (Logan et al., 2019). It was concluded that the first five years of a child’s life are essential in providing linguistic input as those that lacked shared reading experiences entered the K-12 system with approximately 300,000 fewer words than their counterparts (Logan et al., 2019).

It is well known there are barriers that caregivers face in providing language learning activities, such as the pressure of time and discomfort with the suggested activities (Logan et al.,

2019). It has been recommended that other methods of providing input to children without the use of books be utilized (Avineri et al., 2015) including materials accessible to the family, such as describing family pictures, imitating older siblings working on homework, playing scrabble or other word games, and incorporating religious readings and songs into routines (Avineri et al., 2015). Practitioners should build on the family strengths when possible, as not all have equal access to materials (Avineri et al., 2015). This is relevant to EI because it shows that language input matters because even by stimulating the child in basic conversation with their everyday environment, they are gaining access to language everyday (Avineri et al., 2015). Additionally, these practices align with those familial-based focuses within EI.

With this idea of unequal input from caregivers, there are several theories that exist to describe how the caregivers can further mediate and teach their children language. The transactional theory emphasizes the bidirectional nature of the caregiver's and child's communication attempts within interactions (Bottema-Beutel & Kim, 2020). More specifically, the theory describes how adults can tailor their input to their child's current language level, while also building on their child's communication (Roberts et al., 2016). By tailoring input to the child's needs, the language can be broken down to the child using an appropriate level (Roberts et al., 2016). Available research suggests that caregivers of children with autism spectrum disorder (ASD) tend to adjust their language to the child's level (Bottema-Beutel & Kim, 2020).

The social interactionist theory emphasizes the acquisition of social actions through observation (Bottema-Beutel & Kim, 2020). This includes the very basic actions of conversation and turn-taking. Research in this area has focused on the caregiver language input to children, which as a result, has increased the caregiver participation seen within an EI sessions.

Once again, caregivers are considered the best agent of implementation due to their close relationship with and increased access to the child (Adams et al., 2013; Hebbeler et al., 2011; Woodman et al., 2018). The social interactionist theory can be further described as learning through the relationship, in this case the caregiver-child relationship (Adams et al., 2013). Through this relationship, the child receives input in the natural environment, mostly likely involving play, which supports generalization of newly learned skills. Here, the caregivers target the specifics of language to teach the child. Intervention approaches can be utilized to enhance the language within the already-existing family activities and routines (Adams et al., 2013).

Caregiver Coaching

Previous research focused on caregiver coaching within EI has demonstrated positive effects on the caregiver involved within the coaching and treatment process. A study by Roberts et al. (Roberts et al., 2016) found an increase in caregiver empowerment and confidence in their ability to communicate with their children, in order to help their child meet other developmental milestones. EI one-on-one caregiver coaching provides caregivers with a large amount of support to teach them the best strategies for their child and provide input on how to implement said strategies.

Not only does caregiver coaching increase confidence and support for the caregiver, but it also provides the child with a constant source of support. Through training protocols conducted with the EI service providers, caregivers learn the best practices to implement with their child. Once the providers leave, caregivers hold the knowledge and skills to help their child develop on a daily basis. This provides the child with a relatively high dosage of therapy, without the expense of the direct services (Roberts et al., 2016). With the increased dosage, and therefore more learning opportunities, the children in EI have the opportunity to gain greater levels of

adaptive behaviors and better generalization of skills (Meadan et al., 2018; Woodman et al., 2018).

However, caregiver comfort with the techniques is an essential factor in this process. If the caregiver isn't comfortable with the methods they are being taught, it is unlikely that they will implement these techniques with their child in everyday activities (Cox, 2015). According to the adult learning theory, coaching practices and goals are identified by the caregiver themselves, so the practitioner's therapy goals must be aligned with the adults in order for the adult to be motivated to participate in therapy (Cox, 2015). If the teachings do not align with the adult's prior experiences and beliefs, it is believed that the adult must reach a dilemma, where the underlying perspective of the adult is challenged and proved to have an exception (Cox, 2015). This impacts the way in which practitioners should teach caregivers; understanding that first they must change their beliefs independently and based on their life's events. This allows the adult to begin to reject preconceived notions before challenging them with more techniques and ideas (Cox, 2015). Adults are more willing to consider other perspectives following the event that challenges their beliefs, which allows openings for coaching opportunities to replace the prior preconception (Cox, 2015). However, even if caregivers have not reached this point of dilemma, it is always helpful to provide the opportunity to challenge adults' beliefs to encourage a shift in their framework by offering external resources and handouts (Cox, 2015). This is due to the fact that the adult learning theory emphasizes the idea of learners in context, where one specific event in the context of a coaching session may be the challenge that adults need to shift their thinking (Cox, 2015; Merriam, 2008).

Following the initial challenge to the preconceived notions, adults may experience intense emotions, such as fear, anger, guilt, shame, or helplessness (Cox, 2015). However, EI

places emphasis of being family-oriented and flexible, so it is very unlikely that these intense of emotions may be felt. However, when present, these emotions may be debilitating to the caregiver, but they also act as essential motivation tools to encourage the caregiver to learn new methods to provide for their children (Cox, 2015). Additionally, these moments of vulnerability may strengthen the caregiver-practitioner connection due to the emotional support and safe space provided on behalf of the practitioner to help the adult overcome the period of distress (Cox, 2015). After overcoming these emotions, caregivers can begin to incorporate these new frameworks, while the practitioner works alongside to help build confidence and competence, as they work to reintegrate the new concepts into their everyday life with their child, in hopes of generalization (Cox, 2015).

As a result of the cognitive dissonance caregivers may experience, Merriam encourages practitioners to utilize a staged self-directed learning (SSDL) model (Merriam, 2001). This model utilizes the framework of a matrix to help adult learners identify where they are in terms of readiness for coaching and learning new materials, while also identifying how comfortable they are with the process (Merriam, 2001). Practitioners are then encouraged to match their teachings to the learners self-identified stage, which can move along the continuum as the training continues (Merriam, 2001). Thus, as practitioners, we strive to understand what the family thinks and knows, so we can understand their perspective and meet them where they are in their learning process.

While caregivers are not always in agreement with practitioners' initial suggestions, the use and understanding of the SSDL, coaching practices, and gradual integration of concepts often help move caregivers towards acceptance (Dinnebeil, 1999; Merriam, 2001, 2008). Once the caregiver is more comfortable with the concepts, coaching sessions can become more

focused on the specific practices, such as reflection, dialogue, and making connections between previous learning and new experiences (Merriam, 2001). Meadan and colleagues described a typical coaching session where reciprocal interaction could be seen between the caregiver and the practitioner (Meadan et al., 2018). Initially, they discuss content, plans, and strategies that will be targeted within the session (Meadan et al., 2018). Throughout the course of the session, the practitioner works to provide feedback and restructure the session so that the caregiver is always learning how to best provide services. Following the session, caregivers and practitioners discuss outcomes and future decisions for therapy (Meadan et al., 2018). To maximize learning, the adult learning theory encourages practitioners to implement the learning cycle, including awareness and exploration of the new concept, provide time for inquiry, and then a period for utilization (Dinnebeil, 1999).

With learning comes feedback and critiques of the new skill. There are several coaching practices utilized by service providers to provide feedback and coaching to caregivers of children with developmental delays. Douglas and colleagues investigated five methods of implementation: joint planning, observation, action, reflection, and feedback (Douglas et al., 2020). In their investigation, EI service providers ranked these methods in terms of importance and actual usage. The most important methods, as reported by the study, included action and joint planning, with reflection and feedback reported as least important (Douglas et al., 2020). Conversely, the actual reported usage showed that joint planning and feedback were identified as most commonly used, with joint planning being consistent across both groups (Douglas et al., 2020). Time constraints play a large role into the decisions of what practitioners can implement within a single session, and therefore, many times, reflection, the end discussion, fails to occur (Douglas et al., 2020). Furthermore, Douglas and colleagues suggested activities such as

demonstration and modeling, offering opportunities for practice with feedback sessions, problem solving, and reflection (Douglas et al., 2020). With these skills explicitly targeted, self-correction and self-reflection should be encouraged along the way.

Roberts and colleagues identified five overarching themes to implement in the caregiver education of services to assist with coaching practices and collaboration with the caregiver (Roberts et al., 2016). These included the following strategies: quantity-based, directive, responsive, engagement-based, multi-modal, and responsive (Roberts et al., 2016).

Quantity-based strategies place an emphasis on the characteristics included in the caregiver input, with no influence from the child's behaviors (Roberts et al., 2016). The major aim here is for caregivers to direct their language to the child so that, in the end, the child receives more language. Additionally, directive strategies exist as well. These include providing explicit verbal instruction for a child to follow (Roberts et al., 2016). Conversely, engagement-based strategies do not provide any explicit directions, but, instead, focus on engagement and how it facilitates communication (Roberts et al., 2016). Such activities include participating in joint book reading, contingent play, and the use of affect in speech. Roberts and colleagues also define multi-modal strategies as the non-linguistic features that highlight our language – both tactile and visual. Furthermore, responsive strategies emphasize the adult input in relation to the child's speech (Roberts et al., 2016). Using this strategy, caregivers are encouraged to narrate their own actions (self-talk), narrate the actions of their child (parallel talk), and to play by imitating the child's actions and creating language associations with the movements (mirroring and mapping) (Roberts et al., 2016). Caregivers are also encouraged to respond to the child's verbalizations, expand and extend upon the child's utterances, as well as recast output as

necessary (Roberts et al., 2016). These activities allow for a greater amount of language and engagement to be provided to the child.

A guided framework for the teaching process was also described by Roberts and colleagues. Beginning with introduction to the skill, the practitioner would then move up to illustrations and examples of the task, followed by practice for the caregiver (Roberts et al., 2016). The teaching session would end with an evaluation from the practitioner and then a reflection period. This would occur in hopes of mastery of the skills and the ability for caregivers to efficiently teach their children (Roberts et al., 2016).

While these guided frameworks exist as recommendations, they should be implemented flexibly (Bottema-Beutel & Kim, 2020). Practitioners need to be aware of caregiver and child preferences in terms of their learning style as everyone is different and responds to different teaching strategies uniquely (Roberts et al., 2016). With this being said, practitioners should be willing to forgo their favored teaching strategies and utilize what is most beneficial for the child and family. In other words, practitioners should be flexible in their clinical practice (Roberts et al., 2016). These considerations should also be made for children and families in regard to cultural significance and, specifically, its impact on language. Bottema-Buetel and team state, "[b]ecause of the cultural and interpersonal significance of families' linguistic routines, practitioners should exercise caution when giving caregivers advice about how to alter their language practices" (Bottema-Beutel & Kim, 2020, pp. 13). This encourages practitioners to consider the relational aspect that EI and caregiver coaching emphasizes. With this, practitioners gain helpful insights regarding caregiver and child preferences and consider what approaches would be most successful within the practitioner-caregiver relationship.

While challenges of providing clinical practice exist, other limitations also exist.

Another major limitation noted in research is in regard to making caregivers comfortable with playing, not only with their child, but also in front of another adult (Douglas et al., 2020). This goal of expanding the adult's comfort zone can be a hard and uncomfortable process, especially if the caregiver already struggles to play and converse with their child. Furthermore, as noted previously, caregivers also may not be comfortable with the coaching dynamic, and therefore, may be hesitant to implement specific practices they are taught (Cox, 2015). Conversely, other caregivers may lack confidence in themselves and desire explicit directions from the practitioner (Cox, 2015; Merriam, 2001). However, the end goal is to encourage equal caregiver and practitioner interaction during a session (Roberts et al., 2016). Other barriers to the implementation of caregiver coaching include time constraints, socioeconomic constraints, education levels, cognitive and mental health, and language barriers of the caregiver (Meadan et al., 2018). Possible ways to circumvent these barriers include providing easily accessible and understood resources to caregivers experiencing these challenges.

Overall, both caregivers and practitioners have reported that caregiver coaching is beneficial, while data also show the success of the intervention with the child (Douglas et al., 2020). Caregiver coaching training sessions have proved to efficiently teach caregivers the skills necessary to teach their child, while also strengthening already acquired skills to better help their child (Douglas et al., 2020; Meadan et al., 2018). Following coaching sessions, caregivers were noted to be able to perform the tasks alone, without guidance, with their child (Meadan et al., 2018).

Language Input

Why Is It Important?

Practitioners care about why and how adults talk to children. This is because adult talk matters, especially the input provided by the caregivers (Bottema-Beutel & Kim, 2020). Caregivers' speech is strongly linked with children's language development (Bottema-Beutel & Kim, 2020). As caregivers talk to their children, children begin learning words and making associations to objects. As they get older, they begin to observe more of the grammatical aspects of speech to learn how to piece their thoughts together into a cohesive phrase. Children take in the input that their level of comprehension allows them to, to then analyze it for patterns. However, controversy exists as to which type of input is most beneficial to children, especially between the ages birth to three years of age.

Breaking It Down

In regard to the actual input that is provided to children in EI, there is lots of controversy that exists concerning the length of an utterance, and which technique caregivers should be taught (van Kleeck et al., 2010). Additionally, there isn't a lot of evidence in existence about how to simplify adult input, and how much, as well as the impacts of simplifying it. As of now, two main theoretical bases exist concerning lengths of input: grammatical and telegraphic inputs. Grammatical input is defined as simplifications of traditional adult input. More specifically, they require that utterances are shortened naturally, without violating any syntactic rules (Venker et al., 2015, 2019). In doing so, the input retains the rich vocabulary and grammar that can be made meaningful for the child (Roberts et al., 2016). Research shows that the more meaningful language is for a child, the easier it will be to acquire (Roberts et al., 2016). Conversely, telegraphic input (TI) is defined as speech that includes content words, nouns, and verbs;

however, function words, articles, auxiliaries, adjectives, grammatical endings, etc. are eliminated (Venker et al., 2019). TI is shortened in a way that breaks grammatical rules. This type of input was named after the telegram due to their concise nature of the messages (van Kleeck et al., 2010). Examples of each can be found in Table 1.

Table 1: Examples of Shortened Utterances

(Venker et al., 2015)

Grammatical	Telegraphic
Mommy goes	Mommy go
Put it in	Put in

TI was once integrated into several programs, including the Enhanced Milieu Teaching and the It Takes Two to Talk® model utilized within the Hanen Program® (van Kleeck et al., 2010). However, Hanen has since changed their stance regarding TI, so that now the program's "recommendation is to consistently teach parents to use simplified, but well-formed, grammatical models" (Conklin, 2010). TI is also widely utilized with children with ASD, language impairments and/or delays, cognitive delays, and cleft palate (van Kleeck et al., 2010; Venker et al., 2015). This program is well-known to be used with the ASD population due to the ability to limit the incoming information to new item(s), and fine-tune the sensory information being provided to them (Venker et al., 2015). However, this specific population, in particular, holds some of the most controversy regarding whether TI is beneficial due to their already-delayed language (Bredin-Oja & Fey, 2014; Venker et al., 2015).

Furthermore, parents and caregivers of children using alternative and augmentative communication (AAC) systems may receive contradictory advice about the type of input they should use. Research notes that children using AAC may develop further difficulty with language, particularly with using grammatical markers, due to the increased telegraphic input modeled for this population (Binger, 2008). Binger proposes that through modeling, children using AAC can develop grammatical competence just as sufficiently as their non-AAC user peers (Binger, 2008). Specifically, this study utilized both verbal and aided AAC modeling, recasts, and expansions to teach children grammatical markers (such as -ed and plural -s) (Binger, 2008). Results show that participants learned best through aided AAC recasts and models, but more research is needed to understand the length of time needed to ensure the child can understand and generalize these skills (Binger, 2008).

Which Input is Better?

Currently, the field is still in the midst of discovering which input is superior for specific populations of children at different developmental stages. Recommendations have been made in support of both telegraphic and grammatical input. However, over the years, the trends have been increasing in favor of grammatical input (Bang et al., 2019; Choi et al., 2020; Fusaroli et al., 2019). Recommendations have been made for typically developing (TD) children to use TI within their prelinguistic, one-word, or two-word stages; however, not beyond (Venker et al., 2015). It has also been noted that adults concerned about their child's language skills may reduce their utterance length in accordance with their child's comprehension; therefore, children with disabilities may be at a higher risk of receiving grammatically incorrect input (Chafetz et al., 1992). However, as stated previously from Venker et al., once the child is beyond the two-word stage, TI is no longer considered appropriate, and caregivers usually move to longer, more complex utterances (Venker et al., 2015). Additional research by Chafetz and colleagues provided evidence supporting this statement; as participants aged and advanced through the study, the error rates provided in adult input were reduced (Chafetz et al., 1992; van Kleeck et al., 2010).

Venker and colleagues (2019) analyzed the responses of speech-language pathologists (SLPs) regarding their usage of TI. Findings from this study showed that a majority (82%) of SLPs identified having used TI at least once in their practice before (Venker et al., 2019). Meanwhile, only a few (5%) of SLPs identified having always provided TI to their clients (Venker et al., 2019). The SLPs within this study stated they had found TI helpful in regards to children's understanding to input, producing verbal imitations, and learning semantic relationships; however, it was reported to be more helpful in imitation tasks as opposed to

descriptions or requests (Venker et al., 2019). Yet, this study provides additional information in that the SLPs rated shortened utterances as significantly more useful than telegraphic utterances, which supports a more grammatical approach (Venker et al., 2019).

Research has also found concerns regarding how TI may impact a child's language development. Bredin-Oja states: "our results show that removal of grammatical morphology from adult models robs the child of opportunities to detect, process, and learn to use free and bound grammatical morphemes, some of which provide children with their greatest language learning challenges" (Bredin-Oja & Fey, 2014, pp. 24). Additionally, it has been pointed out that TI also eliminates prosodic and syntactic features of speech (van Kleeck et al., 2010). As a result, input that is too simplified may make it difficult for children to acquire language (Bredin-Oja & Fey, 2014; van Kleeck et al., 2010; Venker et al., 2019).

Research has furthermore indicated that TI may have detrimental effects on the language development in children with ASD (Bottema-Beutel & Kim, 2020; Venker et al., 2015). This population of children already produces fewer word tokens and utterances than TD children of the same age, with shorter MLUs than that of their TD peers. It is well-documented that caregivers' mean length of utterance (MLU) is associated with the later developed MLU of children with ASD (Bottema-Beutel & Kim, 2020; Fusaroli et al., 2019). In addition, caregivers who produced longer MLUs had children with ASD who produced more word types and tokens, as well as had a longer MLUs in subsequent visits (Fusaroli et al., 2019). Furthermore, Fusaroli et al. (2019) found that an increased complexity for the children with ASD was beneficial to lexical and grammatical development. With these studies encouraging a more syntactically complete approach with an emphasis on increased complexity, the research is supporting more of

a grammatical approach. Specifically, these studies favor exposure to more word types and more words per phrase (Fusaroli et al., 2019).

In a meta-analysis, Sandbank and colleagues found that "it is possible that children with autism benefit from input that is longer than is usually afforded by telegraphic speech… Thus it is merited to recommend the use of grammatically complete speech when speaking to young children with disabilities" (Sandbank & Yoder, 2016, pp.10). Additionally, other research found that children with language delays tended to respond more accurately to grammatically complete sentences (Bredin-Oja & Fey, 2014; Sandbank & Yoder, 2016). These research findings suggest that grammatical utterances may be beneficial, while also maintaining an appropriate phrase length for infants and toddlers. Research showed higher rates of TI in caregiver input were negatively associated with children's lexical diversity a year later (Venker et al., 2015). Other data indicates that caregivers who used increased amounts of TI, as well as higher rates of single words and determiner omissions, are associated with a lower number of different words (NDW) and MLU in their child (Venker et al., 2015). Considering this, it has been recommended that caregivers adapt their talk to reflect the child's developmental level and interaction preferences, while also refraining from using TI in young children (Bottema-Beutel & Kim, 2020; Bredin-Oja & Fey, 2014).

Another concern about TI is that it does not provide syntactic cues that are known to help children learn the meanings of words. For example, syntactic bootstrapping, often seen in children with Down syndrome, is defined as the mechanism through which children can use grammatical structures to acquire new vocabulary and meaning of words (Fisher et al., 2010; Jolly & Plunkett, 2008; Lidz et al., 2004; Lorang et al., 2019). One such example of this concept is telling a child: "Noah comes the elephant to the ark" and using figures to display the action of

bringing the elephant to the ark. Through this, the child has syntactically bootstrapped the word 'comes' to align with 'brings' (Lidz et al., 2004). In a separate study by Bredin-Oja et al. (2014) that used a verbal imitation task, children responded just as reliably to grammatical input as they did to TI. Therefore, the children within this study did not find the grammatical prompts to be more complex (Bredin-Oja & Fey, 2014). In considering these facts, Sandbank and Yoder (2016) confirmed van Kleeck et al.'s (2010) original notion that insufficient evidence exists to support the recommendation of one input over another.

While more recent research trends are pointing to the use of grammatical input, telegraphic input is still very prevalent within the field of speech-language pathology (van Kleeck et al., 2010; Venker et al., 2015, 2019). According to Slote Morris et al., (2011), there is a gap the occurs between initial research findings and the actual implementation of the findings. This meta-analysis showed an average of a 17-year gap between findings and acceptance and usage of the research (Slote Morris et al., 2011). This helps explain the overlap in current clinical implications regarding language input, as the preference for grammatical input has only recently occurred. Providers are amid the transition to suggesting grammatical input.

Understanding Caregiver Perspectives

A recent survey study conducted by Andary (2020) has begun to address the gap in current research regarding caregiver perspectives about different types of simplified language input. Survey respondents were caregivers of children currently enrolled in EI in Michigan. They gathered data about caregiver perspectives regarding grammatically shortened utterances and telegraphic utterances for children who were not yet producing speech or who were at the one- or two-word stage of language acquisition (Andary, 2020). The results of the survey showed a significantly higher percentage of caregivers (63%) who reported that grammatically shortened

utterances are beneficial, as compared to the 52% of caregivers who reported to agree or strongly agree that telegraphic utterances are beneficial (Andary, 2020). Significantly more caregivers agreed that grammatically shortened utterances were beneficial as compared to those reporting telegraphic utterances to be beneficial.

Additionally, grammatically shortened utterances (i.e., utterances that are shorter than utterances that they would typically use in an adult conversation) were rated significantly higher (3.62) than telegraphic utterances (Andary, 2020). In other words, caregivers were more likely to agree that it is beneficial to produce grammatically shortened utterances than utterances that contain only content words, but not function words or grammatical endings (Andary, 2020). Findings of Andary's study included that 37% of caregivers reported not finding grammatically shortened utterances to be beneficial (2020). This suggested that this set of caregivers favor grammatically rich input being provided to children with language delays. Additionally, results also indicated that caregivers viewed receptive language to be the most important factor in deciding how to speak to a child—significantly more important than expressive language levels, chronological age, cognitive abilities, and diagnosis (Andary, 2020).

Although the study by Andary advanced our understanding of caregiver perspectives on simplified language, it did not explore caregiver comfort which our study will address (2020). It also did not explore links between simplified language and family characteristics or fully explore the rich information in the open-ended responses. We will address these in this study. This thesis study used this existing dataset of survey responses gathered from caregivers of children in EI in Michigan (Andary, 2020). In conjunction with my advisor, Dr. Venker, my role within this study was to process and analyze new variables in the existing dataset (caregiver comfort questions, family characteristics, and open-ended responses), creating related plots and figures, interpreting

the results, and writing the thesis document. I presented preliminary findings from this thesis at the Symposium for Research in Child Language Disorders in June 2021.

Research Questions

Research has previously explored whether EI is beneficial, as well as teaching strategies, but this study will address the next step in this line of work – what do caregivers think about the strategies they are being taught, specifically for language modifications? To do so, the current study will address three research aims: (1) characterize caregiver comfort levels in producing different types of simplified utterances; (2) examine the relationship between family characteristics and caregiver perspectives about simplified language; (3) characterize the recommendations regarding language input provided by Early On professionals.

Methods

Participants

Participants included 77 caregivers of children currently enrolled in the state of Michigan's EI program, called Early On. Early On provides services for all eligible children and their families with mirrored goals from the overarching federally funded EI program. Specifically, Early On requires the child, between birth and 35 months of age, to meet specific criteria. This includes: 1) having an established condition (e.g., ASD, Down syndrome, cerebral palsy) diagnosed by a health care provider or mental health service provider, or 2) showing a developmental delay (1 standard deviation below the mean or a 20% delay) in one or more of the following developmental domains: self-help skills, cognitive skills, communication skills, physical development, and social-emotional development (Michigan Department of Education, 2021). A flyer advertising the survey study was distributed to eligible families through their Early On providers. All eligible participants received a $30 Amazon gift card via email as compensation for their time.

Children were reported to receive a variety of services through Early On, including speech and language services and occupational therapy. A total of 82% of participants reported that their child received speech-language therapy services. Caregiver age ranged from 22-48 years old. The majority (95%) reported having one child enrolled in services, while 5% reported having 2 children receiving services. Just over half (59%) of the caregivers reported working part- or full-time. It was also reported that 95% of caregivers spoke English as their primary language in the home environment. The 77 children in the study ranged from ages 11 to 35 months of age, with a wide variety of diagnoses reported (e.g., speech, language, or communication delay; fine or gross motor delay; ASD; global developmental delay). Although not all children in the survey received speech-language services, a large majority (82%) did.

Caregivers reported that the children primarily communicated verbally, along with signs or gestures; and the majority of the children were reported to be in the single-word stage of language development. Details about participant and child demographic can be found in Table 2.

The current study was determined to be exempt by Michigan State University's (MSU) Institutional Review Board (IRB) because no identifying information was collected in association with the survey responses. With this exemption, "any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to their subjects' financial standing, employability, educational advancement, or reputation" (Michigan State University, 2019).

Survey

The online survey was created using Qualtrics Survey Software. The survey included five sections that will be discussed in further detail. The response times varied due to the online format, which did not require completion of the entire survey in one session (Min: 5.2 minutes, Max: 8024.4 minutes, SD = 79901), and the median time to complete the entire survey was 13.5 minutes. The survey was based on another survey developed by Venker, McDaniel, and Yasick, which collected data regarding language input practices of SLPs (2019).

Table 2: Participant 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%	

(Andary, 2020)

Table 2 (cont'd)

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%	

(Andary, 2020)

Caregiver and Child Information

The first section of the survey collected data regarding demographic information about the caregiver and child. The caregiver data included age, gender, race, ethnicity, education level, primary language, and employment. Child information included age, gender, diagnosis, typical length of utterance, services provided, primary means of communication, and primary language. Adult participants were also asked about their background with child development courses.

Meanwhile, the second section of family characteristics analyzed the participants' experiences with Early On. This information includes time receiving services, the number of children enrolled in the program, intervention details, such as method of communication (verbal, signs, AAC), typical length of utterance, and diagnosis.

Utterance Ratings

The next section of the survey asked caregivers to rate 51 utterances based on 'how beneficial' each utterance was in terms of supporting language development in children who are not yet producing spoken words, or who produce single or two-word utterances. The responses were provided using a 5-point Likert scale, ranging from 'not at all' (1) to 'to a very large extent' (5). Utterances included single words, telegraphic, shorter-grammatical utterances (2-3 morphemes), or longer-grammatical utterances. Responses to these questions were addressed by Andary (2020) and were not examined in the current study.

Beliefs on Language Input

The third section of the survey targeted caregivers' general beliefs on how modifying language input can impact child comprehension and the ability to repeat adult utterances. Questions were modified for caregivers by defining 'function words' and 'content words' each time they appeared in a question, to ensure clarity. Caregivers rated beliefs on grammatically shortened input and telegraphic input separately and provided their perspective on how their child's characteristics (e.g., age, language ability, cognition, etc.) impacted their decision in how to modify their language input.

Comfort Level

The comfort level section contained questions developed to address caregiver comfort levels when providing modified language input to a child who is not yet producing spoken words

or produces single words or two-word phrases. Caregivers were given the task to rank their own comfort with producing Longer-Grammatical, Shorter-Grammatical, and telegraphic utterances if all options were 'equally beneficial' for language development. A 3-point scale was used for ranking, from least comfortable (1) to most comfortable (3). Aim 1 in the current study utilized data from this section. Table 3 displays the utterances provided within the survey.

Table 3: Comfort Level Phrase Options

Longer-Grammatical	Shorter-Grammatical	Telegraphic
Throw the ball	Ball	Throw ball
All done with snack	All done	All done snack
The cookie's yummy	Yummy cookie	Cookie yummy
The spoon fell down	Fell down	Spoon fell down
The doggie's running	Doggie	Doggie run

Experiences

The last section of the survey was created to give caregivers the opportunity to share any personal experiences regarding language modification. This set of questions was strategically placed at the end to ensure this did not influence ratings on any previous portions of the survey. Specifically, caregivers were asked to report the relationship between their child's language production and their level of comprehension, as well as provide comments on recommendations they have received from interventionists regarding how to modify language input. Aim 3 in the current utilized data on this section.

To analyze these free-response comments, categories were devised to capture themes in the content of recommendations caregivers received, as well as the format in which those recommendations were provided. Table 4 provides the content categories with associated definitions, while Table 5 displays categories and definitions for the format in which recommendations were provided.

Table 4: Content Terminology

Content Terminology	Definition
Wait For Response	Involves the caregiver waiting or outwaiting the child for them to give some sort of verbal response (even if only a sound/approximation).
Binary Choices	Involves giving the child two options/choices.
Imitation	Providing a model for the child and encouraging them to say something similar to your output.
Expansion	Providing a longer version of the utterance than what the child has just said.
Low Tech AAC	Different ways of getting your message across without words; such as using pictures, gestures, or sign language.
Simplification (of Utterances & Words)	Simplifying adult language to provide a more child-like version (utterances can be simplified to small phrases or words; words can be simplified to approximations).
One Up Rule	Providing one additional word in conversation than what the child is producing (e.g. if the child is producing 2-3 word utterances, provide them with 3-4 word utterances).
Engagement	Doing something directly involving the child where communication is a key component of the activity (joint attention, facing the child, singing, reading, hands on activities, etc.).
Repetition (of Child or of Yourself)	Caregivers were told to repeat important words, either said by the child or words they said themselves.

Table 4 (cont'd)

Narration/Labeling	Having the caregiver talk about what they or the child is doing or playing with, label objects in sight, and talk as much as they can to the child.
Emphasize sounds/Words/Site of Production	Focusing on giving the child specific verbal input, such as producing a specific sound (pointing out where it is produced at, such as the lips) or emphasizing important words with unique prosody patterns.
Limit Background Noise	Providing a quiet environment for the child to talk in.
Speak clearly/slowly	Talk slowly and enunciate to ensure the child can understand you clearly.

Table 5: Format Terminology

Format Terminology	Definitions
Handout	Information given on a paper format; something for caregivers to reference later.
Verbal Explanation	Physician/therapist explained the techniques verbally.
Real Time Coaching/Feedback	Therapist sat down with the caregivers and taught them how to do the activities with their child, while also providing them with feedback about their performance.
Modeling	Therapist just demonstrated the activities with the child in front of the caregivers.
External Resources	Outside resources not directly created or managed by the therapists (websites, support groups, etc.)

A student research assistant supported categorization of recommendations from caregivers. The research assistant was provided with the sets of definitions in Tables 4 and 5, and trained by the graduate student author. They were taught to categorize the comments for the content, between the thirteen pre-determined categories. The student read through each individual comment laid out on an Excel sheet and either mark a '1' indicating the comment falls

under the category (for each of the 13 categories), or a ‘0’ indicating the comment does not fall in the stated category. Comments could fall in multiple categories. After categorizing, the student totaled each column to obtain the total number of caregivers that were provided the recommendation.

After coding was complete, the coding of the student research assistant and the graduate student was compared, cell by cell. The number of cells differing in their value was totaled, and then divided by the total number of cells. This process determined the interrater reliability. This entire process was conducted with the coding for the format responses as well. Interrater agreement between the two coders for content was 96.75%. Interrater agreement for format was 96.88%. These findings for percent agreement indicated strong alignment between the two coders.

Data Analysis

Aim 1

Aim 1 was to characterize caregiver comfort levels in producing different types of simplified utterances. First, (Aim 1a) we examined the mean ratings for comfort levels and the variability across caregivers for the full sample. These summary statistics showed the overall comfort levels expressed by caregivers, which is important because this has not been studied before. Based on Venker, McDaniel, and Yasick's (2020) study, we also (Aim 1b) examined reported comfort levels for subgroups of caregivers based on their responses to a previous question about the extent to which they agree that telegraphic input is beneficial. Wilcoxon signed-rank tests compared comfort levels for each cluster of utterances across the different subgroups.

Aim 2

Aim 2 was to examine the relationship between family characteristics and caregiver perspectives about simplified language. Family characteristics variables included caregiver age, caregiver coursework in child development, and caregiver education level (highest degree obtained). Independent samples *t*-tests were used to compare family characteristics between caregivers who have a positive view of telegraphic input and caregivers who have a negative or neutral view of telegraphic input.

Aim 3

Aim 3 was to characterize the recommendations regarding language input provided by Early On professionals. Prior research using this data analyzed the 'exploratory results' section of the survey where 64 participants provided additional comments regarding recommendations that they had received from professional on language input (Andary, 2020). Responses were coded for overlapping information between participants, as well as coded for the method that the

recommendation was relayed (i.e., handouts, in person explanation, modeling, feedback). We undertook a more in-depth examination of the content of the recommendations made (including simplifying/shortening utterances, repetition of verbal output, narration/labeling, ASL/sign, giving options, visual aids, one-up rule, etc.). We independently identified the content themes that emerged in each free-form comment, while also having a trained student coder complete reliability coding. Statistical analyses were not conducted on these data. Descriptive information (including a total count of each content type) are provided.

Results

Aim 1

Part A

Our first aim was to characterize caregiver comfort levels in producing different types of simplified utterances. This analysis contained 5 different word clusters, with 3 variations of the same utterance. These variations of the utterance included a Longer-Grammatical option (e.g., *Throw the ball*), a Shorter-Grammatical option (e.g., *Ball*), and a Telegraphic option (e.g., *Throw ball*). These individual word clusters, containing the 3 syntactically different phrases, were analyzed together to understand caregiver comfort levels with the various ways of stating each utterance. The phrases in each word cluster were ranked by caregivers using a 1-3 scale. Markings of '1' meant least comfortable, and markings of '3' indicated most comfortable.

As a note of importance for the results and discussion section, a distinction between terminology needs to be made. The lower case, telegraphic input, references the concept and theoretical framework surrounding the speech that removes grammatical features. However, the upper case, Telegraphic, refers to the specific telegraphic utterance utilized in our study for the specific word cluster set. Similarly, the uppercase terms, Longer-Grammatical and Shorter-Grammatical, reference the other two utterance options provided.

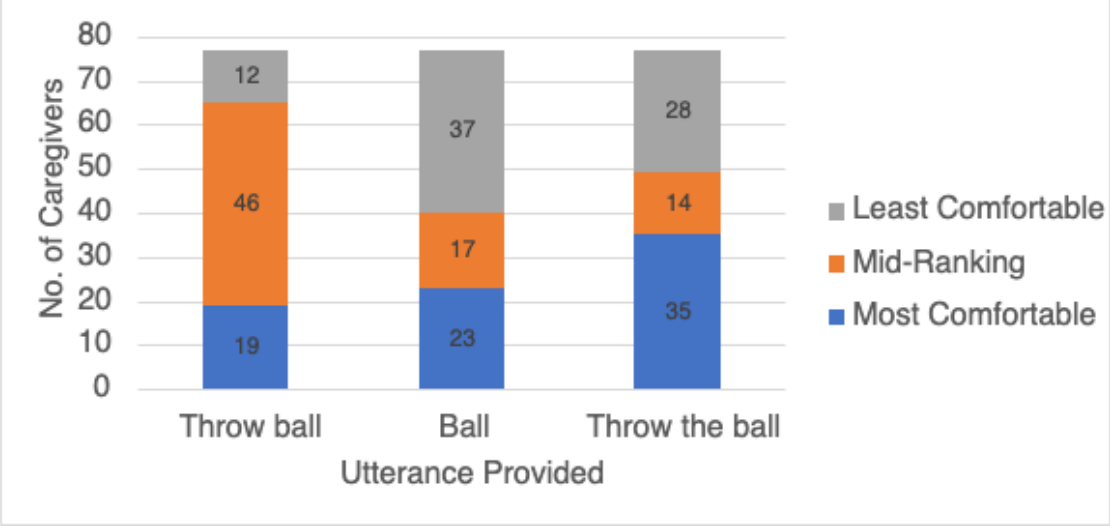
Descriptive results for the *Ball* word cluster are presented in Table 6 and Figure 1. All 3 utterances had a mean rating of approximately 2, indicating that they were all similarly ranked and favored by caregivers who completed the survey. There were no significant differences in the rankings for the *Throw ball* word cluster between the following pairs of comparisons: Telegraphic (*Throw ball*)-Shorter-Grammatical (*Ball*), Shorter-Grammatical (*Ball*)-Longer-

Grammatical (*Throw the ball*), and Telegraphic (*Throw ball*) -Longer-Grammatical (*Throw the ball*) (*p*s > .068).

Table 6: Average Ratings of *Ball* Utterances

Category	Utterance	Mean (SD)
Telegraphic	Throw Ball	2.08 (0.63)
Shorter-Grammatical	Ball	1.82 (0.87)
Longer-Grammatical	Throw the ball	2.09 (0.91)

Figure 1: Caregiver Comfort Rankings for *Ball* Utterances



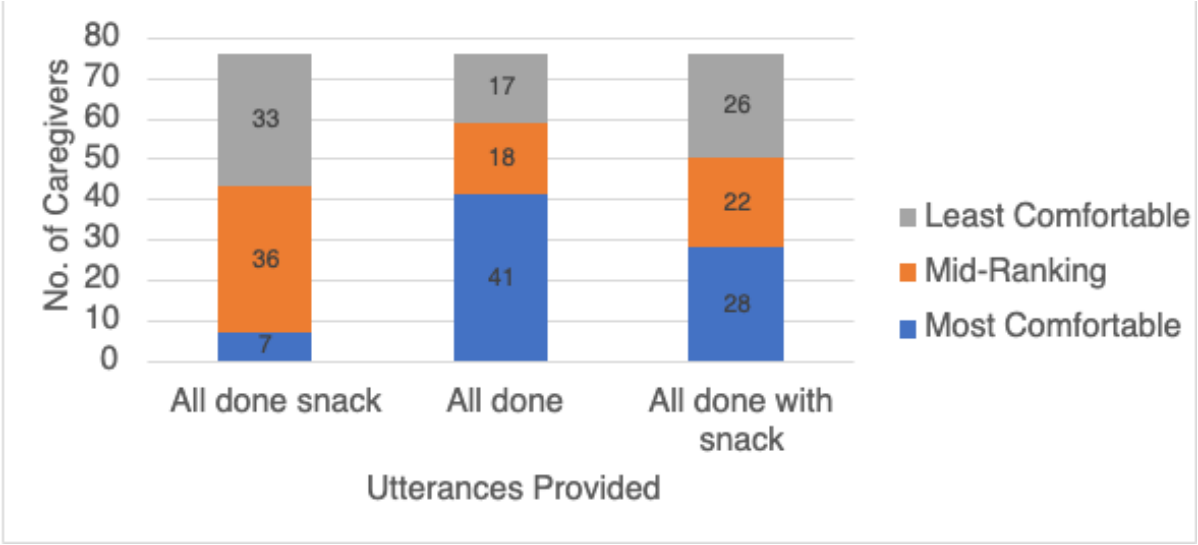
Descriptive results for the *All done* word cluster are presented in Table 7 and Figure 2. All 3 utterances had a mean rating of 2, indicating that they were all similarly ranked and favored by caregivers who completed the survey. For the *All done* cluster, the Telegraphic utterance (*All done snack*) was ranked significantly lower than both the Longer-Grammatical utterance (*All done with snack*) (p = .008) and the Shorter-Grammatical utterance (*All done*) (p < .001).

Rankings between Longer-Grammatical and Shorter-Grammatical utterances did not significantly differ (p = .165).

Table 7: Average Ratings of *All done* Utterances

Category	Utterance	Mean (SD)
Telegraphic	All done snack	1.64 (0.63)
Shorter-Grammatical	All done	2.32 (0.82)
Longer-Grammatical	All done with snack	2.03 (0.85)

Figure 2: Caregiver Comfort Rankings for *All done* Utterances



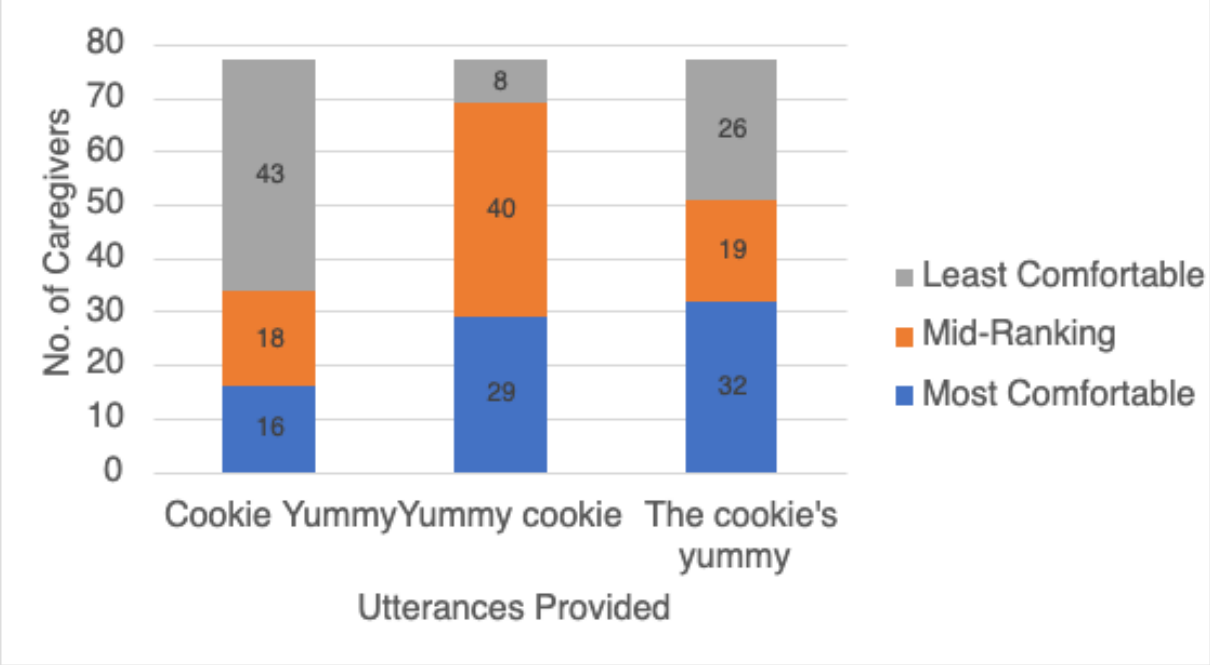
Descriptive results for the *Cookie* word cluster are presented in Table 8 and Figure 3. All 3 utterances had a mean rating of 2 indicating that they were all similarly ranked and favored by caregivers who completed the survey. For the *Cookie* cluster, the Telegraphic utterance (*Cookie yummy*) was ranked significantly lower than both the Longer-Grammatical utterance (*The cookie's yummy*) (p = .015) and the Shorter-Grammatical utterance (*Yummy cookie*) (p < .001).

However, the Longer-Grammatical (*The cookie's yummy*) and Shorter-Grammatical (*Yummy cookie*) utterances rankings did not significantly differ (p = .203).

Table 8: Average Ratings of *Cookie* Utterances

Category	Utterance	Mean (SD)
Telegraphic	Cookie yummy	1.65 (0.81)
Shorter-Grammatical	Yummy Cookie	2.27 (0.64)
Longer-Grammatical	The cookie's yummy	2.09 (0.87)

Figure 3: Caregiver Comfort Rankings for *Cookie* Utterances



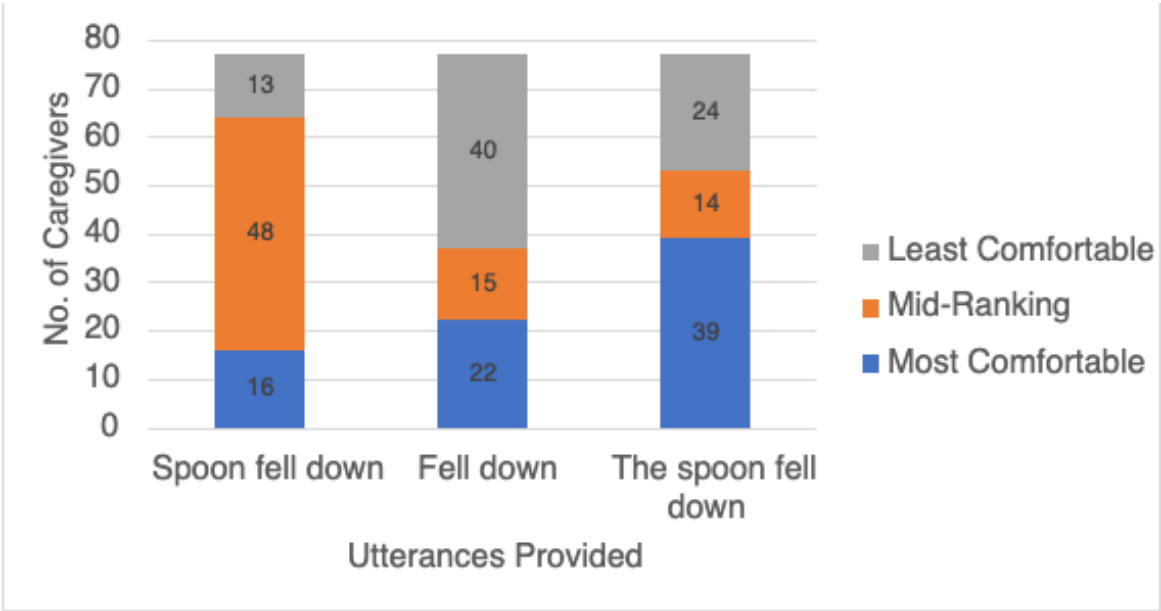
Descriptive results for the *Spoon* word cluster are presented in Table 9 and Figure 4. All 3 utterances had a mean rating of 2, indicating that they were all similarly ranked and favored by caregivers who completed the survey. For the *Spoon* cluster, the Shorter-Grammatical utterance

(*Fell down*) was ranked significantly lower than both the Longer-Grammatical utterance (*The spoon fell down*) (p = .022) and the Telegraphic utterance (*Spoon fell down*) (p = .046). However, the rankings for the Longer-Grammatical utterance (*The spoon fell down*) and the Telegraphic utterance (*Fell down*) did not significantly differ (p = .257).

Table 9: Average Ratings of *Spoon* Utterances

Category	Utterance	Mean (SD)
Telegraphic	Spoon fell down	2.04 (0.62)
Shorter-Grammatical	Fell down	1.75 (0.87)
Longer-Grammatical	The spoon fell down	2.20 (0.90)

Figure 4: Caregiver Comfort Rankings for *Spoon* Utterances



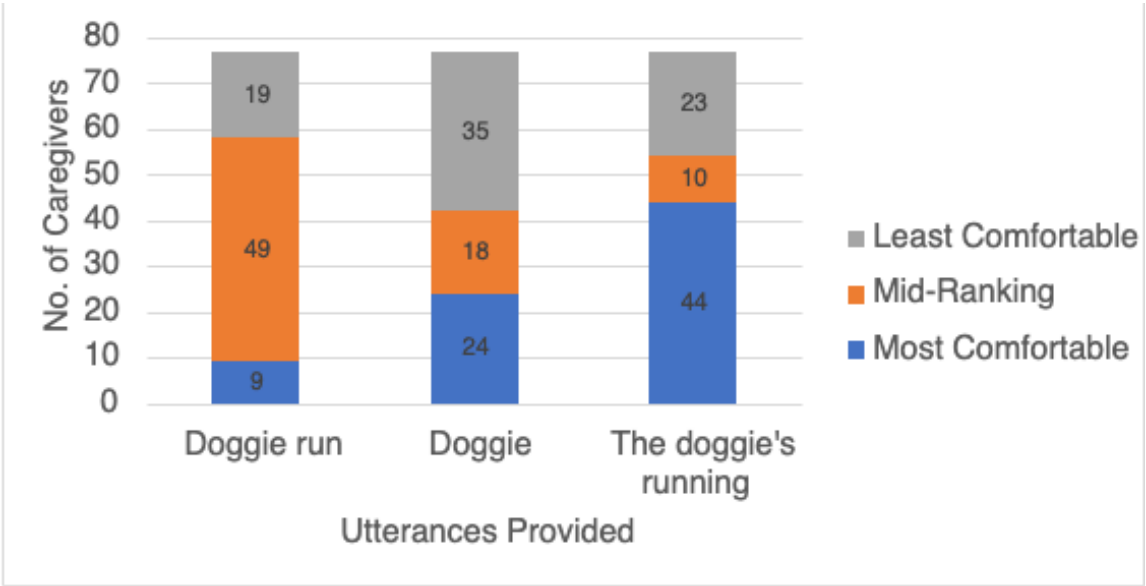
Descriptive results for the *Doggie* word cluster are presented in Table 10 and Figure 5. All 3 utterances had a mean rating of 2, indicating that they were all similarly ranked and favored

by caregivers who completed the survey. For the *Doggie* cluster, the Longer-Grammatical utterance (*The doggie's running*) was ranked significantly higher than both the Shorter-Grammatical utterance (*Doggie*) (p = .040) and the Telegraphic utterance (*Doggie run*) (p = .010). However, the Shorter-Grammatical utterance (*Doggie*) and the Telegraphic utterance (*Doggie run*) did not significantly differ (p = .967).

Table 10: Average Ratings of *Doggie* Utterances

Category	Utterance	Mean (SD)
Telegraphic	Doggie run	1.87 (0.59)
Shorter-Grammatical	Doggie	1.83 (0.87)
Longer-Grammatical	The doggie's running	2.26 (0.90)

Figure 5: Caregiver Comfort Rankings for *Doggie* Utterances



To summarize, the Telegraphic utterance was ranked significantly lower than the Shorter-Grammatical utterance or Longer-Grammatical utterance for 3 of the 5-word clusters: *All done*,

Cookie yummy, and spoon fell down. In these cases, rankings for the Shorter-Grammatical utterance and Longer -Grammatical utterances did not significantly differ. For the *Doggie run* cluster, the Telegraphic utterance was ranked significantly lower than the Longer-Grammatical utterance, but there was no significant difference in rankings for the Shorter-Grammatical utterance or Telegraphic utterance. For the *Throw ball* cluster, there were no significant differences in rankings across the 3 utterance types. Thus, except for the *Throw ball* cluster, the Longer-Grammatical option was favored, either individually or within a pair of utterances that did not significantly differ from one another for the word cluster.

Part B

Based on Venker, McDaniel, and Yasick's (2020) study, Aim 1b examined reported comfort levels for subgroups of caregivers based on their responses to a previous question about the extent to which they agree that telegraphic input is beneficial. To address this question, we analyzed each cluster/group of utterances separately, but we also integrated the comfort level groups that previously existed. With this, we could analyze the two groups instead of using the 3-tiered ranking system utilized in the original survey. Through the use of the original ranking system, there would have been additional comparisons to make, whereas the binary division of positive and negative views provides a more concise analysis. We used 2-proportions *z*-tests to determine whether the proportion of caregivers who put Longer-Grammatical utterance as their most comfortable choice is significantly different between the groups of caregivers who viewed Telegraphic utterances as helpful, and the caregivers who viewed Telegraphic utterances as unhelpful. We used the 2-proportions *z*-test because it is appropriate for comparing the difference in population proportions between 2 groups. Then, through a thorough analysis, we were able to track any correlations between the features available in each option and caregiver characteristics.

Descriptive results regarding these divisions for the *Throw ball* word cluster are presented in Figure 6 and Figure 7. For the "Throw ball" word cluster, the proportion of caregivers who put Longer-Grammatical utterance as their most comfortable was significantly higher in the Telegraphic-Unhelpful group (24/37; 64.9%) than in the Telegraphic-Helpful group (11/40; 27.5%) ($z = 3.29$, $p = .001$).

Figure 6: Comfort Levels of *Ball* Utterances for Caregivers Who Do Not View TI as Beneficial

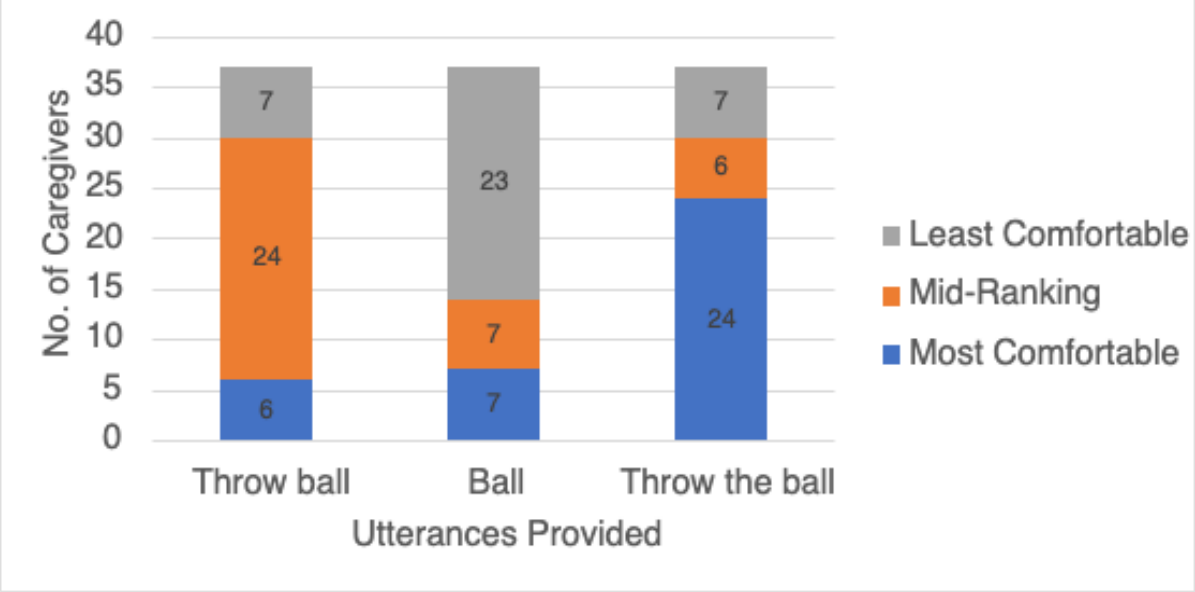
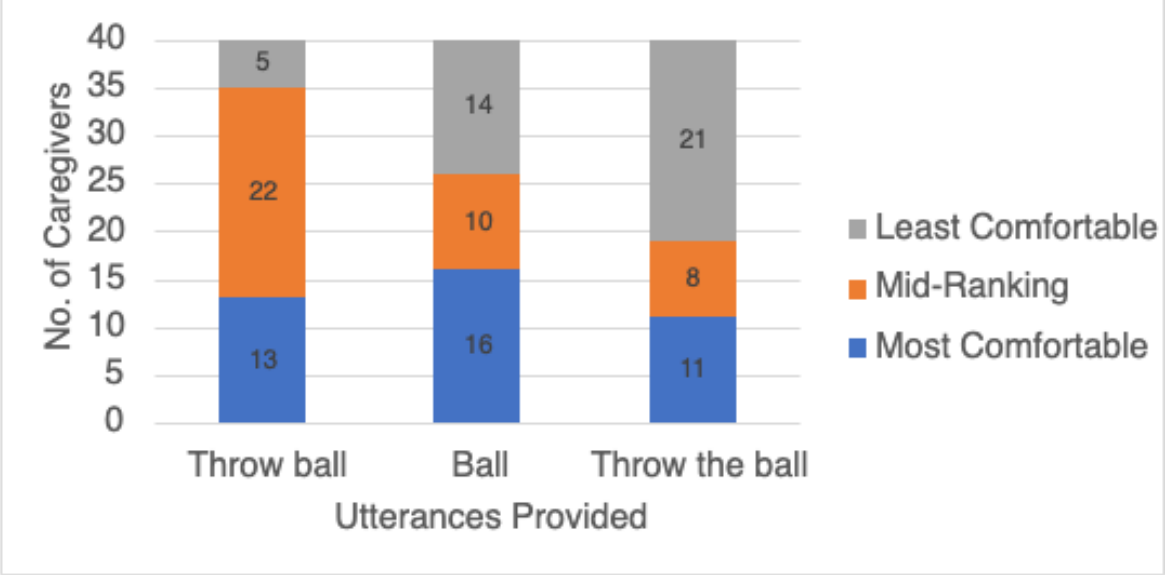


Figure 7: Comfort Levels of *Ball* Utterances for Caregivers Who Do View TI as Beneficial



Descriptive results regarding these divisions for the *All done* word cluster are presented in Figure 8 and Figure 9. For the *All done* word cluster, the proportion of caregivers who put Longer-Grammatical utterance as their most comfortable was significantly higher in the Telegraphic-Unhelpful group (20/37; 54.1%) than in the Telegraphic-Helpful group (8/40; 20.0%) ($z = 3.10$, $p = .002$).

Figure 8: Comfort Levels of *All Done* Utterances for Caregivers Who Do Not View TI as Beneficial

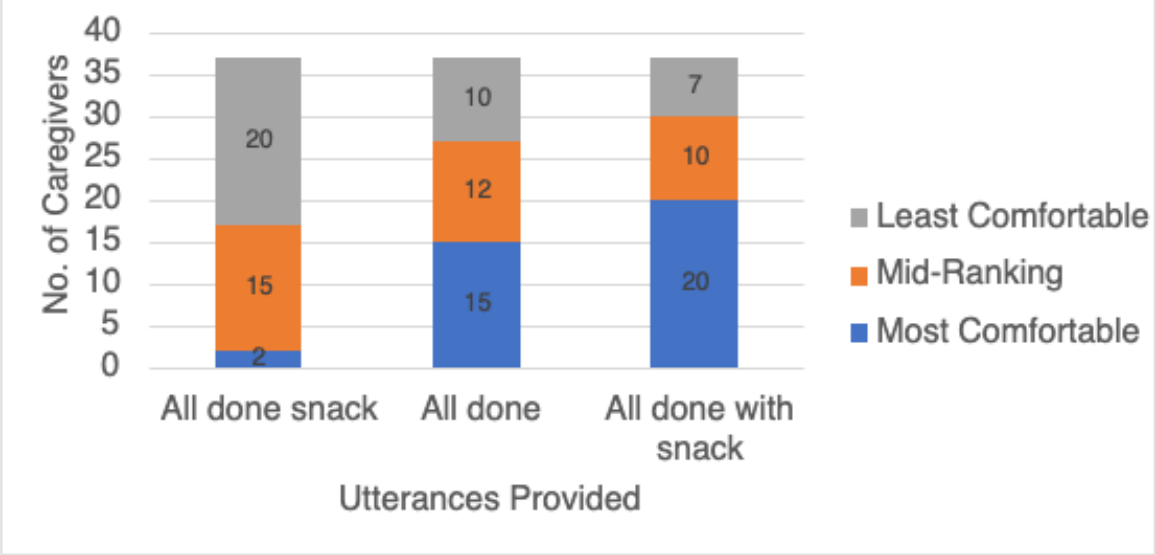
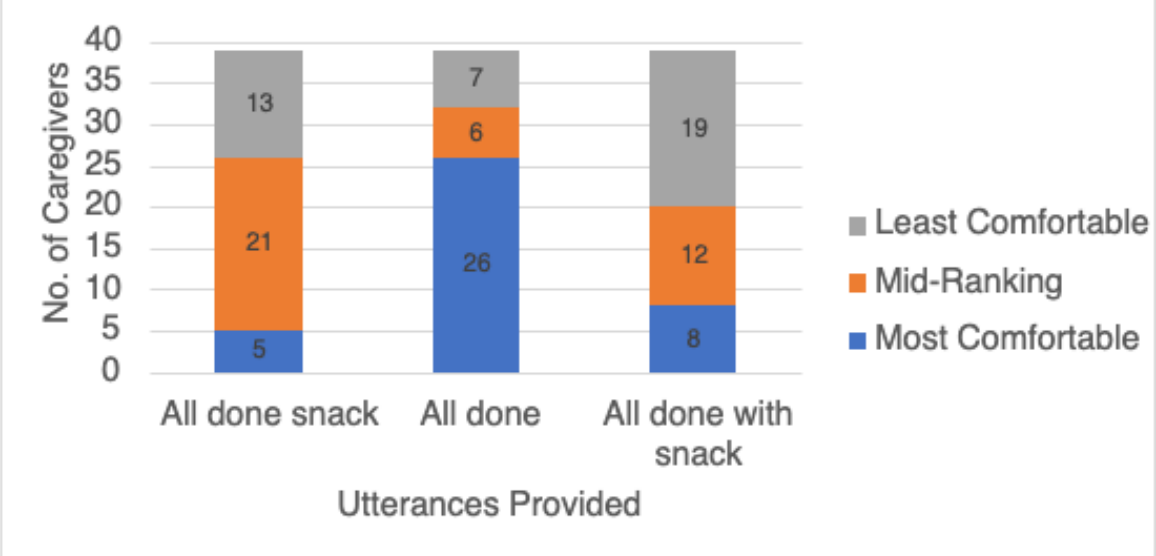


Figure 9: Comfort Levels of *All Done* Utterances for Caregivers Who Do View TI as Beneficial



Descriptive results regarding these divisions for the *Cookie* word cluster are presented in Figure 10 and Figure 11. For the *Cookie* word cluster, the proportion of caregivers who put the Longer-Grammatical utterance as their most comfortable was significantly higher in the

Telegraphic-Unhelpful group (23/37; 62.2%) than in the Telegraphic-Helpful group (9/40; 22.5%) ($z = 3.53$, $p < .001$).

Figure 10: Comfort Levels of *Cookie* Utterances for Caregivers Who Do Not View TI as Beneficial

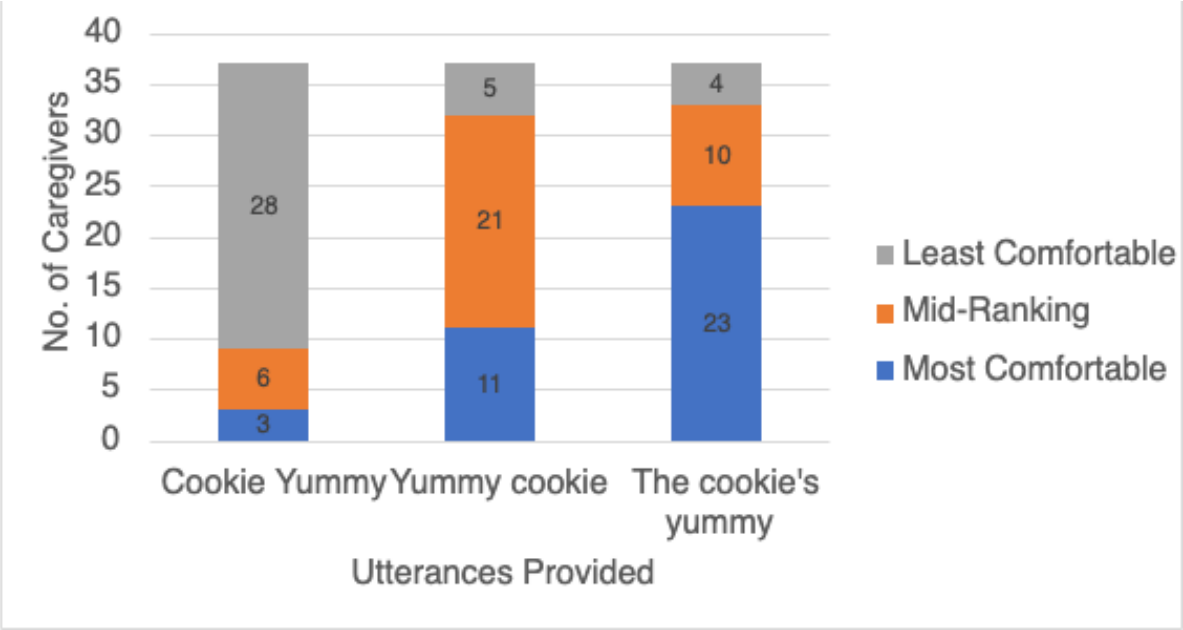
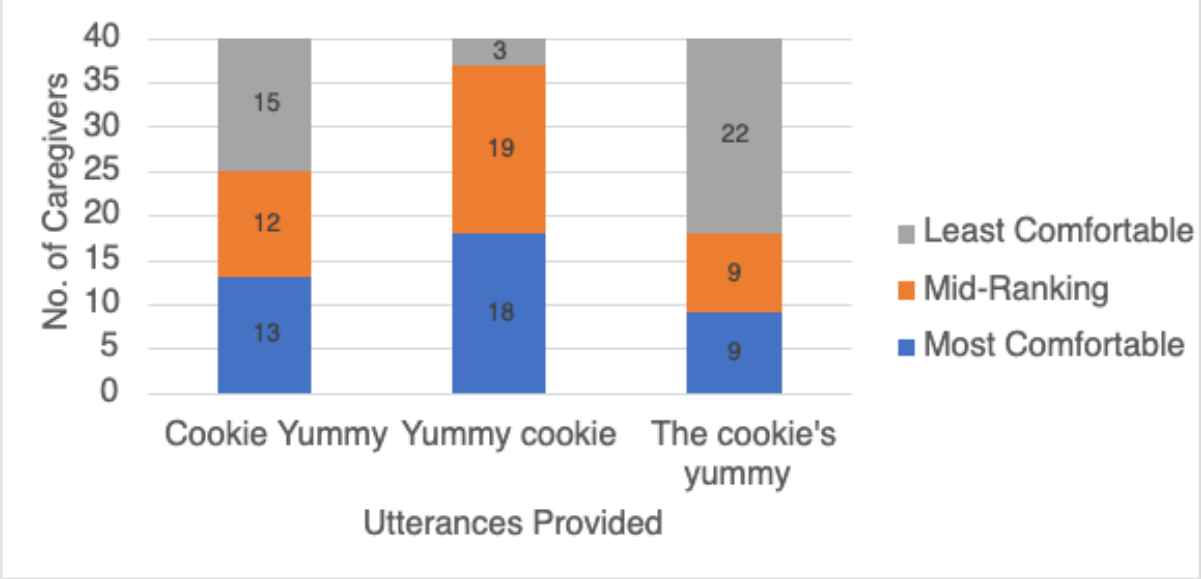


Figure 11: Comfort Levels of *Cookie* Utterances for Caregivers Who Do View TI as Beneficial



Descriptive results regarding these divisions for the *Spoon* word cluster are presented in Figure 12 and Figure 13. For the *Spoon* word cluster, the proportion of caregivers who put the Longer-Grammatical utterance as their most comfortable was significantly higher in the Telegraphic-Unhelpful group (26/37; 70.3%) than in the Telegraphic-Helpful group (13/40; 32.5%) ($z = 3.31$, $p = .001$).

Figure 12: Comfort Levels of *Spoon* Utterances for Caregivers Who Do Not View TI as Beneficial

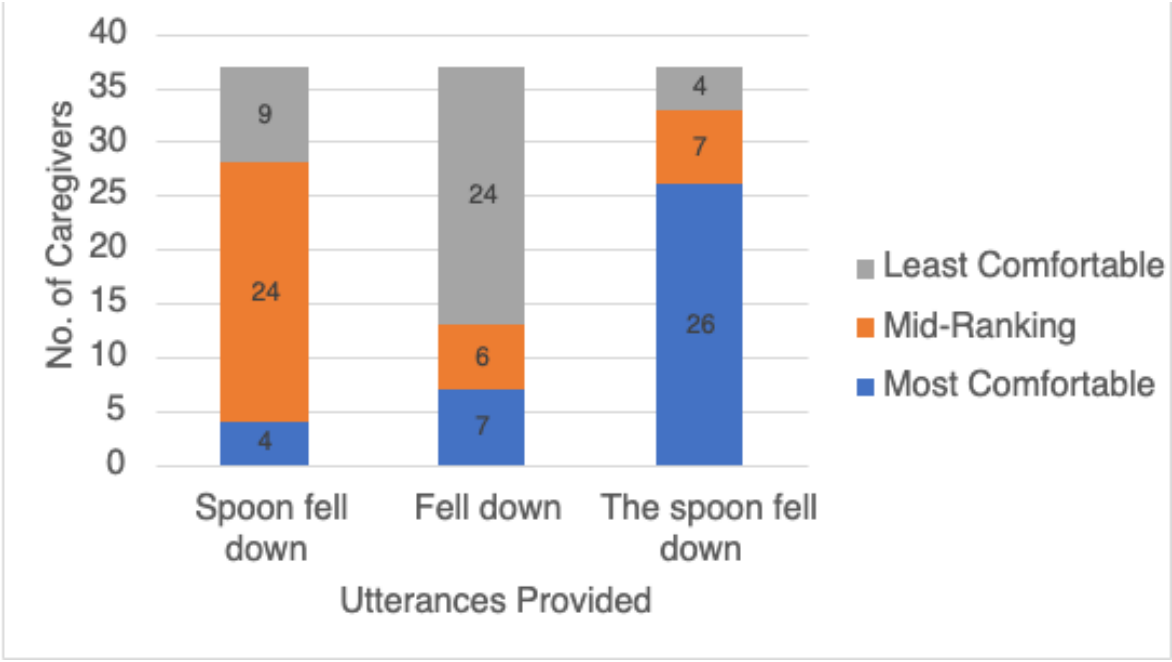
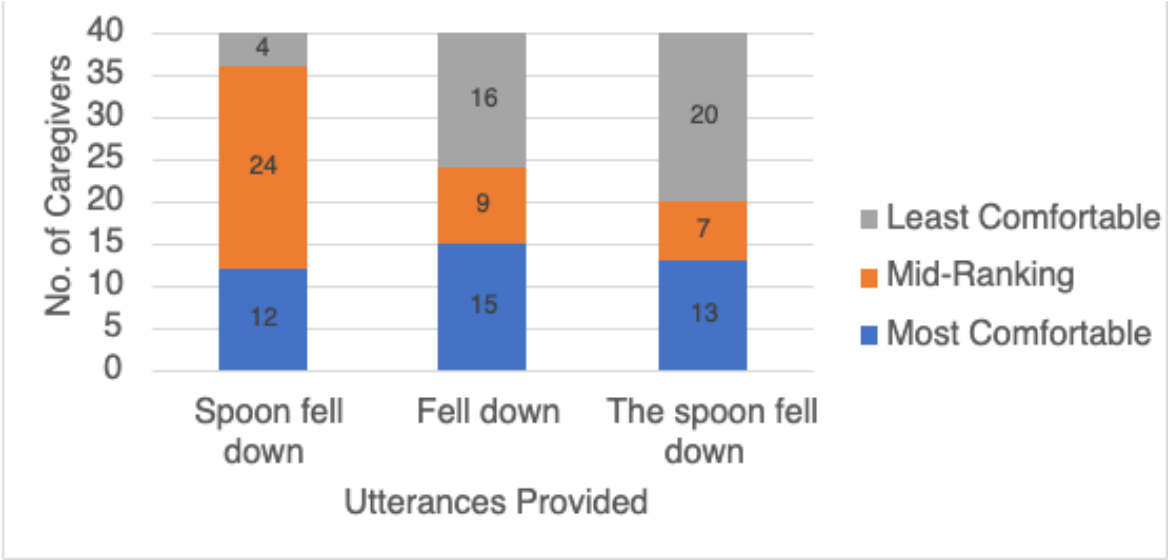


Figure 13: Comfort Levels of *Spoon* Utterances for Caregivers Who Do View TI as Beneficial



Descriptive results regarding these divisions for the *Doggie* word cluster are presented in Figure 14 and Figure 15. For the *Doggie* word cluster, the proportion of caregivers who put the Longer-Grammatical utterance as their most comfortable was significantly higher in the Telegraphic-Unhelpful group (29/37; 78.4%) than in the Telegraphic-Helpful group (14/40; 35.0%) ($z = 3.83$, $p > .001$).

Figure 14: Comfort Levels of *Doggie* Utterances for Caregivers Who Do Not View TI as Beneficial

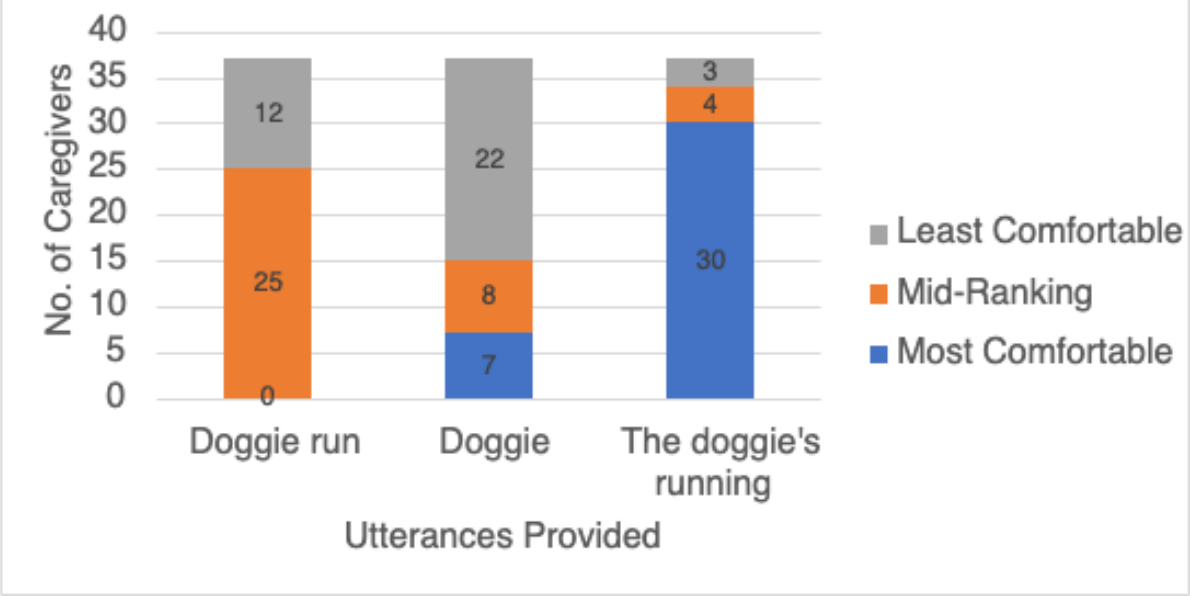
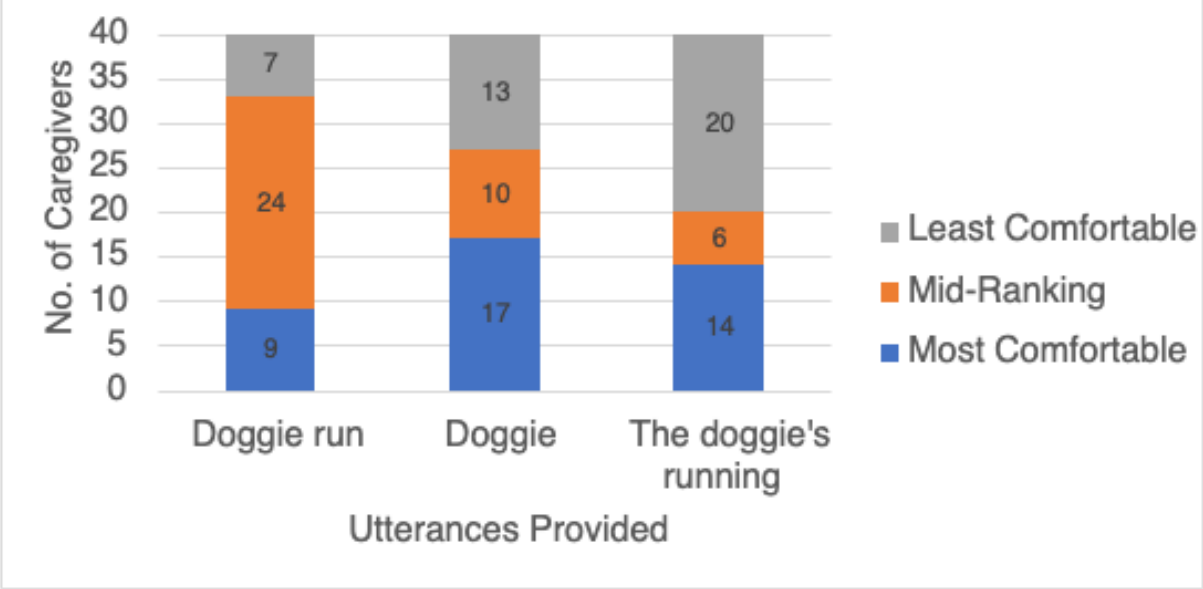


Figure 15: Comfort Levels of *Doggie* Utterances for Caregivers Who Do View TI as Beneficial



In summary, across all 5 word groups, there was a significantly higher proportion of caregivers who were most comfortable with Longer-Grammatical utterances in the group of caregivers with negative views of TI than the group of caregivers with positive views of TI (all *ps* < .01).

Aim 2

Our second aim was to examine the relationship between family characteristics and caregiver perspectives about simplified language. Variables for family characteristics analyzed included caregiver age, caregiver coursework in child development, and caregiver education level (highest degree obtained). Analyses, including a t-test and *z*-test, were conducted for each characteristic between caregivers who have a positive view of telegraphic input and caregivers who have a negative or neutral view of telegraphic input.

First, caregiver education was examined using three comparisons between the Telegraphic-Helpful and Telegraphic-Unhelpful groups. The three comparisons included

analyses of those that had not obtained a bachelor's degree, those that have obtained a bachelor's degree, and the number of caregivers with graduate or professional degrees.

Within the no bachelor's degree grouping, analyses revealed a significant difference in educational level between the caregivers with positive views of TI, versus caregivers with negative or neutral views of TI. There was a significantly ($z = 2.38$, $p = .002$) higher proportion of caregivers who had not obtained a bachelor's degree in the group of caregivers with positive views of TI (26/40; 65.0%) than in the group of caregivers with negative or neutral views of TI (14/27; 37.84%).

Meanwhile, the number of caregivers who had obtained a bachelor's degree was the same in each of the two groupings: both positive and negative/neutral views of TI (n=10). Consequently, there was no significant difference in this education level comparison between the two groups.

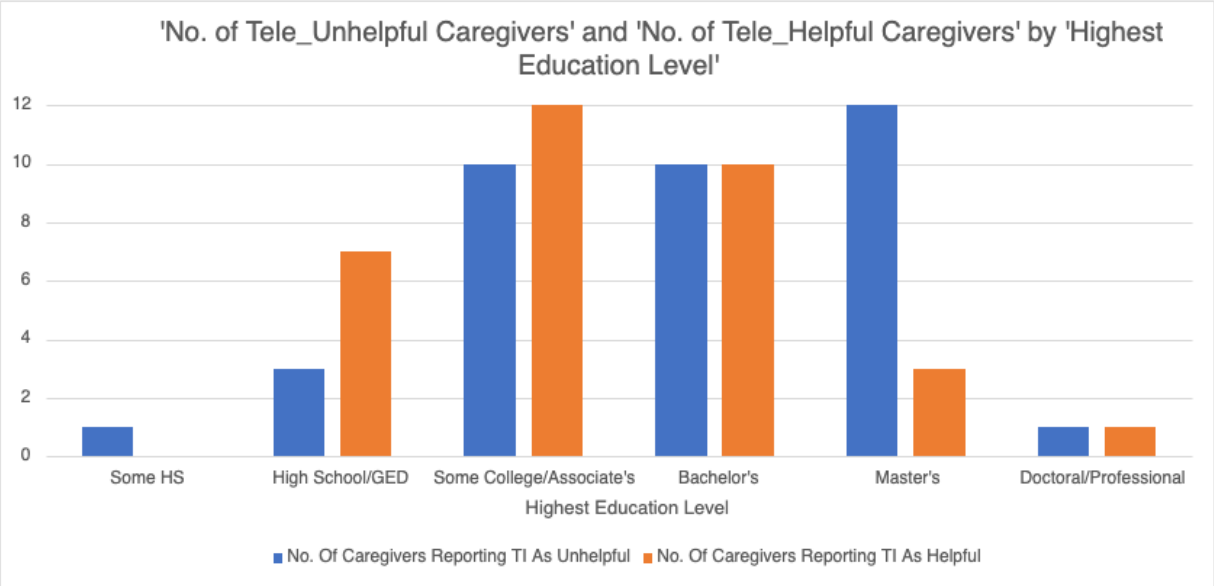
As for graduate and professional degrees, analyses revealed a difference in educational level between the caregivers with positive views of TI, versus caregivers with negative or neutral view of TI. There was a significantly ($z = 2.66$, $p = .008$) higher proportion of caregivers with graduate degrees in the group of caregivers with negative or neutral views of TI (13/27; 35.1%) than in the group of caregivers with positive views of TI (4/40; 10.0%).

These results indicate that caregivers with higher education levels tend to view TI as unhelpful. Whereas the caregivers with lower education levels tend to view TI as having positive impacts. As for the bachelor's degree comparison, results showed equal beliefs from both positive and negative views of TI, indicating an overlap in beliefs at this education level. Caregiver education results are displayed in Table 11 and Figure 16.

Table 11: Number of Caregivers in Divided Groups Highlighting Education Levels

Highest Degree Obtained	Number of Caregivers with Telegraphic-Unhelpful Perspective	Number of Caregivers with Telegraphic-Helpful Perspective
Some HS	1	0
High School/GED	3	7
Some College	1	0
Associate's	3	10
Bachelor's	10	10
Master's	12	3
Doctoral/Professional	1	1

Figure 16: Number of Caregivers in Divided Groups Comparing Education Levels



Next, caregiver coursework in child development was analyzed. Analyses revealed a difference in caregiver coursework level between the caregiver with positive views of TI and the caregivers with negative or neutral view of TI. Even though a difference was noted, there was not a significant ($z = 1.22$, $p = .221$) difference between the proportion of caregivers with caregiver coursework levels in the group of caregivers with negative or neutral views of TI (19/27; 51.35%) than in the group of caregivers with positive views of TI (15/40; 37.50%). Thus, indicating that amount of caregiver coursework did not impact the beliefs of TI usage.

Finally, an age comparison was conducted between the caregivers in the TI-Helpful and the TI-Unhelpful groupings. There was no significant difference ($t(60) = -0.87$, $p = 0.387$) in the mean age of caregivers between the group of caregivers with negative or neutral views of TI and the group of caregivers with positive views of TI. This indicates that age does not impact the beliefs caregivers hold regarding the usage of TI.

Aim 3

Our last aim was to characterize the recommendations regarding language input provided by Early On professionals. Caregivers provided free-form responses, which were categorized for both content and the format of the recommendations they had received. In total, 65 of the 77 participants filled out this free-form section.

The most reported recommendations provided to caregivers included simplification of speech, engagement with the child, repetition of the verbal output just stated, and narration and labeling. The least commonly reported recommendations included using the one-up rule, limiting background noise, and speaking clearly and slowly. Full results are presented in Table 12. The most commonly reported formats used were handouts, modeling, and verbal explanations. The

least commonly reported formats used were feedback and external resources. Full results are presented in Table 13.

Table 12: Number of Caregivers Reporting Content Recommendations

Recommendation Provided	Number of Caregivers Report Being Told
Simplification (of Utterances & Words)	15
Engagement	15
Repetition (of Child or of Yourself)	13
Narration/Label	13
Low Tech AAC	11
Binary Choices	7
Emphasizing Sounds/Words/Site of Production	7
Expansion	5
Wait for response	5
Imitation	3
Speak Clearly & Slowly	2
Limit Background Noise	1
One Up Rule	1

Table 13: Number of Caregivers Reporting Format Recommendations

Format Provided	Number of Caregivers Provided To
Handouts	27
Modeling	23
Verbal Explanation	21
(Real Time) Coaching/Feedback	5
External Resources	5

Discussion

Aim 1

Part A

To our knowledge, this is the first study to investigate caregivers' reported comfort levels in producing different types of simplified utterances. Across 4 of the 5-word clusters, caregivers ranked Longer-Grammatical utterances significantly higher than the Telegraphic utterances. This finding suggests that, overall, caregivers feel more comfortable saying natural variations of utterances that maintain grammatical rules as opposed to ungrammatical utterances that remove function words or morphological endings. These caregiver beliefs align with the most recent research trends, such that there is an increase in preference for grammatical input (Bang et al., 2019; Choi et al., 2020; Fusaroli et al., 2019; Sandbank & Yoder, 2016). Additionally, caregiver beliefs in this study are similar to the beliefs of surveyed SLPs, such that the SLPs interviewed preferred shortened, grammatical utterances as opposed to telegraphic utterances (Venker et al., 2019).

As a reminder, a distinction between terminology was defined. The lower case, *telegraphic input*, references the concept and theoretical framework surrounding the speech that removes grammatical features. However, the upper case, *Telegraphic*, refers to the specific telegraphic utterance utilized in our study for the specific word cluster set.

Even though caregivers preferred Longer-Grammatical utterances over Telegraphic overall, for several word clusters there were no significant differences between caregiver rankings for Longer-Grammatical utterances versus Shorter-Grammatical utterances. Thus, caregivers may not have the same discomfort producing Shorter-Grammatical utterances, more similar to Longer-Grammatical options, as they may with Telegraphic utterances. This is

important to know, since presenting Shorter-Grammatical along with more complex utterances that contain those same words, may help facilitate language development (Lew-Williams et al., 2011).

Nevertheless, we noted considerable variability across individual caregivers in their comfort levels for different types of utterances. This variability emphasizes the importance of talking with caregivers and observing their natural interactions with their child to better understand individual caregiver beliefs. This "baseline" information may allow practitioners to better individualize teaching/coaching strategies. We as practitioners need to understand what caregivers believe prior to giving them treatment recommendations in order to know how to structure the presentation of the material to limit the cognitive dissonance and to ensure we consistently show respect for differing beliefs experienced by the caregiver (Cox, 2015; Merriam, 2001; Merriam, 2008). One such method of doing so is utilizing the SSDL model, but specific interview and structured plan of care criteria does not exist yet (Merriam, 2001). It is essential to meet the caregiver where they are at, and build from there, because EI is aimed towards providing caregivers with the opportunity to play a key role in their child's development and focuses on building relationships with the family (Woodman et al., 2018). This role requires caregivers to be the primary agents of intervention, while EI service providers act as supports for the family (Adams et al., 2013; Douglas et al., 2020; Hebbeler et al., 2011; Woodman et al., 2018). This further allows the caregiver to increase their capacity to care for their child on a day-to-day basis (Woodman et al., 2018).

Some caregivers may more be eager to work in conjunction with the practitioner's beliefs since their beliefs are more closely aligned with the practitioner's. However, other caregivers may have a longer path of coaching sessions in front of them or require information to

understand why the practitioner is using a specific approach before they are motivated to try that strategy with their child. When caregiver and practitioner beliefs are well aligned, the focus could be shifted to altering the simplicity or complexity of language. However, it is important to remember that a slow adjustment to the new perspectives may be required for many caregivers during coaching. The practitioner might begin initially by using a follow-in language approach focusing on engagement, repetition of important words, or including low tech AAC models into play. Then later when the caregiver is comfortable, they can build up to the concept of simplification.

Examining the linguistic constructions of specific word clusters sheds light on potential reasons caregivers reported different comfort levels for producing some utterances than others. There were three patterns observed in the caregivers of our study and how they responded to the word clusters. First, survey responses suggested that many caregivers were not comfortable with removing verbs and morphological verb markers. Our findings showed that caregivers preferred Longer-Grammatical utterances (*The cookie's yummy, The doggie's running*) as opposed to Telegraphic utterances (*Cookie yummy, doggie run*). Similarly, caregiver ratings indicated relatively low levels of comfort for the Telegraphic utterance *All done snack*.

Secondly, overall, caregiver ratings suggested that caregivers were somewhat comfortable removing an article (e.g., *the*) from the utterance. Caregivers showed no significant differences in ratings for the *Ball* word clusters between the Telegraphic utterance (*throw ball),* Shorter-Grammatical utterance (*ball),* and the Longer-Grammatical utterance (*throw the ball).* Similarly, there was no significant difference noted in the *Spoon* word clusters between the Telegraphic utterance (*spoon fell down)* and the Longer-Grammatical utterance (*the spoon fell down).*

The last noted pattern observed was regarding how caregivers seemed to favor having more semantic information in a given utterance, rather than less. Evidence of this pattern can be found in the *Spoon* and *Doggie* word clusters. In the *Spoon* word clusters, the Shorter-Grammatical utterance (*fell down)* containing less descriptive or contextual information was less favored than the Telegraphic utterance (*spoon fell down)* or the Longer-Grammatical utterance (*the spoon fell down)*. In this case, the less favored utterance contained no subject (*spoon*), whereas the more favored utterances contained both a subject and a verb (*spoon* and *fell down*). As for the *Doggie* word clusters, the Telegraphic utterance (*Doggie run)* and the Shorter-Grammatical utterance (*Doggie)* were less favored than the Longer-Grammatical option (*The doggie's running).* This may indicate that caregivers prefer utterances that provide a clear subject and verb; and when present, caregivers will favor the utterance that contains the most grammatical features.

Part B

This study provides the first evidence that there is a significant relationship between caregivers' beliefs about the benefits of telegraphic input, and their comfort levels in saying different kinds of utterances. We divided caregivers into two groups based on their perspectives about telegraphic utterances, as indicated by a previous survey question (see Andary, 2020): caregivers who viewed telegraphic input as beneficial (the Telegraphic-Helpful group), and caregivers who did *not* view telegraphic utterances as beneficial or felt neutral on this issue (the Telegraphic-Unhelpful group). We found it was more common for people in the Telegraphic-Unhelpful group to select Longer-Grammatical utterance as their most comfortable choice, than for people in the Telegraphic-Helpful group. Specifically, caregivers in the Telegraphic-Unhelpful group varied in their selection of the Longer-Grammatical utterance as their 'most

comfortable' option 54-78% of the time across the word clusters. Meanwhile, caregivers in the Telegraphic-Helpful group varied in marking the Longer-Grammatical utterance as their 'most comfortable' option in 20-35% across the word clusters.

To our knowledge, these results show the first evidence that caregivers do vary in their comfort levels for saying different kinds of utterances, and this relates directly to their beliefs. We need to consider this when giving recommendations and coaching caregivers on how to modify their spoken language in EI. We, as practitioners, need to be respectful as to where the caregiver is in the learning cycle, as Dinnebeil described, regarding the topics of the suggestions provided (Dinnebeil, 1999). Before providing recommendations and engaging the caregiver in a coaching session, we need to ensure that we, as the practitioner, understand the caregiver's initial beliefs through an interview and observation process. Understanding these initial beliefs will allow you to understand the amount of cognitive dissonance the caregiver may have to experience prior to altering their beliefs (Merriam, 2001). However, the caregivers who have baseline beliefs and baseline comfort levels that differ greatly from practitioner recommendations and coaching will face more cognitive dissonance and may struggle to accept the teachings without proper support and background reasoning (Cox, 2015; Merriam, 2001; Merriam, 2008).

Aim 2

Findings from this study revealed a relationship between beliefs regarding telegraphic input and education level. It was revealed that caregivers who thought telegraphic language was unhelpful were more likely to have obtained graduate degrees than caregivers who viewed telegraphic language as beneficial. Additionally, caregivers who had not obtained a bachelor's degree were more likely to view telegraphic language as beneficial. This indicates that formal

education level may affect the beliefs caregivers have and, possibly, the decisions caregivers make towards language input. If caregivers acquire more education, this may change the way they think about talking to children. It may also allow for more opportunities to learn how to speak to their child, depending on what field their degree is in. Considerations for this include caregivers with less education, or who are in a field distantly related to child language or development may need to be provided with more background knowledge to explain the recommendations providers are making.

Findings revealed there was no significant relationship between beliefs regarding telegraphic input, and caregiver coursework or caregiver age. This finding suggests that having taken coursework in child development does not motivate caregivers to use one type of input over the other. Additionally, the age of the caregiver does not appear to impact the decisions they make toward language input.

Aim 3

Format Recommendations

Our final aim was to examine the recommendations caregivers had received from professionals in Early On, as well as the format in which those recommendations had been presented to them. The most commonly reported formats used were handouts, modeling, and verbal explanations. The least commonly reported formats used were feedback and external resources. However, research has found that feedback and real-time coaching has proven to be one of the most efficient formats of teaching (Roberts et al., 2016). There is this discrepancy that exists between research and clinical practice. This discrepancy could be due to the fact that coaching and feedback are a relatively new focus in the field and are still being understood as to how they can be properly implemented within a session without overstepping the caregivers'

boundaries. Additionally, caregivers may opt out of coaching sessions due to the difficulty or discomfort of engaging in play with the child while being observed. Therefore, many practitioners may opt out of using coaching and feedback since the process of this teaching can provide a challenge depending on caregivers' attitudes and beliefs. Coaching may also be less familiar and more cognitively and socially challenging for the practitioners because not all providers receive explicit education about the process of coaching adult learners. As a result, coaching is difficult to execute in an effective way that maintains client rapport.

Even so, it should continue to be a high intervention priority because previous research has found an increase in caregiver empowerment, confidence in their ability to communicate with their children, as well as the ability to encourage the child to meet other developmental milestones when participants were given guidance (Roberts et al., 2016). Specifically, caregivers who are provided with coaching on how to implement specific strategies with their child, showed more increased utilization of such strategies (Roberts et al., 2016). These strategies included understanding the structure of sessions with practitioners (e.g., joint planning, observation, action, reflection, and feedback), learning how to utilize skills from practitioners (e.g., demonstration, modeling, feedback, problem solving, and reflection), and learning about caregiver play themes (e.g., quantity-based, responsive, directive, multi-modal, and engagement-based) (Roberts et al., 2016). Through coaching, caregivers are better equipped to hold the knowledge and skills to help their child grow and develop daily.

Content Recommendations

The most commonly reported content recommendations were simplification, engagement, repetition, narration and labeling, and low tech AAC. The least commonly reported content recommendations were limiting background noise, one up rule, speak clearly and slowly, and

imitation. These recommendations match general research findings suggesting simplification, either grammatical or telegraphic, as a common consideration for children with language delays, especially those with diagnoses, such as ASD (Bang et al., 2019; Choi et al., 2020; Fusaroli et al., 2019; Sandbank & Yoder, 2016).

Regarding the recommendation of simplification of utterances and words, it is essential to consider the subset of caregivers with children using AAC devices. These caregivers are more commonly recommended to model telegraphic input due to the technological complexity, on top of the language input (Binger, 2008). However, this provides unnatural sounding speech that may not be beneficial (Binger, 2008). Children using AAC devices can develop and use grammatical features just like their non-AAC user peers, given proper modeling, recasting, and expanding via the provider (Binger, 2008). In considering this, providers need to be providing developmentally appropriate input, especially for those using AAC devices. This provides lots of challenges as AAC devices are often a multi-disciplinary tool – utilized by many providers and across multiple settings, such as home and preschool. It is important for all providers and caregivers to have access to editing the device – thus being able to modify the device and provide the most grammatically complete utterance.

This study builds on prior work by Andary (2020) that found that a that just over half of the responding caregivers preferred to utilize shortened utterances as opposed to telegraphic language, but that there was no polarized belief between the two options. Andary (2020) "suggest[ed] that SLPs in clinical practice may find it valuable to ask caregivers 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" (Andary, 2020, pp. 30). This holds true for our current study, in that

practitioners need to do a thorough initial caregiver interview to understand their background, attitudes, and beliefs, but also conduct the interview in a way that begins building trust between the caregiver and the provider to fully enable to family and build on their strengths (Inbar-Furst et al., 2020). Understanding what the caregiver thinks about language helps the practitioner know how the guide them within their child's intervention. During this, the practitioner needs to remain available to actively listen to the caregivers' concerns regarding their child and show the caregivers how their role is to help the family meet their individualized goals (Inbar-Furst et al., 2020).

Limitations and Future Directions

One limitation of this study was that the survey methodology did not allow us to ask any follow-up questions to gather more in-depth information about caregivers' beliefs and attitudes. Using semi-structured, qualitative interview methods would provide a way for caregivers to explain more about their communication style. Ongoing work in the Lingo lab is using this approach for a more thorough understanding of parent beliefs. Also, the survey had only a few simple questions about their child's language skills, cognitive levels, and diagnosis. It would be beneficial to further characterize children's communication styles and how it may relate to caregiver beliefs and attitudes.

Another limitation of this study was the relatively limited racial, ethnic, and geographic diversity of the participants. Recruiting caregivers who represent a more heterogeneous group will produce more generalizable results and should be a priority in future studies. Future research should explore whether caregivers from minority groups have differing viewpoints on simplified speech, especially considering the varied communication styles among families from culturally and linguistically diverse backgrounds

One future direction based on the findings of this study could be to develop a systematic approach (such as an interview protocol) to aid practitioners in understanding caregivers' beliefs as well as using this knowledge to effectively teach caregivers. This might also include a systematic approach that provides practitioners with a step-by-step process and strategies when teaching a concept that does not align with caregiver current beliefs.

Final Conclusions

Through our study, we discovered that caregivers, as a whole, tended to prefer Longer-Grammatical utterances and Shorter-Grammatical utterances, as opposed to Telegraphic utterances. Specific trends we identified among the caregivers' responses include: 1) being less comfortable the removal of verbs and morphological verb markers; 2) being somewhat comfortable with removing articles, such as *the*; and 3) being in favor of increased amounts of semantic information. However, differences emerged based on education level. Caregivers with graduate degrees were more likely to have negative or neutral views of TI than positive views of TI. In contrast, caregivers who had not obtained a bachelor's degree were more likely to have positive views of TI than negative or neutral views of TI. Results still varied among the word clusters and caregiver preference was dependent on the utterance options.

Results revealed simplification as one of the most common recommendations for caregivers. The study also revealed the research-implementation gap that exists regarding language input recommendations. While research emphasizes the importance of caregiver coaching, our survey results show limited implementation of coaching. Providers need to be aware of this knowledge gap with research and advocate for the best training method for the caregivers as they can implement services in everyday life.

Considerations must be made regarding a child's specific goals. Future research is needed to determine how linguistic simplification affects receptive vs. expressive language. Finally, one last consideration to make is the challenges teaching provides. Providers need to be aware of teaching counterintuitive ideas, such as teaching caregivers to use telegraphic input, but then implementing grammatical input once age-appropriate for the child. Instead, by implementing grammatical input for caregivers from the start, while encouraging age-appropriate imitation skills, providers will not confuse caregivers or risk the possibility of breaking the established trust.

APPENDICES

APPENDIX A: Recruitment Flyer

Figure 17: Recruitment Flyer

APPENDIX B: Full Survey

Demographics

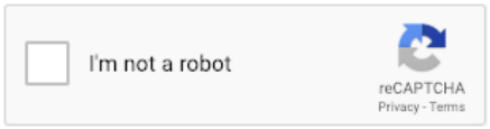
The goal of this research study is to better understand the beliefs and experiences of **parents and caregivers of children *currently* enrolled in early intervention in Michigan** (often referred to as "Early On"). Please note: early intervention in Michigan is for children who are birth to 35 months 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.

Please check the box below



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

- ○ Yes
- ○ No

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.

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

- ○ Yes
- ○ No

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.

What is your current age (in years)?

What is the primary language spoken in your home?

- ☐ English
- ☐ Spanish
- ☐ Mandarin Chinese
- ☐ Arabic
- ☐ Other

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

- ○ Yes
- ○ No

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

- ☐ American Indian or Native Alaskan
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or Pacific Islander
- ☐ White
- ☐ I prefer not to answer
- ☐ Other

Which ethnicity best describes you?

- ☐ Hispanic
- ☐ Non-Hispanic
- ☐ I prefer not to answer

As which of the following do you most closely identify?

- ○ Female
- ○ Male
- ○ Non-binary
- ○ I prefer not to answer

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

- ○ Some High School
- ○ Completed high school (or GED)
- ○ Some college
- ○ Associate's degree
- ○ Bachelor's degree
- ○ Master's degree
- ○ Doctoral degree/Professional degree

In what Michigan county do you currently live?

- ○ Ingham
- ○ Clinton
- ○ Shiawassee
- ○ Eaton
- ○ Jackson
- ○ Livingston
- ○ _____ Other

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

- ○ Yes
- ○ No

Occupation/job title:

What is your relation to the child/children?

How many children do you have?

Have you ever taken classes/coursework in child development?

- ○ Yes
- ○ No

Please briefly describe the topics of this coursework.

How did you hear about this survey?

- ○ From an early intervention provider
- ○ From a family member or friend
- ○ Through social media
- ○ [ ] Other

Early intervention

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

- ○ Less than 6 months
- ○ 6 months to 1 year
- ○ 1 year
- ○ 2 years
- ○ 3 years
- ○ [ ] More than 3 years

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

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5+

Child specific

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

How old is your child?

[ ]

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

- ○ Yes
- ○ No
- ○ I don't know
- ○ I prefer not to answer

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

- ☐ Verbally
- ☐ Signs/ Sign language
- ☐ A speech generating device
- ☐ Gestures
- ☐ A picture exchange communication system

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 words at a time (e.g., Want milk, My toy)
- ☐ 3 words at a time (e.g., I want milk, My toy please)
- ☐ More than 3 words at a time (e.g., I want to go, Give me the toy)
- ☐ My child does not yet produce recognizable spoken words

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

- ☐ Autism/Autism Spectrum Disorder
- ☐ Down syndrome
- ☐ Global developmental delay
- ☐ Speech/language delay
- ☐ Communication delay
- ☐ Fine or gross motor delay
- ☐ Other

2 children

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

	Age
Child 1	
Child 2	

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

	Yes	No	I don't know	I prefer not to answer
Child 1	○	○	○	○
Child 2	○	○	○	○

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

	Verbally	Signs/ Sign language	A speaking device	Gestures	A picture exchange communication system
Child 1	☐	☐	☐	☐	☐
Child 2	☐	☐	☐	☐	☐

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

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

	Autism/ Autism Spectrum Disorder	Down syndrome	Global developmental delay	Speech language delay	Communication delay	Fine/ gross motor delay	Other
Child 1	☐	☐	☐	☐	☐	☐	☐
Child 2	☐	☐	☐	☐	☐	☐	☐

3 children

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

	Age
Child 1	
Child 2	
Child 3	

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

	Yes	No	I don't know	I prefer not to answer
Child 1	○	○	○	○
Child 2	○	○	○	○
Child 3	○	○	○	○

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

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

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

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

	Autism/ Autism Spectrum Disorder	Down syndrome	Global developmental delay	Speech/ language delay	Communication delay	Fine/ gross motor delay	Other
Child 1	☐	☐	☐	☐	☐	☐	☐
Child 2	☐	☐	☐	☐	☐	☐	☐
Child 3	☐	☐	☐	☐	☐	☐	☐

4 children

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

	Age
Child 1	
Child 2	
Child 3	
Child 4	

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

	Yes	No	I don't know	I prefer not to answer
Child 1	○	○	○	○
Child 2	○	○	○	○
Child 3	○	○	○	○
Child 4	○	○	○	○

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

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

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 words at a time (e.g., Want milk, My toy)	3 words at a time (e.g., I want milk, My toy please)	More than 3 words at a time (e.g., I want to go, Give me the toy)	My child does not yet produce recognizable spoken words
Child 1	☐	☐	☐	☐	☐
Child 2	☐	☐	☐	☐	☐
Child 3	☐	☐	☐	☐	☐
Child 4	☐	☐	☐	☐	☐

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

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

5+

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

	Age
Child 1	
Child 2	
Child 3	
Child 4	
Child 5	
Child 6	
Child 7	
Child 8	

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

	Yes	No	I don't know	I prefer not to answer
Child 1	○	○	○	○
Child 2	○	○	○	○
Child 3	○	○	○	○
Child 4	○	○	○	○
Child 5	○	○	○	○
Child 6	○	○	○	○
Child 7	○	○	○	○
Child 8	○	○	○	○

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

	Verbally	Signs/ Sign language	A speaking device	Gestures	A picture exchange communication system
Child 1	☐	☐	☐	☐	☐
Child 2	☐	☐	☐	☐	☐
Child 3	☐	☐	☐	☐	☐
Child 4	☐	☐	☐	☐	☐
Child 5	☐	☐	☐	☐	☐
Child 6	☐	☐	☐	☐	☐
Child 7	☐	☐	☐	☐	☐
Child 8	☐	☐	☐	☐	☐

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 words at a time (e.g., Want milk, My toy)	3 words at a time (e.g., I want milk, My toy please)	More than 3 words at a time (e.g., I want to go, Give me the toy)	My child does not yet produce recognizable spoken words
Child 1	☐	☐	☐	☐	☐
Child 2	☐	☐	☐	☐	☐
Child 3	☐	☐	☐	☐	☐
Child 4	☐	☐	☐	☐	☐
Child 5	☐	☐	☐	☐	☐
Child 6	☐	☐	☐	☐	☐
Child 7	☐	☐	☐	☐	☐
Child 8	☐	☐	☐	☐	☐

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

	Autism/ Autism Spectrum Disorder	Down syndrome	Global developmental delay	Speech language delay	Communication delay	Fine/ gross motor delay	Other
Child 1	☐	☐	☐	☐	☐	☐	☐
Child 2	☐	☐	☐	☐	☐	☐	☐
Child 3	☐	☐	☐	☐	☐	☐	☐
Child 4	☐	☐	☐	☐	☐	☐	☐
Child 5	☐	☐	☐	☐	☐	☐	☐
Child 6	☐	☐	☐	☐	☐	☐	☐
Child 7	☐	☐	☐	☐	☐	☐	☐
Child 8	☐	☐	☐	☐	☐	☐	☐

Utterance rating

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	To a small extent	To a moderate extent	To a large extent	To a very large extent
You want to play?	○	○	○	○	○
Doggie running	○	○	○	○	○
Throw ball	○	○	○	○	○
All done	○	○	○	○	○
Down	○	○	○	○	○
Water on	○	○	○	○	○
Yummy cookie	○	○	○	○	○
Throw the ball	○	○	○	○	○

	Not at all	To a small extent	To a moderate extent	To a large extent	To a very large extent
Shoes on	○	○	○	○	○
Bubbles are all done	○	○	○	○	○
More bubbles	○	○	○	○	○
Want to play?	○	○	○	○	○
Put in	○	○	○	○	○
See cookie?	○	○	○	○	○
We're all done	○	○	○	○	○
Running	○	○	○	○	○

	Not at all	To a small extent	To a moderate extent	To a large extent	To a very large extent
The car went under	○	○	○	○	○
All done snack	○	○	○	○	○
He's running	○	○	○	○	○
Turn water on	○	○	○	○	○
You want a cracker?	○	○	○	○	○
Throw	○	○	○	○	○
See the cookie?	○	○	○	○	○
Car under table	○	○	○	○	○

	Not at all	To a small extent	To a moderate extent	To a large extent	To a very large extent
Cookie?	○	○	○	○	○
Cookie yummy	○	○	○	○	○
Put your shoes on	○	○	○	○	○
The cookie's yummy	○	○	○	○	○
Throw it	○	○	○	○	○
It's yummy	○	○	○	○	○
Bubbles all done	○	○	○	○	○
More bubble	○	○	○	○	○

	Not at all	To a small extent	To a moderate extent	To a large extent	To a very large extent
All done	○	○	○	○	○
The ball fell down	○	○	○	○	○
See it?	○	○	○	○	○
Fell down	○	○	○	○	○
Under the table	○	○	○	○	○
Doggie	○	○	○	○	○
All done with snack	○	○	○	○	○
In	○	○	○	○	○

	Not at all	To a small extent	To a moderate extent	To a large extent	To a very large extent
The car's under the table	○	○	○	○	○
Doggie run	○	○	○	○	○
The doggie's running	○	○	○	○	○
Ball	○	○	○	○	○
Put shoes on	○	○	○	○	○
The water's on	○	○	○	○	○
Ball down	○	○	○	○	○
Put it in	○	○	○	○	○

	Not at all	To a small extent	To a moderate extent	To a large extent	To a very large extent
Want cracker?	○	○	○	○	○
Want the cracker?	○	○	○	○	○
Turn the water on	○	○	○	○	○

Belief questions

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."

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	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
○	○	○	○	○

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

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
○	○	○	○	○

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

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
○	○	○	○	○

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	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
○	○	○	○	○

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	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
○	○	○	○	○

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	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
○	○	○	○	○

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	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
○	○	○	○	○

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

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
○	○	○	○	○

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

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
○	○	○	○	○

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

	Not important	Slightly Important	Moderately Important	Important	Very Important
The child's spoken (expressive) language skills	○	○	○	○	○
The child's language comprehension skills (receptive language)	○	○	○	○	○
The child's age	○	○	○	○	○
The child's cognitive abilities (memory, nonverbal problem solving skills)	○	○	○	○	○
The child's diagnosis (e.g., autism, Down syndrome, general language delay)	○	○	○	○	○

Comfort level

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

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).

	1	2	3
Throw ball	○	○	○
Throw the ball	○	○	○
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).

	1	2	3
All done snack	○	○	○
All done	○	○	○
All done with snack	○	○	○

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).

	1	2	3
The cookie's yummy	○	○	○
Yummy cookie	○	○	○
Cookie yummy	○	○	○

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).

	1	2	3
Spoon fell down	○	○	○
The spoon fell down	○	○	○
Fell down	○	○	○

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).

	1	2	3
Doggie run	○	○	○
The doggie's running	○	○	○
Doggie	○	○	○

Influence questions

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

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	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
○	○	○	○	○

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	Somewhat Disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
○	○	○	○	○

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
- ○ No
- ○ I don't know

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.)?

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

- ○ Not at all
- ○ A little bit
- ○ Some
- ○ A great deal

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

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

- A
- B
- C
- D

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!

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!

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REFERENCES

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