Perseveration or Perseverance: Investigating Interpretations of Echolalia, Self-Stimulatory Behaviors, and Intervention Approaches for Children Who Have Autism

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PERSEVERATION AND PERSEVERANCE: INVESTIGATING INTERPRETATIONS OF ECHOLALIA, SELF-STIMULATORY BEHAVIORS, AND INTERVENTION APPROACHES FOR CHILDREN WHO HAVE AUTISM

by

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ABSTRACT
The broad purpose of this study was to examine professionals’ perceptions of self-stimulatory behaviors in school-age children who have autism and the relation of these behaviors to communication. More specifically, I investigated whether and how speech-language pathologists and applied behavior analysis therapists address these behaviors during therapy by analyzing what factors may influence the selection of intervention methods and how these methods may be used to shape restrictive behaviors into functional communication. Through pursuing this topic, I hoped to increase research concerning the ways that echolalia and self-stimulatory behaviors are perceived by clinicians who work with clients on the autism spectrum and how clinicians approach these behaviors in therapy. Data for this study were collected using a quantitative, electronic survey that was completed by 52 speech-language pathologists and 2 applied behavior analysis therapists. The results revealed that professionals believe that self-stimulatory behaviors can be both purposeful and communicative. In addition, participants reported that they believed the needs and opinions of clients and their families were the most important factors to consider when deciding interventions for self-stimulatory behaviors.

Key Words: autism, self-stimulatory behaviors, speech-language pathologist (SLP), applied-behavior analysis therapist (ABA therapist), echolalia
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CHAPTER I: INTRODUCTION

Language is governed by complex rules and social structures yet, in practice it is individual and multi-dimensional. This is especially true for individuals on the autism spectrum who may utilize unique vocalizations and body language to express needs and adjust to the social environment. While these behaviors may present restrictions and challenges for the individual, there is also evidence that suggests that many of these behaviors not only have purpose, but are communicative. In this chapter, I will explain the purpose of the study, provide rationales, background information, and definitions, and describe the methods used to conduct this research.

Purpose Statement

The broad purpose of my study is to examine professionals’ perceptions of self-stimulatory behaviors in school-age children who have autism and the relation of these behaviors to communication. More specifically, I will investigate whether and how speech-language pathologists and applied behavior analysis therapists address these behaviors during therapy by analyzing what factors may influence the selection of intervention methods and how these methods may be used to shape restrictive behaviors into functional communication.

Rationales

There is a need for greater research and understanding concerning the ways that echolalia and self-stimulatory behaviors are perceived by clinicians when navigating language and social situations. Echolalia and perseverative self-stimulatory behaviors are often viewed as inherently problematic by both communicative partners and professionals (Arora, 2012). This may be due to the perceived purposelessness of these behaviors. By furthering research on how professionals perceive echolalic and self-stimulatory behaviors in individuals who have autism, we can gain a better understanding of how these behaviors may, or may not, be seen as communicative by professionals.
The second rationale for this study is to investigate interventions that professionals use to address self-stimulatory behaviors in therapy. Current research has focused on how perseverative behaviors can be restrictive for children with autism, and thus has advocated for extinguishing or replacing the behaviors (Koegel & Covert, 1972; Troyb et al., 2014). However, echolalia and other rehearse behaviors can also be highly motivating and potentially used in therapy by clinicians. By viewing the language of children with autism as multi-dimensional, we are able to recognize the possible challenges and restrictions of perseverative behaviors while also creating opportunities to appreciate these behaviors as individual strengths and motivators (Mottron, 2017, p. 816).

It is important to increase understanding of clinician motivations or reasons why particular methods, such as extinguishing self-stimulatory behaviors, are chosen. There are many individuals involved in the care of children who have autism. As a result, there may be many perceptions on why a behavior may or may not be maladaptive. When creating intervention plans for children who have autism, the clinicians involved may receive input from parents, teachers, and other professionals that can shape their procedures. Furthermore, there may be several other factors that can affect what methods are chosen when addressing self-stimulatory behaviors in therapy, such as clinical setting, cultural preferences, and understanding or experiences with advocacy or social movements, such as neurodiversity. Through collecting data not only on types of interventions used, but also reasons behind professional decisions on intervention type, this study can increase understanding of how professionals choose interventions, and what factors may affect those decisions.

Lastly, the results of this research can help professionals better understand the ways in which their clients communicate. As a consequence of the perception of echolalia and
perseverative behaviors as non-functional, literature regarding therapy has often focused on extinguishing or replacing these behaviors (Foxx & Azrin, 1973; Rincover 1978; Mays et al., 2011). However, defaulting to extinguishing behaviors we perceive as maladaptive only addresses the behavior on the surface and often ignores underlying reasons for the perseveration. By educating ourselves and others on how language develops in individuals who have autism, we can better understand and serve their individual needs.

**Definitions**

In this section, I will provide definitions for three terms that will be used throughout the document. *Autism spectrum disorder* is a developmental disability that is characterized by difficulty communicating and interacting with others, restrictive or repetitive behaviors, decreased or increased reactions to sensory stimuli, fixated interests, and adherence to routine (American Psychiatric Association (APA), 2013, p. 50). Because the disorder reflects a spectrum of abilities, individuals may have different needs or may not experience difficulties in the same areas as others. Additional information regarding autism spectrum disorder, manifestations of the disorder, and interventions will be addressed in the next chapter. *Echolalia* is a form of verbal perseveration and is defined as “repetitive speech… the delayed or immediate parroting of heard words” (APA, 2013, p. 54). Repetitive behaviors, also known as *self-stimulatory behaviors*, stimming, or stereotypy, defined by the APA (2013), may include “motor stereotypies (e.g., hand flapping, finger flicking), repetitive use of objects (e.g., spinning coins, lining up toys), and repetitive speech” (2013, p. 54).

**Background**

In this section, I will provide additional information regarding autism spectrum disorder. According to the National Institute of Mental Health (2017, p. 1), many children who have
autism demonstrate behaviors that can be identified in early childhood, leading to a valid and reliable diagnosis by age two. The overall prevalence for autism spectrum disorder (ASD) is estimated to be about 1 in 40 children (Kogan et al., 2018, p. 9). Additionally, the Centers for Disease Control and Prevention (CDC) statistics indicated that ASD was identified 4.5 times more often in boys than in girls (2014). There are many behaviors that are associated with, but are not necessarily indicative of, autism spectrum disorder. For a comprehensive list, an interested reader may refer to the CDC’s statement on Autism Spectrum Disorder.

**Description of Method**

Data for this study were collected using a quantitative survey. The survey link was distributed electronically to online forums for speech-language pathologists and applied behavior analysis therapists. The survey contained questions addressing demographics, training, perceptions of verbal and motor self-stimulatory behaviors, how self-stimulatory behaviors relate to communication, how professionals address self-stimulatory behaviors in therapy, factors that may influence methods to target self-stimulatory behaviors, and how professionals shape self-stimulatory behaviors into functional communication. Examples of perception questions include Likert scales regarding whether observed self-stimulatory behaviors suggested purpose or appeared communicative, beliefs on how self-stimulatory behaviors affect their children who have autism, and open-ended questions regarding perspectives on treatment of these behaviors in therapy.

**Conclusion**

This chapter introduced the purpose, rationales, background, definitions, and the methods of study for my research on speech-language pathologists’ and applied behavior analysis therapists’ perceptions of echolalia and other self-stimulatory behaviors in children who have
autism. Research on this topic is important as it will provide for a multi-dimensional understanding of the ways that children who have autism utilize language. While these behaviors can present challenges for the individual child, these behaviors can also aid in the processing of the social environment, help motivate and engage, and serve as communicative modes of expression. In the next chapter, I will review previous literature that is related to the purpose and goals of the present study.
CHAPTER II: LITERATURE REVIEW

Everything is “super.” It is not a good day, it is a super day. And it is not a good job, it is a super job. On some days, when we need extra reassurance, it could be three “super jobs” followed by anywhere from five to ten fist bumps. It may be running down the hall, flapping of our hands, randomly talking about what we are putting on our Christmas list in April or singing the entire VeggieTales discography when we are feeling sad. Sometimes it is taking 30 minutes and countless tears to get into one car door. And sometimes, it is when we are overjoyed and our entire bodies shake with excitement.

Living with my two brothers who have autism has afforded me the unique opportunity of viewing echolalia and self-stimulatory behaviors with and without a clinical lens. I have observed the restrictions and the stigma that these behaviors can create for individuals. However, I have also seen the ways in which these behaviors can be used to soothe, to express emotions, and to communicate. Echolalia and other self-stimulatory behaviors have been considered key characteristics of autism since Leo Kanner’s (1943) first observations in his paper “Autistic Disturbances of Affective Contact.” Despite this, research regarding these behaviors has not reached a consensus and has led to many different theories, interpretations, and approaches. In this chapter, I will introduce theories concerning self-stimulatory behaviors, the significance of these behaviors to the individual, therapy techniques and their results, and professional statements on extinguishing, as well as supporting, these behaviors.

Theories of Self-Stimulatory Behaviors

Self-stimulatory behaviors, much like the usage of language, vary based on the individual. Consequently, these behaviors may manifest in a variety of ways and particular presentations may be more or less restrictive than others. Likewise, the reasons that children who have autism engage in perseverative behaviors are often idiosyncratic. There is no all-
encompassing explanation for why children with autism echo and self-stimulate. However, there are several theories that may provide insights into these behaviors. In the sections that follow, I will discuss three prominent theories of the origins and functions of echolalia and other repetitive behaviors.

**Sensory Over-Arousal and Under-Arousal**

One theory is that children with autism engage in self-stimulation because they experience difficulty filtering environmental stimuli and, as a result, respond with over-arousal or under-arousal to sensory information (Arora, 2012, p. 803). By redirecting the arousal energy into a motor or verbal activity, the child may be able to decompress or energize themselves to better adjust to the demands of their environment. One aspect of this theory that Grossi, Marcone, Cinquegrana, and Gallucci (2012) proposed is that echolalia “reflects the inability of the subject to filter out background environmental noise, which occasionally results in environmental dependency” (p. 903). Environmental dependency is the tendency for children who have autism to utilize the same prosody, or intonation and stress, of the original speaker when reproducing words they heard and to experience difficulty preventing themselves from repeating the phrases of others (Grossi et al., 2015, p. 904). This suggests that incidental echolalia results from children who have autism becoming overstimulated by their environment. As a result, they may become fixated on the last thing that they heard and repeat the same word or phrase. When children who have autism experience over-stimulation or under-stimulation and are not able to redirect or create arousal energy, they may experience negative emotional responses, such as anxiety.
Anxiety

A second theory is that perseverative behaviors may stem from anxiety caused by over-stimulation and stimming, or the process of self-stimulation, provides a physical way for the body to return to a controlled state (Joosten, Bundy, & Einfeld, 2009, p. 523). Factor, Condy, Farley, and Scarpa (2016), found that anxiety in children who have autism was linked to an increase in repetitive behaviors and, in turn, a decrease in motivation to engage with others in the social environment (p. 2553). However, it is not only stimuli from the environment that may result in increased anxiety and repetitive behaviors. Wigham, Rodgers, South, McConachie, and Freeston (2014) proposed that, rather than the environmental stimuli causing anxiety and leading to an increase in repetitive behaviors, self-stimulation may stem from the child’s own anxious feelings (p. 944). Children who have autism are at an increased risk for experiencing other neurological or sensory abnormalities, such as anxiety disorders, that may, in turn, increase repetitive behaviors. Anxiety may be amplified by the child’s negative feelings associated with a particular stimulus, a change in routine, or an unfamiliar situation, and repetitive behaviors serve as a mechanism to reduce their internal anxiety. Similarly, children who have autism may become restless or unfocused when their environment is not producing adequate stimuli.

Lack of Engaging Stimuli

A third theory is that children with autism may increase self-stimulatory behaviors in environments that lack engaging stimulation (Boyd, McDonough, & Bodfish, 2011, p. 1239). While most theories are associated with over-stimulation or the release of excessive stimuli, this theory examines the need for the child to be in an environment that provides adequate reinforcement. Many children who have autism may need to stimulate a particular sense in order to attend to their environment. As Mays, Beal-Alvarez, and Jolivette (2011) explained, “a student
who is seeking stimulation may engage in behaviors providing tactile, proprioceptive, or vestibular stimulation not available in the environment” (pp. 46-47). Although these theories may not be able to explain the origins of these behaviors at an individual level, theoretical research increases our understanding of motivators for these behaviors and may shed light on the different developmental trajectories of children who have autism. By investigating self-stimulatory behaviors, such as echolalia, we may begin to comprehend the ways in which children who have autism begin to learn language and develop social skills.

**Echolalia**

In the following two sections, I will discuss the ways in which echolalia manifests in children who have autism and how echolalia may inform the development of language and social behaviors. I will begin by examining research that has linked echolalia to the acquisition of language and the ways in which echolalia can be observed as a social behavior.

**Echolalia and Language Development**

Echolalia is an important linguistic perseveration to examine when considering the developmental trajectory of children who have autism. Echolalia is often present early in language development and may serve as a stepping stone to the first words for a child who has autism (Arora, 2012, p. 804). For some children who have autism, following a period of no verbalization, there is “relatively rapid, but atypical, speech [sic] development at the age of about 40-60 months, including immediate and delayed echolalia and pronoun reversals” (Mottron, 2017, p. 818). The emergence of echolalia during this period of development suggests that echolalic perseverations may serve as strategies for acquiring language. While immediate echoes may suggest that the child is learning new speech sounds and words, delayed echoes suggest that
semantic connections are already formed (Stiegler, 2015, p. 751). Similarly, echolalia may be an important method for children who have autism to develop other skills, such as social behaviors.

**Echolalia as a Social Behavior**

Although previous researchers, including Kanner (1943) himself, have dismissed echolalia and other verbal perseverative behaviors and labeled them as purposeless, others, such as Sterponi, Kirby, and Shankey (2014), have found that “the majority of echolalic utterances produced by their subjects with autism served a communicative function” (p. 519). In fact, echoes are often a widely utilized and socially reinforced method of communication. Stiegler (2015) argued that echoing helps us maintain conversation and connect with the emotions and words of others during conversation (p. 751). For children who have autism, echoing may help them not only understand what is occurring in their environment, but also how others are feeling. In the same way that listening to someone talk about their experience expands our understanding, echoing another’s words in their own voice can help children with autism integrate themselves into the social experience (Sterponi et al., 2014, p. 523).

Echolalia in the absence of a social stimulus also presents an opportunity for understanding how language develops in children who have autism. Given that social interaction can be difficult for children who are autistic, verbal perseverative behaviors can provide a way for a child to engage with their environment, or even themselves, without the presence of another person – a process referred to as “non-person oriented speech” (Arora, 2012, p. 804). Even if the child is not engaging with another person, they may use echoes to adjust to their environment by recalling familiar experiences and casting them into their current world, looking through the lens of the past to inform the present. An example of this non-person oriented speech was documented in Kanner’s observations of an autistic child named Paul when, after his mother
recited the nursery rhyme “peter, peter, pumpkin eater” before dropping a saucepan, Paul began to recite the rhyme whenever he saw a saucepan (Kanner, 1946, p. 242). As Kanner (1946) noted, “Paul, while saying these words, glanced in the direction of the stove and finally picked up the pan, running wildly around with it and chanting ‘Peter eater’ over and over again” (p. 242). This event displays that, while Paul was not engaging with others directly, he utilized echolalic phrases to recall a past experience with an item, a saucepan, and used this knowledge to engage with his environment. While this may have been an informative event for Paul, Kanner’s (1946) descriptions of Paul’s echolalic phrases as “nonsensical” and “irrelevant” and his account of Paul “running wildly,” creates negative connotations regarding Paul and his self-stimulatory behaviors (p. 242).

**Stigma Surrounding Self-Stimulatory Behaviors**

Although there is evidence that perseverative behaviors have purpose, these behaviors are still considered to be problematic or threatening to the development of appropriate language skills (Sterponi et al., 2014, p. 519). This is often due to stigmas associated with these behaviors as well as the experiences of the individuals communicating with the child who has autism. Arora (2012) argued that lack of experience regarding or understanding of perseverative behaviors often result in communicative partners not wanting to engage with the individual who has autism and, in turn, this reduces opportunities for individuals who are autistic to have conversational experiences (p. 799). According to the DSM-V criteria, social interaction presents a challenge for children who have autism and, in social situations, negative reactions from conversational partners can simultaneously increase children’s anxiety and decrease their motivation (American Psychiatric Association (APA), 2013, pp. 50, 53-54). Because communicating with others and learning from their speech is viewed as essential process for
children learning language, perseverative behaviors are often perceived to be restrictive and distracting to the conversational environment (Hockett, 1960, p. 96).

**Self-stimulatory behaviors and developmental milestones.** Researchers have made arguments that “the presence of RRBS [restricted and repetitive behaviors] prevent a child from fully attending to the environment, which could make the child unavailable to receive meaningful input from the social environment” (Troyb et al., 2014, p. 3169). This is a valid concern, especially when considering how the child who has autism is otherwise receiving information needed for early development. However, it can be difficult to determine what information or knowledge any child is, or is not, receiving from the social environment. Rather, this concern requires an assumption that if children who have autism are not following the sequence of developmental milestones, then they are not learning (Mottron, 2017, p. 817). Societal expectations and interpretations based on prior experience with typical development can play a role in what is considered to be reflective of social competence and what is problematic or restrictive (Mottron, 2017, p. 818). While some self-stimulatory behaviors can be restrictive for the child who has autism, Mottron (2017) argued that it is important to maintain an open posture to learning about the development of children who have autism and reject rhetoric that considers any deviation from the course of what is viewed as typical to be inherently problematic (p. 818). For professionals who work with children who have autism, this view should be given careful consideration – especially in determining what behaviors are maladaptive and how to best provide intervention. This means that professionals, such as speech-language pathologists, should understand common therapy techniques for working with children who have autism.
Therapy Techniques for Management of Self-Stimulatory Behaviors

As there are multiple theories for why children who have autism self-stimulate, there are also several therapy techniques that have been proposed for the treatment of self-stimulatory behaviors. Rather than attempting to examine each of these techniques, in the sections that follow I will instead outline two overarching schools of thought regarding approaches for the treatment of these behaviors: extinguishing or replacing behaviors. Within these two general categories, I will provide examples of each and discuss arguments that have supported as well as dispute the efficacy of each. Finally, I will introduce the concept of family-centered services. Within this section, I will examine accounts from both SLPs, or speech-language pathologists, and families to discuss what exactly a family-centered service entails with regard to therapy approaches and what this means for professionals, families, and most importantly, children who have autism.

Extinguishing Self-stimulatory Behaviors

The first approach to the treatment of self-stimulatory behaviors is that of suppressing or extinguishing self-stimulatory behaviors altogether. There are several reasons that therapists may choose to extinguish self-stimulatory behaviors in children who have autism. Many of these reasons have been previously discussed in this literature review including stigma regarding self-stimulatory behaviors, impaired ability to express wants and needs, and difficulty developing further vocabulary and skills for social interaction. Of most concern are the restrictions that these behaviors may place on the child for learning and utilizing new information. Schreibman and Carr (1978) found that, when asked a question or issued a command, children who have echolalia may echo the teacher’s command without altering behavior or providing an appropriate reply (p. 453). For example, if a teacher tells a child to “sit still,” a child who has echolalic
behaviors may echo the teacher’s command to “sit still” without adjusting their behavior. This can be frustrating for peers and teachers who may feel their message has not been received or is, instead, being intentionally ignored. Additionally, this may also be frustrating for children who have autism as they may default to these behaviors. To repair this breakdown, clinicians may attempt to extinguish self-stimulatory behaviors in an effort to remove the barrier between their clients and successful communication.

**Sensory extinction and overcorrection.** Echolalia and self-stimulatory behaviors are often viewed as behaviors that are “maintained by its sensory consequences,” or, in other words, are directly reinforced by the sensory stimulation they produce (Rincover, 1978, p. 301). As a result, these behaviors are often highly motivating and difficult to extinguish because of the self-reinforcement that these behaviors provide. Following this theory, sensory extinction is a procedure in which reinforcements of self-stimulatory behaviors are identified and impeded in order to reduce, and ultimately extinguish, the self-stimulatory behavior. Rincover (1978) identified three children who exhibited various types of self-stimulatory behaviors, such as plate spinning, object manipulation, and finger flapping (p. 302). For the child who was engaged in spinning behaviors and appeared to be reinforced by its auditory feedback, carpeting was installed to reduce the auditory-feedback that resulted from the plate spinning (Rincover, 1978, p. 303). While the child exhibited this spinning behavior in 72% of opportunities in the baseline session, following the installation of the carpet, or the sensory blocker, spinning behavior “decreased to 0% and remained very low for four consecutive sessions” (Rincover, 1978, p. 306).

A similar theory is that of overcorrection. In overcorrection, the clinician facilitates interventions addressing unwanted behaviors to “overcorrect the environmental effects of an
inappropriate act, and (2) to require the disruptor intensively to practise overly correct forms of relevant behavior” (Foxx & Azrin, 1973, p. 2). This means that the unwanted behavior was not only disrupted by clinicians, it was also “corrected” through verbal commands and motor training. For example, if a child was exhibiting spinning behavior, such as in Rincove’s study, the child would be issued a verbal warning, the behavior would be interrupted, and the child would undergo a “functional movement training procedure,” such as standing still for 15 seconds each time the behavior occurred (Foxx & Azrin, 1973, p. 7). Following overcorrection procedures, all self-stimulatory behaviors of the children who were involved in the study were reduced to near zero levels after 10 days of treatment (Foxx & Azrin, 1973, p. 11). The use of movement-based interventions served as a successful method of reducing self-stimulatory behaviors in overcorrection training procedures, and have also been effective in other interventions, such as exercise therapy.

**Exercise.** A popular method of intervention that has been examined across studies is that of “movement-based sensory interventions,” or exercise, and the effects that such exercise have on the reduction of self-stimulatory behaviors (Mays et al., 2011, p. 46). Exercise may seem out-of-place in the therapy realm, especially in the context of speech-language therapy. However, as Case-Smith and Arbesman (2008) noted, “given the breadth and depth of performance limitations, children and adolescents with ASD need a range of interventions and educational programming,” as well as an interdisciplinary team of professionals who work and communicate with one another for the benefit of the client (p. 417). As a result, SLPs and other professionals may find themselves either facilitating or working directly with clients who may be receiving services and or therapy techniques that may or may not usually fall within their scope of practice. This necessity for professionals to learn about and understand multiple health care practices is
often referred to as interprofessional education. Furthermore, one of the ways in which children who have autism may exhibit echolalic and other self-stimulatory behaviors is through motor activities. In order to release excessive energy or decompress from environmental stimuli, children who have autism may naturally seek out or perform motor movements, such as jumping, running, and flapping. One of the ways in which SLPs and other professionals may address these behaviors either within therapy or prior to beginning speech-interventions is through incorporating motor-based interventions, such as exercise. This could be as simple as encouraging the client to “shake your sillies out” prior to beginning therapy or could incorporate formal intervention designs, such as those developed by Rosenthal-Malek and Mitchell (1997), Celiberti, Bobo, Kelly, Harris, and Handleman (1997), and Burns and Ault (2009).

Rosenthal-Malek and Mitchell (1997) had adolescents who have autism engage in an aerobic exercise activity before completing an academic or workshop activity (p. 195). The researchers found that, following the exercise activity, there was a significant decrease in self-stimulatory behaviors and a significant increase in both number of correct responses to the academic activity and number of tasks completed during the workshop (Rosenthal-Malek & Mitchell, 1997, p. 199). Similarly, Celiberti et al. (1997) explored the duration of decreased rates of self-stimulatory behaviors of a child who has autism (p. 140). Following six minutes of moderate jogging exercise before going to class, “physical self-stimulatory and ‘out of seat’ behaviors remained below baseline for the duration of the 40 min session” (Celiberti et al., 1997, p. 148). The data suggest that vigorous, but consistent, exercise can be helpful in reducing physical self-stimulatory behaviors, at least for a short period of time. Finally, Burns and Ault (2009) examined the effects of exercise on the self-stimulatory behaviors, eye contact, verbal initiation, and overall mood of a child who has autism (p. 45). The researchers predicted that
moderate exercise could decrease physical self-stimulatory behaviors. However, they also attempted to investigate if exercise, and the resulting reduction of self-stimulatory behaviors, could improve the child’s level of eye-contact, verbal communication, and mood. While their results revealed a decrease in self-stimulatory behaviors, there were no observable changes in level of eye-contact or verbal communication. There was a change in mood, however, with a decrease in positive mood behaviors and little to no change in the frequency of negative mood behaviors (Burns & Ault, 2009, p. 49). While all three studies yielded results that supported the claim that exercise reduced self-stimulatory behaviors, there were several differences and limitations identified in the studies, as the “exact effects of physical activity on the core symptoms of autism appear to depend on multiple factors, including the exercise duration, the exercise setting,” as well as the varying methods of exercise used, “…and the characteristics of the child” (Burns & Ault, 2009, p. 50).

**Temporal constraints of exercise therapy.** The first concern that arose across the three studies was that of time constraints. While exercise reduced self-stimulatory behaviors immediately following the intervention, the reduction of self-stimulatory behaviors did not sustain over time and eventually returned to baseline levels. Additionally, the time needed for reduction of self-stimulatory behaviors varied based on the child’s needs due to differences in type of physical activity, activity level, and equipment used. This combination of variability and the individual aspects makes it difficult to determine exactly how long children who have autism need to engage in exercise before self-stimulatory behaviors are reduced. Furthermore, it is impossible for small studies to suggest specific types of exercise or intensity levels that will work for entire populations, especially because of individualized needs and the variety of methods and differences in exercise types across the studies.
Variation in methods and definitions of exercise therapy. While most of the studies focused on moderate intensity workouts and aerobic (e.g., running or jogging) exercises, there were differences in definitions of intensity, length of the session, and the location/equipment used during the workout. For example, Burns and Ault (2009) reported on a child who used a treadmill in his home while Rosenthal-Malek and Mitchell (1997) observed adolescents who ran through cones in the gym and had more free space. Celiberti et al. (1997) described a child who ran and walked, while holding the hand of a researcher, outside on the grounds of the school (p. 142). Additionally, as Burns and Ault (2009) noted, “the interventions have spanned different intensities and durations, and many researchers have used the adjectives ‘mild,’ ‘moderate,’ or ‘vigorous’ to describe the prescribed exercise without clear operational definitions” (p. 45).

Burns and Ault (2009) defined the exercise as “mildly strenuous (e.g., increased breathing rate or slightly flushed face) but not painful (e.g., shortness of breath or cramped muscles)” (p. 46), while Celiberti et al. (1997) described jogging as moderate and continuous and included a cool down period in which the child walked before returning to the classroom (p. 143).

Despite the results of all three studies yielding similar reductions of self-stimulatory behaviors, it is important to note the wide range of definitions and conditions across the studies. Moreover, two of the three studies involved single-subject research design (Burns & Ault, 2009; Celiberti et al., 1997). While Celiberti et al. (1997) suggested that “research findings… presented in this study and the others described herein should extend to classrooms serving children with autism,” the results of case studies, while certainly valuable, cannot be generalized to an entire population of children who have autism (p. 149). Furthermore, not every child who has autism may respond positively to jogging or other vigorous aerobic exercises, but may experience
similar reductions in self-stimulatory behaviors when engaging in another activity that better suits their interests or needs.

Child reactions and emotions regarding exercise therapy. Finally, the Burns and Ault (2009) case study introduced an interesting issue regarding the reactions and emotions of children who autism to this type of therapy. While exercise is often recommended as an activity that tends to improve mood in the general population, Burns and Ault (2009) found that, at least for the particular child they were studying, the child did not enjoy the activity and, as a result, positive mood behaviors were actually reduced following exercise (pp. 45, 49). Although the procedure was successful in reducing self-stimulatory behaviors, this technique was not necessarily the most efficient or appropriate intervention for this particular child’s needs. By contrast, no adverse effects on mood were recorded by either Celiberti et al. (1997) or Rosenthal-Malek and Mitchell (1997). While this may suggest that the children who participated enjoyed or tolerated the activities, it is important to note that information regarding mood following intervention may not have been included as it was not a factor being researched in either study. To circumvent this issue, Mays et al. (2011) argued that interventions must “involve active participation by the student, be self-directed, which includes responding to activities… vocalizing pleasure and smiling, be based on the individual’s neurological needs, and emphasize sensory stimulation and elicit an adaptive response that integrates the senses” (p. 49). By following these criteria, researchers can reduce behaviors that restrict children who have autism while respecting their feelings and finding alternative ways for children to satisfy their sensory needs.
**Replacement Behaviors**

For some children who have autism, extinguishing self-stimulatory behaviors altogether may prove to be difficult, if not impossible, given the deeply rehearsed and routine nature of these behaviors. Additionally, for behaviors that are not self-injurious and do not pose danger to others, there may not be clinical reasoning to extinguish self-stimulatory behaviors completely, especially if the child enjoys these activities. However, self-stimulatory behaviors may still present obstacles for children who have autism, especially in clinical and educational settings where these behaviors may not be “appropriate.” One way that researchers and educators can respect the needs of children who have autism while also reducing behaviors that may be distracting to the child or others is by introducing a replacement behavior (Mays et al., 2011, p. 48). Replacement behaviors allow the child who has autism to receive the type of stimulation that they need using activities or strategies that are either time-specific or modified to be more classroom appropriate. These activities ideally utilize the same rate and body parts as the original behavior, maintaining the original outlet for self-stimulation while using more controlled motions or by placing the student in a more appropriate setting. By establishing replacement behaviors and encouraging self-stimulation in a controlled and safe setting, children who have autism can receive the benefits of self-stimulation and professionals can reduce behaviors that are distracting or otherwise maladaptive.

For “appropriate behaviors” to be generalized, children who have autism must be able to implement the replacement task independently. However, this can be difficult, as Reeves, Umbreit, Ferro, and Liaupsan (2017) found in their examination of the use of replacement behaviors as alternatives to off-task behavior in interventions for three students who have autism (Reeves et al., 2017, p. 305). In particular, they highlighted the importance of identifying
performance versus acquisition deficits in children who have autism. If a child has a performance error, they have the ability and knowledge to perform the behavior independently but may opt not to; meanwhile, if a child has an acquisition error, they may not have the ability to perform these behaviors independently and need appropriate instruction and prompting (Reeves et al., 2017, p. 306). Reeves et al. (2017) planned to not only utilize replacement behaviors for conduct management of children who have autism, but also provide deliberate instruction for the students on how to use these replacement behaviors appropriately. Following instruction, the researchers found that “when performance of replacement behaviors were taught directly, high levels of on-task behavior were produced” (Reeves et al., 2017, p. 314). For example, one student who exhibited off-task and self-injurious behaviors when called on or asked questions by a teacher was provided instruction for replacement behaviors, such as saying “no thank you” when called on (Reeves et al., 2017, p. 309). Before instruction was given, the student performed suggested replacement behaviors independently in 14% of opportunities; following instruction, independent performance of replacement behaviors increased to 92% and, when the instruction was withdrawn, the replacement behavior was still performed in 52% of opportunities (Reeves et al., 2017, pp. 312-313). While there was an observed decrease in replacement behavior use after removal of instruction, the researchers noted that “replacement behaviors will not maintain if intervention components are discontinued too quickly” (Reeves et al., 2017, p. 314). This finding also suggests that with prolonged, supported instruction and intervention, replacement behaviors can be learned and used independently by students. The combination of both extinguishing and replacing behaviors in a way that children who have autism can perform appropriate behaviors independently is utilized in one of the most credible therapies for autism: applied behavior analysis.
Applied Behavior Analysis

One of the most well-known and well-evidenced therapy options for children who have autism is that of Applied Behavior Analysis or ABA. ABA is not a singular treatment, but rather, a behavior therapy methodology that incorporates multiple principles and uses them to assess intervention procedures (Wang & Krata, 2017, p. 23). There are many different behavior therapy strategies that share the principles of ABA which include, but are not limited to: discrete trial training (DTT), pivotal response training (PRT), and early intensive behavioral interventions (EIBIs) (Wang & Krata, 2017, p. 23). In addition, there are other techniques that may be considered behavioral interventions and have been absorbed into ABA teaching, such as prompting, reinforcement, modeling, and cuing (National Joint Committee for the Communication Needs of Persons with Severe Disabilities, n.d.). Even for clinicians who are not proponents of ABA, techniques that have been developed, supported, or used by ABA therapists are often utilized and celebrated across professions because of their breadth of not only evidence, but also success. Lim and Draper (2011) used ABA Verbal Behavior (VB) techniques in conjunction with music and speech therapy for developmental speech production in children who have autism (p. 532). The researchers found that music therapy with ABA VB techniques and speech therapy were equally effective for increasing target speech word productions, and that ABA was particularly successful in increasing speech production through echoic based responding, or using echolalia (Lim & Draper, 2011, pp. 542-543). In this study, the researchers not only utilized ABA techniques, but also incorporated echolalia and self-stimulatory behaviors into the procedures and achieved success. Conversely, Koegel and Covert (1972) studied the relationship between self-stimulatory behaviors and learning in children who have autism and experienced different results when utilizing ABA with children who exhibit self-stimulatory
behaviors. While Lim and Draper were able to utilize ABA in order to facilitate learning through echolalia, Koegel and Covert (1972) found that, when children who have autism engaged in self-stimulatory behaviors, they were unable to correctly respond in discrimination trials (p. 384). Instead, they found that, only after self-stimulatory behaviors were suppressed were the children able to acquire discrimination learning (Koegel & Covert, 1972, p. 384). Although these two studies differed in their stance on self-stimulatory behaviors, each utilized ABA therapy techniques and yielded successful outcomes in increasing learning for children who have autism.

**Controversies.** ABA is considered one of the “gold standard” therapy methodologies associated with therapy for children who have autism. It is evidence-based and, when combined with early-intervention services, can produce optimal outcomes in children who have autism, particularly by reducing self-stimulatory behaviors and other behaviors that are perceived as outwardly “autistic” and instead, striving towards “normativity” (Mottron, 2017, p. 816). However, because of ABA’s lengthy history, range of practices, and strict principles, there are also several controversies that have surrounded the use and practice of ABA, especially in relation to its role in the treatment of children who have autism.

First, as was noted previously, ABA is not a specific technique but rather a methodology that utilizes a collection of procedures and standards to direct therapy. While this can be a benefit to ABA, as it can encompass a wide variety of ideas and applications, this large collection of terms and techniques that fall under the ABA umbrella “makes it difficult to discern what is meant when reference is made to ABA as a treatment approach” (Prizant, 2009, p. 28). For professionals and parents who work with children who have autism, the words “ABA services” can be vague and confusing as they may include a variety of different strategies or techniques. Conversely, the reverse can also present a problem in ABA where “ABA is used synonymously
with discrete trial training,” or DTT (Prizant, 2009, p. 28). DTT is a well-known strategy used in ABA where ABA practitioners work one-on-one with clients and provide direct instruction through “trials” and reinforcements that reward desired behavior or redirect the behavior (Smith, 2001, p. 86). While DTT can certainly be an effective strategy of ABA in therapy for children who have autism, as Simpson (2001) noted, DTT is only one of many ABA techniques and “a single, narrowly focused method, such as DTT, will be an unsatisfactory method for every student in every situation” (p. 70).

Another area of controversy for ABA has been the question of credibility, especially in comparison to other approaches and techniques in therapy for children who have autism. More specifically, ABA has been touted as the “only” effective and credible approach for therapy with children who have autism (Prizant, 2009, pp. 28-29; Simpson, 2001, p. 70). These claims are problematic for several reasons. First, this can unfairly and negatively impact or cast doubt on programs that may not utilize ABA standards or programs. Moreover, there is no conclusive evidence that supports this claim or holds any other therapy approach as being the best therapy technique for children who have autism (Lord & McGee, 2001, p. 118). Secondly, ABA’s, as well as other therapies, effectiveness is often determined based on how visibly they “cure” autistic symptoms, such as echolalia and self-stimulatory behaviors. While there have been researchers that have suggested possibilities for optimal outcomes among children who have received early intervention, the proposed margins are often small, and it is still unknown as to how many may actually achieve these outcomes (Fein et al., 2013, pp. 202-203). Even within ABA studies that result in reductions of “problem” behaviors and increases in desired or replacement behaviors, there may still be deficits in generalizability of behaviors, as well as child understanding of what constitutes appropriate social behaviors (Beals, 2003, p. 36).
Finally, promoting a specific therapy approach as the best or only approach for children who have autism “violates principles of family-centered philosophy and practice” (Prizant, 2009, p. 28). When parents are given misinformation or are not adequately informed about what interventions are available to them, they may make uniformed decisions regarding which treatment options to pursue or may make a choice that does not necessarily line up with their values or their child’s individual needs. Furthermore, upon hearing these claims, parents may believe that they are doing a disservice to their child if they choose to pursue approaches that are outside the realm of ABA. This use of misinformation shadows a larger problem in the application of therapy techniques for children who have autism by calling into question what family, and client, centered practice means and if it is being appropriately implemented.

**Family and Client-Centered Care**

Family-centered care has long been considered an essential practice for speech-language pathologists, audiologists, and other health professionals for the assessment and implementation of therapy for children who have autism. In encouraging the use of family-centered care within therapy practicum, ASHA has established clear outlines as to who is involved, what is included, and what the benefits of family-centered practice are for both clinicians and families. The core concepts that ASHA outlines in their definition of family-centered practice are described by Johnson et al. (2008) and include: respect and dignity, information sharing, participation, and collaboration (p. vi). By focusing on providing care that is founded on these principles, speech-language pathologists can “honor patient and family perspectives and choices… communicate and share complete and unbiased information with patients and families,” encourage and facilitate parent participation, and work with parents to establish therapy plans that meet their family’s unique needs (Johnson et al., 2008, p. vi). Given these detailed descriptions, it is evident
that family-centered practice is seen as a significant and essential responsibility for SLPs who work with children who have autism. Despite this, there have been researchers who have described parent perceptions of therapy and how family-centered care can be lacking for those who have a child with autism.

One of the main goals identified by ASHA is that of family-centered care and information sharing between the clinicians and families. This may apply to families sharing, and being encouraged to disclose, pertinent information or concerns about their child’s behaviors that may or may not be observed during an assessment or therapy session. However, this goal also applies to the education of parents regarding their child’s diagnosis and/or performance. Beals (2003) described her experience of attempting to obtain a diagnosis for her son who has autism. She recounted the “lengthy observation sessions, the video-taping, the note taking, the twenty-page questionnaires, the intakes of past medical histories,” and noted that, after three months of waiting, she received little more than “a recapitulation of what you’ve told them, completely devoid of new insights” (p. 35). Receiving an official diagnostic label for a child is often the first of many steps in initiating therapy. However, while it can be difficult or even impossible for clinicians to provide immediate answers or prognoses regarding a child’s behaviors, it can be extremely frustrating for parents of children who have autism to be handed a diagnostic label with no further information or guidance. SLPs and other clinicians who work directly with families must not only provide education regarding diagnostic criterion and treatment approaches – they must also avoid bias and misinformation.

When providing information about behaviors associated with autism, the autism diagnosis, or therapy approaches for children who have autism, clinicians must be aware of how they convey information to parents. Controversies that surround ABA include the issues of
biased marketing of specific therapy approaches as well as questioning the credibility of other programs. Decisions regarding what therapy techniques or approaches may be best for a particular child should be made as a collaboration among clinicians, parents, other professionals who work with the client, and the client themselves. However, in cases where the client may not be able to self-advocate, the parents or guardians of the child serve as the key decision makers of what services will be used (Mandak & Light, 2018, p. 1312). While this may seem apparent, Mandak and Light (2018) found that, even when SLPs reported on a survey that parents were essential to the success of speech intervention, the SLPs themselves were “using a professionally-centered model of intervention and remained the primary decision makers” (p. 1313). As a result, SLPs are tasked with the important responsibility of providing information to families regarding options for treatment while also ensuring that they are not making decisions for parents and their children (Mandak & Light, 2018, p. 1313). Finally, SLPs may also be asked to consider what thriving looks like for different children who have autism, as well as the roles that diversity and acceptance play in what is “best practice.”

Perhaps the most important concept that ASHA introduces regarding family-centered practice is that of “dignity and respect” for families and clients. While this refers to appropriate decorum within therapy, this also applies when recommending which therapy approaches may be best given family values and opinions. For example, several therapy techniques and approaches that have been discussed in this literature have examined echolalia and self-stimulatory behaviors as problematic behaviors that may interfere with a child who has autism’s ability to function and thrive in a neurotypical world (Koegel & Covert, 1972; Troyb et al., 2014). For many families, this is a valid concern and, they may knowingly choose therapy approaches that focus on extinguishing or replacing these behaviors. If the reduction of these behaviors allows the child
who has autism to engage in their environment with little restriction and results in the child thriving, this is a successful outcome for the child. However, it is also important for professionals to consider the concerns of parents regarding therapies that may aim to extinguish or repress behaviors that may not be perceived as necessarily problematic. Prizant (2008) recounted an experience with one family and their child who has autism’s “happy dance,” which consisted of the child moving on her tip-toes while flicking her fingers in front of her eyes (p. 37). After an observation of the child by another clinician, the therapy plan that was suggested by the clinician aimed to extinguish the behavior by “telling their daughter in a stern voice ‘sit down, quiet hands, sit on hands’” (Prizant, 2008, p. 37). However, the parents did not see the behavior as problematic and, instead, noticed that the treatment was causing their daughter anxiety (Prizant, 2008, p. 37). For this particular family, best practice was not necessarily the “most evidenced,” rather, it was an approach that recognized the family and their daughter’s values and abilities. Family-centered practice is a way that SLPs “empower families with the knowledge and skills to make the best choices for their child… and consider each family’s unique strengths and needs” (Prizant, 2008, p. 36). Furthermore, this approach not only recognizes families, but also children who have autism as contributors to their own progress and not simply passive recipients. Through client-centered care, clients are given the opportunity to direct their own therapy and assign values, which allows space for the inclusion of diverse viewpoints, such as neurodiversity.

**Neurodiversity**

A recent movement that may play a role in how SLPs and other professionals conduct therapy for individuals who are autistic is neurodiversity. In the neurodiversity movement, the idea that autism itself is a disorder is rejected. Rather, people who have autism are considered to have a difference in minds, much like that of different bodies, races, and orientations (Owren &
Stenhammer, 2013, p. 2). Furthermore, neurodiversity challenges the idea of using neurotypical standards to define behaviors associated with autism as inherently problematic. Instead, it recognizes the ways in which behaviors that are often dismissed as autistic perseveration can be used by the individual, and by clinicians working with them, as strengths. While Koegel and Covert (1972) had concluded that self-stimulatory behaviors interfered with discrimination learning, they observed and commented on the powerful nature of self-stimulatory behaviors as reinforcers (p. 387). Following this theory, Hung (1978) studied the use of self-stimulatory behaviors as reinforcements for increasing spontaneous appropriate sentences (p. 355). He found that, following a period of suppressing self-stimulatory behaviors of children who have autism, the children increased their spontaneous usage of appropriate sentences in order to receive tokens and praise. However, they did not necessarily perform the desired behaviors for the tokens or social reinforcement – instead, he found that, given the option of using their tokens in order to engage in self-stimulatory behaviors for two minutes, the children immediately chose to spend their tokens (Hung, 1978, p. 363). Furthermore, upon running out of tokens, and, as a result, being prevented from engaging in self-stimulatory behaviors, the children increased the desired behavior of using appropriate sentences in order to receive more tokens (Hung, 1978, p. 363). Hung demonstrated that these behaviors were not only reinforcing, but they were also motivating for the children involved while increasing language use.

Individuals who have autism possess their own individual strengths and weaknesses. There are individuals who have autism who can outperform others in “auditory tasks, detecting visual structures, and mentally manipulating complex three-dimensional shapes,” as well as individuals who may have learning delays or struggle to communicate in typical ways (Mottron, 2011, p. 34). By allowing space for diverse views and values within the therapy space, SLPs and
other professionals can collaborate with children who have autism and their families in order to identify weaknesses, support strengths, and provide care that best meets their client’s individual needs.

**Conclusion**

In this chapter, I introduced theories of the origins of echolalia and self-stimulatory behaviors, examined echolalia’s function in the development of language and social behaviors, and addressed the role that stigma surrounding self-stimulatory behaviors often plays in identifying maladaptive behaviors and assessing the competence of children who have autism. Additionally, I discussed prominent therapy approaches and techniques that are often used in the management of self-stimulatory behaviors and echolalia and examined the benefits and concerns associated with these interventions. Finally, I defined and discussed the importance of practicing family-centered care within therapy and the roles that parents and clients play in selecting therapy techniques that not only meet the child’s needs, but also respect and acknowledge the values and strengths of the child and their family. In the next chapter, I will introduce and define my methods of investigation as to how speech-language pathologists identify and address echolalia and self-stimulatory behaviors in therapy.
CHAPTER III: METHOD

The purpose of this study was to investigate speech-language pathologists’ and applied behavior analysis therapists’ perceptions of self-stimulatory behaviors in school-age children who have autism and the relation of these behaviors to communication. In this chapter, I will explain my methodology by providing a justification of method, describing my participants and the instrument I used to collect data, and summarizing the procedures of this study.

Justification of Method

For the study, I chose to collect data using an electronic survey for several reasons. First, as I was using a purposive sampling method for my study, I needed to receive responses specifically from participants who fit the criteria of the study: speech-language pathologists and applied behavior analysis therapists who had worked with children who have autism and addressed self-stimulatory behaviors. By using an electronic survey, I was able to post directly to communities online that speech-language pathologists (SLPs) and applied behavior analysis (ABA) therapists utilized, allowing the survey to be accessible to any community member. Additionally, by employing the skip-logic method available through an electronic survey, I was able to collect responses from those who met all the criteria and automatically remove participants who did not fit one or more criterion.

Second, because the survey was online, the survey was self-administered and allowed participants to take it at their convenience. The self-administered design of the survey allowed the data to be gathered in a short amount of time and without the inconveniences or expenses of mail surveys (Wrench, Thomas-Maddox, Peck Richmond, & McCroskey, 2016, p. 230). Additionally, use of an online format allowed the survey to reach participants from many diverse settings and locations and did not restrict the study to local participation. Participants in the study
were not required to expend any extra time to participate in the study, such as wait or travel time, and could use as much time as desired to complete the survey.

Lastly, an electronic survey allowed participants to remain anonymous throughout the survey process, which may have encouraged participants to answer questions more honestly. By including open-ended questions that allow for elaboration, but retaining the anonymity of an electronic survey, I was able to collect further context regarding my participants’ answers to my survey while hopefully preventing any participant response bias (Wrench et al., 2016, p. 230).

Participants

A total of 81 professionals began the survey instrument in the study. The survey asked several demographic questions, such as gender, profession, number of years worked in the field, and whether or not they were currently working with clients who have autism on their caseload in order to gather more information about the professionals who participated in the study. Of those who participated in the survey, 78 (96%) of respondents were female, two (2.5%), were male, and one participant chose “prefer not to say” (1.2%). A total of 77 (95.1%) speech-language pathologists, three (3.7%) applied behavior analysis therapists, and one SLP/board certified behavior analyst (1.2%) were included in this study. Participants were asked to specify how many years they had worked in their field of speech-language pathology or applied behavior analysis therapy. These results are graphed in Figure 1. Figure 2 shows the types of settings participants worked in and the number of professionals represented in each setting. Lastly, 73 (90%) participants stated that they were currently working with a child or children who have autism, seven (8.6%) participants said they were not currently working with a child who has autism, but had previous experience with this population, and one (1.2%) participant said they had no prior experience working with a child who has autism.
Figure 1. Number of years that SLPs and ABA therapists worked in their field.

Figure 2. Current work settings of SLPs and ABA therapists and number of professionals represented in each setting (multiple response allowed).
**Procedures**

On November 21st, I received a notification that my protocol was approved as exempt from Human Subjects Research Committee review. After receiving approval, I contacted coordinators from ASHA Special Interest Groups (SIGs) 1, Language Learning and Education, and 16, School-Based Issues, and requested to have my survey posted on the boards. The recruitment messages can be found in Appendix A. Additionally, I also contacted administrators on Facebook for the pages Speech-Language Pathologists & Autism Spectrum Disorders and Speech Pathology-Applied Behavior Analysis (SPABA) Special Interest Group. I posted the recruitment messages and links onto the Facebook pages and asked participants to share the survey link with other professionals who met the survey criteria.

**Instrument**

The survey instrument used in this study was created using Qualtrics software. The survey contained a total of 34 questions. Questions included in the survey addressed demographics, perceptions of verbal and motor self-stimulatory behaviors, how self-stimulatory behaviors relate to communication, how professionals address self-stimulatory behaviors in therapy, experiences of addressing self-stimulatory behaviors, factors that may influence methods to target self-stimulatory behaviors, and how professionals shape self-stimulatory behaviors into functional communication. The survey contained 5-point Likert scales, multiple choice, and open-ended questions. Open-ended questions on the survey included questions about professionals’ experiences with children who have autism, such as experiences replacing or extinguishing client’s self-stimulatory behaviors in therapy. The survey can be found in Appendix B. In the next chapter, I will present my analysis of the data and discuss the results.
CHAPTER IV: RESULTS AND DISCUSSION

In this chapter, I will present the results of the data I collected and discuss the findings as they relate to the purpose of my research. The main purpose of my study was to examine speech-language pathologists’ and applied behavior analysis therapists’ perceptions of self-stimulatory behaviors in school-age children who have autism and how these behaviors relate to communication. Within this broad research topic, I also investigated whether and how speech-language pathologists and applied behavior analysis therapists addressed these behaviors during therapy by exploring what factors may have influenced the selection of intervention methods and how these methods may be used to shape restrictive behaviors into functional communication.

Results

In the results section of this chapter, I will present the data from the professionals who participated in this study. All analyses of these survey data were completed using SPSS. A total of 81 participants responded to the survey and 54 completed the survey. Of the 54, 52 of the participants were SLPs and 2 of the participants were ABA therapists. Given the small number of ABA therapists who responded, means will be reported on the scores of the aggregate group unless otherwise specified.

Professionals’ Knowledge of Language Development and ABA Techniques

In order to gain an understanding of how much background knowledge the participants had about how children who have autism acquire language, the researcher asked them how knowledgeable do you feel you are about language development in children who have autism. Participants indicated their level of knowledge using a Likert scale, which was coded, so that 100 represented extremely knowledgeable, 75 represented very knowledgeable, 50 represented moderately knowledgeable, 25 represented slightly knowledgeable, and 0 represented not knowledgeable at all in order to calculate a mean. A total of 78 (96.3%) participants responded
to this question and 3 (3.7%) chose not to respond. For this item, the mean and standard deviation were calculated separately for each profession. The mean of SLPs’ knowledge of the language development of children who have autism was 76.35 ($SD = 20.65$, $Range = 75$-100, $n = 75$), which corresponds with being very knowledgeable. The mean of ABA therapists’ knowledge of the language development of children who have autism was 83.33 ($SD = 14.43$, $Range = 75$-100, $n = 3$), which also corresponds with being very knowledgeable.

Participants were asked how knowledgeable do you feel you are about ABA therapy techniques. The Likert scale was coded so that 100 represented extremely knowledgeable, 75 represented very knowledgeable, 50 represented moderately knowledgeable, 25 represented slightly knowledgeable, and 0 represented not knowledgeable at all. SLPs’ mean of their knowledge of ABA therapy techniques was 56.08 ($SD = 22.97$, $Range = 0$-100, $n = 75$), which corresponds with being moderately knowledgeable. Applied Behavior Analysis therapists’ mean reporting of their knowledge of ABA therapy techniques was 83.33 ($SD = 14.43$, $Range = 75$-100, $n = 3$), which corresponds with being very knowledgeable.

**Relationship of Self-Stimulatory Behaviors to Communication**

Participants answered questions regarding the ways in which self-stimulatory behaviors may affect their clients and the ways they communicate. The researcher asked participants do you believe verbal (e.g., echolalia) self-stimulatory behaviors are communicative and do you believe motor (e.g., gestural movements, hand flapping, head weaving, etc.) self-stimulatory behaviors are communicative. The participants rated their agreement using a Likert scale which was coded, so that 2 represented definitely yes, 1 represented probably yes, 0 represented might or might not, -1 represented probably not, and -2 represented definitely not. The responses for both questions are depicted in Figure 3.
Figure 3 Participants’ perceptions of whether or not they believe verbal and motor self-stimulatory can be communicative \( (n = 69) \).

The researcher asked participants do you believe that self-stimulatory behaviors affect your client(s)' ability to communicate. They responded using a 5-point Likert scale which was coded, so that 2 represented definitely yes, 1 represented probably yes, 0 represented might or might not, -1 represented probably not, and -2 represented definitely not. Participants’ mean rating of .90 \((SD = .99, Range = -2 to 2)\) corresponds to probably yes.

Participants rated how frequently do self-stimulatory behaviors affect your client(s) in the following ways: reduced speech, increased speech, interfered with social interactions with peers, interfered with social interactions with adults, increased language development, decreased language development, or other (please specify). They rated the frequency of these effects occurring using a Likert scale in which the items were coded, so that 100 represented always, 75 represented most of the time, 50 represented about half the time, 25 represented sometimes, and 0 represented never. The descriptive statistics for participants’ responses to each item are presented in Table 1.
Table 1

Number of participants, means, and standard deviations of how frequently participants believed self-stimulatory behaviors have affected their clients in specified ways

<table>
<thead>
<tr>
<th>Self-Stim. Behavior Effects</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interfere with peer interactions</td>
<td>61</td>
<td>62.70</td>
<td>23.10</td>
<td>25-100</td>
</tr>
<tr>
<td>Interfere with adult interactions</td>
<td>62</td>
<td>56.45</td>
<td>25.98</td>
<td>0-100</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>50.00</td>
<td>35.36</td>
<td>0-100</td>
</tr>
<tr>
<td>Reduce speech</td>
<td>62</td>
<td>39.52</td>
<td>22.43</td>
<td>0-75</td>
</tr>
<tr>
<td>Decrease language development</td>
<td>60</td>
<td>30.83</td>
<td>26.59</td>
<td>0-75</td>
</tr>
<tr>
<td>Increase speech</td>
<td>61</td>
<td>28.69</td>
<td>21.33</td>
<td>0-100</td>
</tr>
<tr>
<td>Increase language development</td>
<td>61</td>
<td>27.05</td>
<td>24.28</td>
<td>0-100</td>
</tr>
</tbody>
</table>

Note. Items were coded, so that 100 represented always, 75 represented most of the time, 50 represented about half the time, 25 represented sometimes, and 0 represented never. For participants’ answers for other, see Appendix D.

The researcher asked participants based on your experiences, have clients who gained functional communication had a reduction in self-stimulatory behaviors. The participants responded using a Likert scale which was coded so that 2 represented definitely yes, 1 represented probably yes, 0 represented might or might not, -1 represented probably not, and -2 represented definitely not. Participants’ mean response of .89 (SD = 1.05, Range = -2 to 2, n = 63) corresponds to probably yes.

Professionals’ Perceptions of Self-Stimulatory Behaviors

One of the primary goals of this study was to gain an understanding of SLPs’ and ABAs’ perceptions of self-stimulatory behaviors in school-age children who have autism. The survey included 15 items to measure participants’ beliefs about the purposefulness of self-stimulatory behaviors, experiences observing self-stimulatory behaviors, beliefs regarding their roles in therapy to extinguish or replace behaviors, beliefs about whether or not these behaviors should be replaced or extinguished, and their level of agreement with several statements about self-
stimulatory behaviors. First, participants rated *do you believe that self-stimulatory behaviors can serve a purpose* using a Likert scale. The items were coded, so that 2 represented *definitely yes*, 1 represented *probably yes*, 0 represented *might or might not*, -1 represented *probably not*, and -2 represented *never*. After running a descriptive analysis, the researcher found that participants’ mean was 1.59 (SD = .633, Range = 0 to 2, n = 78), which fell between *probably yes* and *definitely yes*.

The researcher asked participants additional questions regarding their perceptions of self-stimulatory behaviors and how they may affect their clients. Participants were asked to *rate your agreement with each of the following statements*: *I believe self-stimulatory behaviors can prevent learning*; *I believe self-stimulatory behaviors can be communicative*; *I believe self-stimulatory behaviors can be pleasurable for the client*; *I believe self-stimulatory behaviors are typically not harmful to the client*; *I believe self-stimulatory behaviors are typically not harmful to others*; *I believe behaviors that are not typical should be extinguished*; and *I believe behaviors that are not typical should be replaced with more typical behaviors*. Participants rated each of these items using a 5-point Likert scale which was coded, so that 2 represented *strongly agree*, 1 represented *somewhat agree*, 0 represented *neither agree nor disagree*, -1 represented *somewhat disagree*, and -2 represented *strongly disagree*. The descriptive statistics for each item are presented in Table 2.

Participants reported their perceptions of their own roles as SLPs and ABA therapists in replacing or extinguishing self-stimulatory behaviors. Participants rated their agreement to the statement *I believe it is part of my role to extinguish self-stimulatory behaviors in therapy* and the statement *I believe it is part of my role to replace self-stimulatory behaviors in therapy*. Participants rated their level of agreement using a 5-point Likert scale which was coded, so that 2
represented strongly agree, 1 represented somewhat agree, 0 represented neither agree nor disagree, -1 represented somewhat disagree, and -2 represented strongly disagree.

Table 2

Participants’ responses about their perceptions of self-stimulatory behaviors and how these behaviors can affect their clients.

<table>
<thead>
<tr>
<th>Perceptions of Self-Stim. Behaviors</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be pleasurable for the client</td>
<td>51</td>
<td>1.67</td>
<td>.52</td>
<td>0 to 2</td>
</tr>
<tr>
<td>Can be communicative</td>
<td>52</td>
<td>1.31</td>
<td>.83</td>
<td>-2 to 2</td>
</tr>
<tr>
<td>Are typically not harmful to others</td>
<td>51</td>
<td>.94</td>
<td>.90</td>
<td>-1 to 2</td>
</tr>
<tr>
<td>Can prevent learning</td>
<td>52</td>
<td>.67</td>
<td>.98</td>
<td>-2 to 2</td>
</tr>
<tr>
<td>Are typically not harmful to the client</td>
<td>51</td>
<td>.51</td>
<td>1.0</td>
<td>-2 to 2</td>
</tr>
<tr>
<td>Should be replaced with typical behaviors</td>
<td>51</td>
<td>.49</td>
<td>.95</td>
<td>-2 to 2</td>
</tr>
<tr>
<td>Should be extinguished</td>
<td>51</td>
<td>-.63</td>
<td>.98</td>
<td>-2 to 2</td>
</tr>
</tbody>
</table>

Note. Items were coded, so that 2 represented strongly agree, 1 represented somewhat agree, 0 represented neither agree nor disagree, -1 represented somewhat disagree, and -2 represented strongly disagree.

When asked if they believed it was part of their role to replace self-stimulatory behaviors in therapy, the mean response of .48 (SD = 1.02, Range = -2 to 2) was between neither agree nor disagree and somewhat agree. By contrast, when asked if they believed it was part of their role to extinguish self-stimulatory behaviors in therapy, the mean response of -.63 (SD = 1.04, Range = -2 to 2) corresponded to somewhat disagree.

Participants were asked do you believe self-stimulatory behaviors should be extinguished (i.e., completely eliminated) from the client’s behaviors during therapy and do you believe self-stimulatory behaviors should be replaced (i.e., substituted with more appropriate behaviors) during therapy. They responded using a 5-point Likert scale which was coded, so that 2 represented definitely yes, 1 represented probably yes, 0 represented might or might not, -1 represented probably not, and -2 represented definitely not. While participants’ mean response of
-.89 (SD = .79, Range = -2 to 1) for extinguishing behaviors corresponds with probably not, their response towards replacing the behaviors with more appropriate behaviors was a mean of .68 (SD = .88, Range = -2 to 2), which corresponds most closely with probably yes.

**How Professionals Address Self-Stimulatory Behaviors in Therapy**

Participants were asked *do you respond to verbal self-stimulatory behaviors as if they are communicative and do you respond to motor self-stimulatory behaviors as if they are communicative*. The participants rated their agreement using a Likert scale which was coded, so that 2 represented definitely yes, 1 represented probably yes, represented to might or might not, -1 represented probably not, and -2 represented definitely not. The responses for each question are graphed in Figure 4.

![Figure 4](image)

*Figure 4. Participants’ responses to whether or not they responded to motor and verbal self-stimulatory behaviors as if they were communicative (n = 68).*

Participants were asked *how frequently do you use the following intervention approaches to address self-stimulatory behaviors in therapy* for the following approaches: discrete trial training, exercise/movement-based interventions, sensory integration, replacing behaviors, ABA techniques, or other (please specify). The participants rated the frequency of their use of different
techniques using a Likert scale, which was coded so that 100 represented always, 75 represented most of the time, 50 represented about half the time, 25 represented sometimes, and 0 represented never. The descriptive statistics for each item are presented in Table 3.

Table 3
Participants’ ratings of how frequently they use specified intervention approaches to address self-stimulatory behaviors in therapy

<table>
<thead>
<tr>
<th>Intervention approaches</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>9</td>
<td>66.67</td>
<td>35.36</td>
<td>0-100</td>
</tr>
<tr>
<td>Replacing behaviors</td>
<td>62</td>
<td>56.45</td>
<td>28.96</td>
<td>0-100</td>
</tr>
<tr>
<td>Sensory Integration</td>
<td>63</td>
<td>40.08</td>
<td>30.63</td>
<td>0-100</td>
</tr>
<tr>
<td>ABA Techniques</td>
<td>62</td>
<td>35.89</td>
<td>31.57</td>
<td>0-100</td>
</tr>
<tr>
<td>Exercise/Movement-based</td>
<td>63</td>
<td>33.33</td>
<td>24.59</td>
<td>0-100</td>
</tr>
<tr>
<td>Discrete Trial Training</td>
<td>63</td>
<td>22.62</td>
<td>26.07</td>
<td>0-100</td>
</tr>
</tbody>
</table>

Note. The items were coded so that 100 represented always, 75 represented most of the time, 50 represented about half the time, 25 represented sometimes, and 0 represented never. The “other” responses for intervention methods used included: modeling, the early start Denver model (ESDM approaches), milieu teaching, floortime, relation-based intervention, interaction-based intervention, and incorporating a child’s echolalia into the intervention (Appendix E).

Factors that Influence Intervention Methods

In addition to gathering data about how professionals understand and address self-stimulatory behaviors, it was also important to gain an understanding of what factors may play a role in how professionals select intervention methods when working with clients on the autism spectrum who have self-stimulatory behaviors. The survey contained 25 items that addressed factors that may influence a professionals’ decision in choosing interventions for clients.

Participants were asked to please indicate the extent to which each of these factors may affect the intervention technique(s) you choose to address self-stimulatory behaviors in therapy. These factors included: parent preferences, parent cultural background, parent religious background, teacher preferences, co-treating therapist preferences, client preferences, client
cultural background, client religious background, and experience with neurodiversity movement/opinions. The participants rated the influence of these factors using a Likert scale in which the items were coded, so that 2 represented definitely will, 1 represented probably will, 0 represented might or might not, -1 represented probably will not, and -2 represented definitely will not. Descriptive statistics for each item are presented in Table 4.

Table 4

Participants' ratings of the extent that specified factors that influence intervention techniques selected when addressing self-stimulatory behaviors in therapy

<table>
<thead>
<tr>
<th>Factors</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client preferences</td>
<td>53</td>
<td>1.42</td>
<td>.72</td>
<td>0 to 2</td>
</tr>
<tr>
<td>Parent cultural background</td>
<td>52</td>
<td>1.19</td>
<td>.93</td>
<td>-2 to 2</td>
</tr>
<tr>
<td>Parent preferences</td>
<td>52</td>
<td>1.13</td>
<td>.91</td>
<td>-2 to 2</td>
</tr>
<tr>
<td>Client cultural background</td>
<td>52</td>
<td>1.08</td>
<td>.97</td>
<td>-2 to 2</td>
</tr>
<tr>
<td>Experience with Neurodiversity</td>
<td>51</td>
<td>.98</td>
<td>.91</td>
<td>-2 to 2</td>
</tr>
<tr>
<td>Co-treating therapist preferences</td>
<td>52</td>
<td>.79</td>
<td>.85</td>
<td>-2 to 2</td>
</tr>
<tr>
<td>Teacher preferences</td>
<td>52</td>
<td>.77</td>
<td>.94</td>
<td>-2 to 2</td>
</tr>
<tr>
<td>Client religious background</td>
<td>52</td>
<td>.75</td>
<td>1.1</td>
<td>-2 to 2</td>
</tr>
<tr>
<td>Parent religious background</td>
<td>52</td>
<td>.69</td>
<td>1.1</td>
<td>-2 to 2</td>
</tr>
</tbody>
</table>

Note. The items were coded, so that 2 represented definitely will, 1 represented probably will, 0 represented might or might not, -1 represented probably will not, and -2 represented definitely will not.

Participants were asked to please indicate the extent to which each of these factors may influence you to extinguish self-stimulatory behaviors in therapy and please indicate the extent to which each of these factors may influence you to replace self-stimulatory behaviors in therapy. These factors included: parents’ requests to extinguish or replace behaviors, teachers’ requests to extinguish or replace behaviors, another professional requests to extinguish or replace behaviors, client requests to extinguish or replace behaviors, the behavior is distracting to the client, the
behavior is distracting to others, and behavior is not typical. The participants rated the influence of these factors using a Likert scale in which the items were coded, so that 100 represented a great deal, 75 represented a lot, 50 represented a moderate amount, 25 represented a little, and 0 represented none at all. The results are presented in Figure 5.

Due to the recent rise in autism acceptance and the movements that have been created from this idea, participants were asked how familiar are you with the neurodiversity movement. Participants responded using a Likert scale coded so that 100 represented extremely familiar, 75 represented very familiar, 50 represented moderately familiar, 25 represented slightly familiar, and 0 represented not familiar at all. Overall, the participants’ mean response of 45.75 (SD = 29.31, Range = 0-100, n = 53) corresponded with being moderately familiar with the neurodiversity movement.

![Figure 5. Participants’ ratings of the extent to which each factor influenced them to either extinguish or replace self-stimulatory behaviors during therapy. For extinguishing behaviors, n = 53 and for replacing behaviors, n = 51.](image)

Participants reported how did you become familiar with neurodiversity. Participants were invited to select from options including: client experience, parent experience, professional
publications, journal articles, popular press, social media, and other (please specify) and were able to choose multiple responses. The results are depicted in Figure 6.

**Figure 6.** Participants’ responses to how they became familiar with the neurodiversity movement. Of the participants who selected other, they reported that they learned about neurodiversity through: co-workers, colleagues who were a part of the movement, friends who are autistic, family members, books like NeuroTribes and Far from the Tree, and through reading literature written by adults on the autism spectrum ($n = 46$).

**Shaping Self-Stimulatory Behaviors into Functional Communication**

The researcher asked participants about their role as therapists for shaping self-stimulatory behaviors into functional communication. Participants rated their level of agreement with the statement *I believe it is part of my role to shape self-stimulatory behaviors into functional communication* using a Likert scale that was coded, so that 2 represented *strongly agree*, 1 represented *somewhat agree*, 0 represented *neither agree nor disagree*, -1 represented *somewhat disagree*, and -2 represented *strongly disagree*. The participants’ mean response of 1.24 ($SD = .843$, *Range* = -2 to 2) indicated that they *somewhat agreed* that it was part of their role to shape behaviors into functional communication.
The researcher asked participants how often do you pursue functional communication skills when working with clients with self-stimulatory behaviors. They rated their frequency of pursuing functional communication skills using a Likert scale, which was coded so that 100 represented always, 75 represented most of the time, 50 represented about half the time, 25 represented sometimes, and 0 represented never. The participants’ mean response of 92.06 (SD = 15.44, Range = 25-100) corresponds most closely to always.

The researcher asked participants when a client has verbal self-stimulatory behaviors, how likely are you to attempt to shape these behaviors into functional communication and when a client has motor self-stimulatory behaviors, how likely are you to attempt to shape these behaviors into functional communication. They rated their likelihood using a Likert scale, which was coded so that 2 represented extremely likely, 1 represented slightly likely, 0 represented neither likely nor unlikely, -1 represented slightly unlikely, and -2 represented extremely unlikely. The descriptive statistics were calculated for both verbal and motor self-stimulatory behaviors. For verbal self-stimulatory behaviors, the participants’ mean of 1.43 (SD = .946, Range = -2 to 2) indicated that they were between extremely likely and slightly likely to attempt to shape self-stimulatory behaviors into functional communication. For motor self-stimulatory behaviors, the participants’ mean of .67 (SD = 1.15, Range = -2 to 2) indicated that they were neither likely nor unlikely to attempt to shape self-stimulatory behaviors into functional communication.
Discussion

In the sections that follow, I will discuss the results of my study. In addition, I will connect these results to findings from previous literature.

Professionals’ Knowledge of Language Development and ABA Techniques

It is important that professionals working with individuals on the autism spectrum have knowledge of the ways in which language may develop in children who have autism in order to effectively analyze and understand behaviors that may differ from typical language development. Speech-language pathologists and applied behavior analysis therapists both reported that they believed themselves to be very knowledgeable. This response was anticipated given that several of the groups the survey was posted to included members who worked frequently with the children on the autism spectrum.

Similarly, professionals reported their knowledge of ABA techniques. ABA therapy and the interventions associated with it are often employed by applied behavior analysis therapists, as well as other professionals, when working with children on the autism spectrum, and more specifically when addressing self-stimulatory behaviors. Speech-language pathologists’ overall rating of their knowledge of ABA therapy techniques was moderately knowledgeable, suggesting that they may use ABA techniques, such as discrete trial training. Participants, such as one professional who stated that they work at a “speech program in an ABA school,” may have been more familiar with ABA therapy techniques than other participants because of experiences working in clinical teams with ABA therapists or other professionals who may have utilized ABA techniques during therapy. Not surprisingly, applied-behavior analysis therapists reported that overall, they were very knowledgeable of ABA therapy techniques. According to the Behavior Analysis Certification Board (BACB), in order for professionals to become licensed...
ABA therapists, they must earn a master’s or doctorate degree, complete coursework, and pass the BCBA examination in order to practice ABA therapy (BACB, n.d.).

**Relationship of Self-Stimulatory Behaviors to Communication**

Following the assessment of their own knowledge, professionals considered if and how self-stimulatory behaviors play a role in communication. First, professionals were asked if they believed that verbal, as well as motor, self-stimulatory behaviors could be communicative. For verbal behaviors, the consensus of professionals was that they believed verbal stimming could probably be communicative. However, when asked if they believed motor behaviors could be communicative, professionals’ responses were more divided, and their mean score fell between *might or might not* and *probably yes*. This may indicate that professionals may have a bias towards interpreting verbal stimming behaviors as being more likely to have communicative intent, whereas they believe that motor stimming may or may not suggest communication. Given that the majority of participants in this survey were SLPs, it is not surprising that they may be more likely to understand and react to behaviors that represent speech communication, rather than motor communication using the body. However, because many individuals, including those on the autism spectrum, are nonverbal or may use non-verbal communication (Tager-Flusberg & Kasari, 2013, p. 1), identifying and understanding motor communication, such as gestures, fall under the scope of practice for SLPs (ASHA, 2016, p. 14). In addition, there is previous research that supports the use of gestural-based communication and its role in language acquisition. In his study, Hewes (1973) discussed our “first language,” or the idea that our complex communication system evolved from primitive language forms consisting mostly of gestures and body movements. It was from these forms that we were able, and are still able to express messages, as “gesture did not wither away, but persisted as a common accompaniment of speech, either as a
kinesic paralanguage for conveying nuances, emphasis, or even contradiction of the spoken message,” (Hewes, 1973, p. 11). While motor self-stimulatory behaviors could be considered or interpreted to be, in some contexts, gestural, not all motor behaviors may necessarily be used for this purpose.

Participants reported whether they believed self-stimulatory behaviors affected their clients’ abilities to communicate. The professionals’ responses were closest to probably yes. This response aligned with previous researchers’ concerns regarding the impact that self-stimulatory behaviors may have on the communication of children who have autism (Mays et al., 2011; Troyb et al., 2014). Communication, as Hockett (1960) described, allows us to transmit important information to one another (p. 96). However, if something impedes communication, makes the user’s message less understandable, or simply is off-putting to other communicative partners, then communication can be impaired (Arora, 2012, pp. 799, 802). Given their answer of probably yes, the professionals who responded to this survey may have experienced or observed their client’s self-stimulatory behaviors impeding their ability to communicate.

Participants rated how frequently self-stimulatory behaviors have affected their clients in these specific ways: reduced speech, increased speech, interfered with social interactions with peers, interfered with social interactions with adults, increased language development, decreased language development, or other. Previous researchers, as well as contributors to the DSM-V, have discussed the possible negative effects of self-stimulatory behaviors, which include reducing or interrupting communication (Mays et al., 2011), interfering with social interactions (APA, 2013), and decreasing language development (Troyb et al., 2014). When asked how frequently these behaviors reduced speech, participants’ mean answer was closest to about half the time. This result is consistent with concerns documented in previous studies that fixation on
self-stimulatory behaviors may reduce or interfere with children’s communication (Schreibman & Carr, 1978, p. 453). By contrast, participants believed that self-stimulatory behaviors increased speech only *sometimes*. In Hung’s (1978) study, he found that after suppressing self-stimulatory behaviors for a period of time, children who had autism would perform desired behaviors, such as increasing their speech, in order to gain tokens that could be used and “redeemed” to engage in self-stimulatory behaviors (p. 363). In this particular study, self-stimulatory behaviors were so rewarding to the children in the study that they increased their speech, however, this may not be true for every child, which may explain why participants overall had a neutral response. In addition, it is difficult to interpret whether professionals’ interpretation of “speech” in this context is referring to speech deemed to be communicative, as frequent echolalic or other verbal stimming could very well cause a child to speak frequently or “increase speech,” and not “reduce speech.”

When asked about how self-stimulatory behaviors may affect interactions, participants reported that self-stimulatory behaviors most likely interfered with adult interactions *about half the time*, while interactions with peers were probably impacted *more than half the time*. These results are consistent with Arora’s (2012) findings, as they noted that conversational partners may avoid individuals on the autism spectrum who have self-stimulatory behaviors, which, in turn, reduces conversational opportunities for these individuals (p. 799). This may be because conversational partners are confused or intimidated by behaviors that they don’t understand. This interpretation is consistent with an open-ended answer to this item in which the participant stated that self-stimulatory behaviors “interfere when the communication partner gives up because they find the stimming odd or overwhelming.”
Lastly, when asked about how self-stimulatory behaviors affected language development, professionals’ answers to how frequently stimming behaviors “increased language development,” and “decreased language development” were both closest to *sometimes*. This neutral finding may reflect the differences among individuals on the autism spectrum. As one professional noted, “it is important to remember that all individuals are different… what impacts one’s communication may not impact another.” Sterponi, Kirby, and Shankey (2015) discussed that researchers, including Kanner (1943), have often focused on the differences of language in children who have autism and cited repetitive and unrelated speech, echolalia, as evidence of impaired language (p. 518). Conversely, other researchers have supported the claim that self-stimulatory behaviors, such as echolalia, could actually facilitate the acquisition of words during language development. Arora (2012), Mottron (2017), and Stiegler (2015) discussed echolalia’s possible benefits to language development, which included echolalia’s role in helping a child form their first word, the development of language through immediate and delayed echolalia, and how delayed echoes could signify semantic connections. While previous literature has demonstrated both positive and negative effects of self-stimulatory behaviors on language development, this finding suggests that there may not be an answer that encompasses a majority of the experiences of those on the autism spectrum.

Participants reported if, in their personal experience, clients who gained functional communication had a reduction in self-stimulatory behaviors. Participants’ overall response was closest to *probably yes*. This finding is consistent with previous research, as researchers have focused on reducing self-stimulatory behaviors through providing functional replacement behaviors (Mays et al., 2011, p. 48). For example, Reeves, Umbreit, Ferro, and Liaupsan (2017) taught students who had autism and perseverative behaviors replacement phrases to manage
behavior. Following the introduction and teaching of replacement phrases, such as saying “no thank you,” when the student did not want to be called on, the researchers reduced the prevalence of unwanted behaviors, such as self-injurious behaviors, when the student did not want to talk in class.

Professionals’ Perceptions of Self-Stimulatory Behaviors

Professionals rated whether or not they believed that self-stimulatory behaviors could serve a purpose. Overall, the majority of participants responded with definitely yes, while the remaining participants responded with probably yes and might or might not. Given that literature, including Kanner’s (1943) original paper first detailing the behaviors of individuals on the autism spectrum, has often described self-stimulatory behaviors as purposeless, this finding is significant. The professionals who responded to this survey echoed this idea in their open-ended responses. When asked to describe a situation in which a client utilized their self-stimulatory behavior to serve a purpose, participants contributed several interesting examples (Appendix C). Most of the answers discussed the use of self-stimulatory behaviors, such as rocking, hand flapping, and other motor stimulations as a way for the client to self-soothe and calm their bodies. Others, like one participant, discussed the multiple functions self-stimulatory behaviors can serve: “some students will work hard in speech sessions, and then start stimming because they need a break and some because they are getting excited… escape/avoidance, if they're overwhelmed... And sometimes stimming behaviors just feel good.”

In addition to asking participants about what purpose self-stimulatory behaviors could serve for clients, participants indicated how they believed self-stimulatory behaviors could affect their clients. Participants rated their agreement with statements that asked if they believed that self-stimulatory behaviors: can prevent learning, can be communicative, can be pleasurable for
the client, are typically not harmful to the client, are typically not harmful to others, should be extinguished, and should be replaced with more typical behaviors. Participants somewhat agreed that self-stimulatory behaviors could possibly prevent learning. This is supported by previous research, such as Troyb et al., (2014) who stated that repetitive behaviors, or RRBs, “interfere with the child’s ability to attend to the external environment where learning opportunities are present and, consequently, may impede learning,” (p. 3180). When asked if they believed self-stimulatory behaviors could be pleasurable for the client, participants showed strong agreement, which was reinforced in their open-ended comments. One participant suggested that self-stimulatory behaviors can be used “to express extreme joy,” and several reported that clients often used self-stimulatory behaviors that reflected preferred objects or activities, such as scripting “from her favorite TV show.”

Professionals’ responses to the statements that self-stimulatory behaviors are typically not harmful to the client or are typically not harmful to others were more variable. While most professionals agreed that client’s self-stimulatory behaviors were usually not harmful to others, several professionals had conflicting answers about stimming behaviors being harmful to the client themselves. Several participants discussed stimming behaviors that their clients had that could be considered self-harming, such as hitting their jaw due to pain from molars growing in and scratching their skin. This is consistent with the literature, as Reeves et al. (2017) discussed students who engaged in self-injurious behaviors, such as hitting their head, in response to experiencing frustration in class (p. 307).

Participants reported their opinions on whether or not self-stimulatory behaviors should be extinguished or replaced. For all questions regarding attempting to extinguish behaviors, participants mostly disagreed with extinguishing self-stimulatory behaviors. Additionally, when
asked if they believed it was part of their role to extinguish self-stimulatory behaviors in therapy, participants, again, tended to disagree. When asked to describe an experience where extinguishing self-stimulatory behaviors has produced a desired outcome, several participants answered that they could not think of an experience, extinguishing had not worked, or attempts to extinguish the behavior resulted in upsetting the client (Appendix F). One particular participant gave a detailed response regarding their stance against extinguishing: “Why would you kick a person's legs out from under them like that? Please show me your sparkle hands so I know you're happy or your head waving so I know you're thinking about something.” Conversely, for all questions regarding whether they thought behaviors should be replaced, professionals were more neutral and their mean answers often fell between neither agreeing nor disagreeing and partially agreeing. This finding is surprising given the amount of recent literature, such as Mays, Beal-Alvarez, and Jolivette (2011), that has focused on and discussed the results of replacing behaviors, especially for increasing functional communication (Reeves et al., 2017). In looking at professional’s responses to open-ended questions, professional’s opinions on whether or not a behavior should be replaced may depend on the kind of behavior the child is exhibiting. When asked to describe an experience in which they were able to replace a behavior to produce a desired outcome, many participants gave specific examples of behaviors they shaped, such as teaching the client to request breaks instead of hitting themselves or others and using echolalic stimming to teach a client new words (Appendix G). To explain the neutral reports on replacing behaviors, one speech-language pathologist stated that, “I usually look for the perceived root of the behavior-tactile, visual, kinesthetic, vocal, auditory, etc… it really depends on what the behavior is thought and how socially unexpected/undesirable it is and how useful/important it is to the client.”
How Professionals Address Self-Stimulatory Behaviors in Therapy

Professionals may address self-stimulatory behaviors using a variety of methods that may depend on their knowledge of the client and the various settings where they work. Their intervention methods may also depend on how they understand their client’s behaviors. Participants reported if they responded to verbal and motor self-stimulatory behaviors as if they were communicative. While participants generally agreed that they probably would respond to verbal self-stimulatory behaviors as if they were communicative, participants had mixed responses regarding motor behaviors, producing a neutral answer of *might or might not*. The difference in response due to the behavior being verbal or motor-based is a function of the sample. As a majority of the participants in the survey were SLPs, they may respond more readily to communication that is verbal rather than motor-based. Although participants were somewhat neutral regarding responses to motor behaviors, when asked to describe a situation in which a client utilized their self-stimulatory behavior to serve a purpose, the majority of participants listed motor behaviors, such as “jaw thrusting,” hand rubbing, “excited flapping,” and rocking. The professionals themselves believed these motor behaviors were done to communicate that the tasks were frustrating, engaging, or that they needed a break. One SLP stated that “any behavior communicates about needs and emotions- it just takes an alert partner to read the meaning.”

Participants indicated how frequently they used specific types of interventions when addressing self-stimulatory behaviors in children who have autism. They were asked about their use of: discrete trial training, exercise/movement-based interventions, sensory integration, replacing behaviors, ABA techniques, or other intervention methods. The intervention used most frequently of the listed intervention choices was replacing behaviors, which reflected that
participants replaced behaviors *about half of the time* when in sessions with clients who had self-stimulatory behaviors. ABA techniques and sensory integration scored slightly lower on the scale, nearing use of about half the sessions. When asked about exercise/movement-based interventions, participants reported that they only used these methods *sometimes* in sessions. The intervention method that was used the least frequently of all the intervention methods listed was discrete trial training. This may be due to the small number of ABA therapists who participated in the study. Finally, the option for “other” received only nine participants, but had the largest mean as participants suggested that they may have used other intervention methods not listed most of the time during interventions. The “other” responses for intervention methods used included: modeling, the early start Denver model (EDSM), milieu teaching, floortime, relation-based intervention, interaction-based intervention, and incorporating a child’s echolalia into the intervention (Appendix E). One SLP’s response may help give context to why participants did not identify heavily with any particular method: “each of these kids is unique… I really can't make a blanket statement regarding how I deal with the behaviors.”

**Factors that Influence Intervention Methods**

Professionals described the extent to which selected factors may influence their intervention choice. These factors included: parent preferences, parent cultural background, parent religious background, teacher preferences, co-treating therapist preferences, client preferences, client cultural background, client religious background, and experience with neurodiversity movement/opinions. These factors were chosen based on ASHA’s definition of family-centered practice, which was modeled after a paper by Johnson et al. (2008), as well as other literature that discussed individuals working with children who have autism, such as teachers and other professionals (Mandak & Light, 2017; Mays et al., 2011). Of the listed
factors, professionals placed client preferences as the most important factor in the determination of what may influence intervention methods. The second most important factor was parent cultural background, followed by parent preferences. These findings reflect ASHA’s definitions of family-centered practice (Johnson et al., 2008) and evidence-based practice, which includes providing therapy that reflects “the interests, values, needs, and choices of the individuals we serve,” (ASHA, n.d.). The factor that ranked the lowest in determining intervention methods was parent’s religious background, as the mean answer fell between probably yes and might or might not. While a majority of participants still agreed that this is an important factor to consider when making intervention decisions, this answer is surprising considering previous responses to parent and client cultural background, and ASHA’s core concepts of Dignity and Respect emphasizing the respect and incorporation of beliefs into the therapy practice (Johnson et al., 2008, p. vi).

Similarly, participants rated the extent to which selected factors may influence them to extinguish or replace self-stimulatory behaviors in therapy. These factors included: parents’ requests to extinguish or replace behaviors, teachers’ requests to extinguish or replace behaviors, another professional’s requests to extinguish or replace behaviors, client requests to extinguish or replace behaviors, the behavior is distracting to the client, the behavior is distracting to others, and behavior is not typical. The two factors that were rated the highest by professionals for both extinguishing and replacing behaviors were client requests and behaviors that were distracting to the client. The difficulty with professionals being most willing to extinguish or replace a behavior when it is distracting to the client is that professionals may perceive a behavior as being distracting, rather than clients reporting that they themselves find the behavior distracting. Professionals may find that, as Troyb et al. (2014) discussed, self-stimulatory behaviors could possibly impede a client’s ability to engage in their environment (p. 3169). One ABA therapist
stated that, “I allow self stim (verbal and physical) as long as it doesn’t interfere with a current target (i.e., if we’re trying to work on riding a bike and the client is flapping I’d try to decrease the hand flapping).”

The factor that was ranked the lowest for both extinguishing and replacing behaviors was the behavior not being typical. While this factor was rated as having the lowest amount of influence out of the selected factors, it still moderately influenced professionals’ willingness to either extinguish or replace behaviors. This finding is not surprising, as Mottron (2017) and Owren and Stenhammer (2013) argued that behaviors that are typical, such as maintaining eye contact or pointing, are usually viewed as prerequisites for communicating while language development that does not include these typical milestones or is characterized by atypical behaviors may be seen as concerning (p. 817). Despite this, even if a behavior is considered an “oddity,” this does not negate an individual’s ability to engage socially, much like teaching a child to point does not ensure social competency (Mottron, 2017, p. 818).

As a growing movement in circles involving professionals who work with individuals on the autism spectrum, as well as individuals who have autism themselves, I investigated participants’ experience with the neurodiversity movement as a possible factor that could influence choice of intervention. Overall, the participants reported that they were *moderately familiar* with the movement. Participants then indicated how they became familiar with the movement by selecting from a list of possibilities including: client experience, parent experience, professional publications, journal articles, popular press, social media, and other. The majority of participants indicated that they became familiar with the neurodiversity movement through professional publications and through social media, but there were selections in every category. For those who became familiar with the neurodiversity movement from other sources, responses
included having friends or family on the autism spectrum, friends or family involved in the movement, and through reading books, such as *Neurotribes* (Silberman, 2015) or literature written by adults on the autism spectrum. This finding is interesting given that, even though about half of the participants were familiar with the movement, the ways in which they learned about the movement varied considerably.

Participants’ experience with neurodiversity movement/opinions was one of the factors asked when considering how different factors may play a role in their selection of intervention methods. The participants’ mean response was that experience with neurodiversity would probably influence their choice of intervention method. As the neurodiversity movement seeks to increase understanding of autism as a difference and not necessarily as a disorder, this finding suggests that professionals who work with individuals on the autism spectrum may take these opinions, client’s experiences, or their own experiences into consideration when deciding on interventions that best respect and address a client’s needs (Owren & Stenhammer, 2013, p. 2).

**Shaping Self-Stimulatory Behaviors into Functional Communication**

The last category of this survey included questions that asked participants about their beliefs and experiences shaping self-stimulatory behaviors into functional communication. Participants rated their agreement with whether or not they believed it is part of their role to shape self-stimulatory behaviors into functional communication in therapy using a Likert scale. Professionals overall agreed that it was part of their role to shape behaviors into functional communication.

Participants reported how often they pursued functional communication skills when working with clients who have self-stimulatory behaviors. Overall, the mean response of participants was that they almost always pursued functional communication skills. While
professionals were between extremely likely and slightly likely to attempt to shape verbal self-stimulatory behaviors into functional communication, they were neither likely nor unlikely to attempt to shape motor self-stimulatory behaviors into functional communication. This finding is interesting as it seems to conflict with participants’ previous reporting that they are almost always likely to pursue functional communication skills when working with clients who have self-stimulatory behaviors. The majority of participants who responded to the survey were speech-language pathologists, so this discrepancy may be due to SLP’s greater understanding and exposure to working with behaviors that represent speech communication rather than motor-based communication. One participant’s open-ended response helps support this possible explanation, as the participant stated that, “as a speech pathologist I seek to help the patient communicate their thoughts and needs as best as possible, and my goal is for these needs to be expressed verbally as much as possible,” (Appendix I). This statement suggests that SLPs may not have had as much experience or success shaping motor behaviors into more functional communication in comparison to shaping verbal behaviors. In addition, professionals may choose not to address the motor stimming. For example, while some participants did indicate they had introduced ways to make motor behaviors more functional, such as teaching a client to verbally request deep pressure stimulation instead of leaning physically on adults to request, other behaviors, such as hand flapping or “happy dancing” may not be viewed as necessary to replace (Prizant, 2008, p. 37).
CHAPTER V: CONCLUSION

In this final chapter, I will identify the major conclusions from the study, discuss the implications of these findings, describe the limitations of the study, and offer recommendations for future research. Last, I will share my final thoughts about my study and what I have gained from the I.S. process.

Major Conclusions

The first major conclusion that can be drawn from this study is that professionals believe that self-stimulatory behaviors can have a purpose. When asked if they believed that self-stimulatory behaviors could serve a purpose, the majority of participants responded with definitely yes, while the remaining participants responded with probably yes and might or might not. No participant rated that they believed self-stimulatory behaviors were purposeless. This suggests that professionals do not agree with Kanner’s (1943) conclusion that self-stimulatory behaviors were purposeless and “nonsensical.” In addition, participants have observed and described situations in which these behaviors have served a purpose and may have even served as communication.

The second major conclusion of this study is that professionals believe that self-stimulatory behaviors could be communicative. However, there was a difference in how professionals perceived verbal behaviors and motor behaviors. Overall, while participants were more likely to believe that verbal self-stimulatory behaviors could be communicative, their feelings about interpreting and responding to motor self-stimulatory behaviors as if they were communicative were mixed and tended to be more neutral. This, in part, is due to the fact that SLPs, who were the majority population in this survey, are more inclined to respond to verbal behaviors, given their profession.
A third major conclusion from this study is that, although there may have been differences in opinion about verbal and motor behaviors, there was a consensus regarding how professionals feel about addressing these behaviors in therapy. Overall, professionals reported that they disagreed with extinguishing self-stimulatory behaviors of any type and did not feel it was part of their role to remove these behaviors. However, professionals reported that they would probably be more likely to replace self-stimulatory behaviors.

The last conclusion of this study is that participants believe in implementing client and family-centered practice. Participants were most likely to base their intervention decisions off their clients’ preferences and whether self-stimulatory behaviors were affecting their clients. The second most important factor was parents and their background. The results of this study demonstrate that professionals value the needs and opinions of clients and their families above all other factors when making decisions regarding interventions for self-stimulatory behaviors.

**Implications**

There has been a shift over time in how professionals perceive and understand self-stimulatory behaviors. As a result, professionals understand that self-stimulatory behaviors can have purpose and, in turn, may have become more attuned to what these behaviors are, how they may be used to communicate, and how these behaviors can be used in therapy. In addition, as professionals in this study reported that they have observed self-stimulatory behaviors possibly serving a purpose or being communicative, they also demonstrated disagreement with extinguishing these behaviors in therapy. This may be an outcome of professionals’ increasing understanding of the context surrounding when and why self-stimulatory behaviors occur. The results of this study imply that professionals who work with individuals who have self-stimulatory behaviors are far more likely to attempt to replace behaviors in therapy as needed or
may feel that they do not need to address the behaviors at all. This may allow for clients to self-regulate through self-stimulation in more controlled ways, such as through replaced behaviors, or may allow for more diverse ways of communication.

Although participants overall agreed that they would interpret and respond to both verbal and motor behaviors as being communicative, the implication of professionals interpreting verbal, more than motor behaviors, as communicative suggest that more training may need to be done in recognizing and understanding motor self-stimulatory behaviors. During the survey, participants were asked ways in which they observed their clients using self-stimulatory behaviors to serve a purpose. The majority of answers participants detailed motor self-stimulatory behaviors and included behaviors such as rocking to communicate overstimulation or need to self-regulate, hand-flapping to show excitement, and seeking/requesting deep pressure stimulation when stressed. While motor self-stimulatory behaviors may be more difficult to understand, it is valuable for professionals who work with individuals on the autism spectrum, several of whom may be nonverbal or use alternative ways of communicating, to be knowledgeable of non-verbal communication. The results from this study suggest that more awareness should be raised about the possibility of motor behaviors being communicative and that professionals may need additional training to better serve the needs of their clients.

Lastly, if participants are acting in accordance with their beliefs about client-centered care, then they may be engaging in practices that reflect the values and choices of clients and their families. The implication of the final conclusion of this study is that because professionals understand the importance of family and client-centered practice, as well as evidence-based practice, they may be incorporating these beliefs into their interventions for self-stimulatory
behaviors. As a result, these interventions may be individual reflections of the client and their family’s needs.

**Limitations**

There were several limitations of this study. The first limitation was the survey’s sample size. While the survey received a total of 81 responses, only 54 of these responses were complete. Some responses may have been incomplete due to technical difficulties that occurred when taking the survey, as a few participants reported technical errors on the ASHA SIG forum. However, incomplete responses may also have been due to the survey’s number or type of questions. In addition to the general sample size, the small number of ABA therapists who responded to the survey made it difficult to represent ideas of multiple professions. Despite my best efforts to recruit them, only three of my participants were ABA therapists. While the original aims of this study were to examine both SLP and ABA therapist perspectives, the results of this study overwhelmingly represent more SLPs experiences. As a consequence of the small sample size and limited representation from ABA therapists, the results of this study may be difficult to generalize and do not adequately represent ABA therapists’ experiences.

A second limitation of this study is that the survey did not include any questions regarding the intentionality of the self-stimulatory behaviors that participants observed. While participants did report they believed that self-stimulatory behaviors could be communicative, the survey did not include questions about the intentionality of the self-stimulatory behaviors (e.g., produced to intentionally communicate with others about how they were feeling). As a result of the survey not addressing intentionality, it is not possible to make a statement from this study that self-stimulatory behaviors are used by children on the autism spectrum for the purpose of communication. While there were limitations to this study, the research and final conclusions of
this study included and were supported by reputable sources, echoed the findings of previous studies, and incorporated the responses of licensed professionals who work with children on the autism spectrum.

**Recommendations for Future Research**

For future research on this topic, I would recommend that researchers attempt to collect a larger sample size by expanding the methods in which they identify and contact the populations they wish to survey. If researchers wish to gather opinions of ABA therapists, the researchers may need to reach out to multiple locations and forums in order to locate eligible professionals. Furthermore, researchers may want to consider how they will obtain data for the study. While a survey was the most convenient format for the current study, future researchers may want to consider length of surveys, types of questions used, and how accessible the survey may be for mobile forms of technology.

Future researchers should also consider how they define several of the behaviors and methods of intervention that were discussed during this study. For example, several participants in the current study expressed confusion about how extinguishing and replacing behaviors differ from each other. One participant even remarked that “you could never do one without the other.” Additionally, it would be important for researchers to establish what exactly they mean by self-stimulatory behaviors. While behaviors such as hand flapping or echolalia often come to mind, depending on the definition, maladaptive behaviors, such as hitting one’s head could also be perceived to be a self-stimulatory behavior. It would also be important for researchers to explore possible intentionality of behaviors, and how this determines whether or not a behavior is communicative. While a behavior may serve a purpose or could signal how a client may be
feeling, if they are not intentionally utilizing the behavior to communicate with another person, it could be difficult to determine whether this behavior is technically “communicative.”

Final Thoughts

Self-stimulatory behaviors have been discussed for years in literature regarding those on the autism spectrum. They are written in diagnostic manuals as key behaviors for diagnosing autism, labeled as stigmatizing and restrictive, and have numerous intervention methods dedicated to eliminating, replacing, and “fixing” them. But growing up, when I saw my brother make his happy squeal, or squeeze his hands together, I knew how genuinely excited he was. When I watched a client spin or dance around the room with a large smile on their face, I saw them experiencing their world. Self-stimulatory behaviors are not always harmless, not always conducive to their environment, not always “good.” And yet, some behaviors are able to genuinely capture how one is feeling in ways that words never could and never will.

I am so incredibly thankful that I have been able to conduct my independent research on a topic that I am passionate about as I move forward into graduate school and into my career as a speech-language pathologist. Through all the bumps and bruises of the I.S. process, knowing that my research was something that I had a personal connection with, and a responsibility to, kept me dedicated and allowed me to move forward. In the future, I would like to work with children on the autism spectrum and continue research into topics similar to my study, as well as assist in elevating the voices and diverse experiences of those on the autism spectrum. I believe that these last four years at the College of Wooster, and the almost two years of writing my I.S., have helped inspire my passion for my future endeavors and allowed me to grow in ways I had never thought possible. For this, I am so grateful.
REFERENCES


APPENDIX A
Recruitment Materials

[Page Moderators.]
Hello! My name is Ashlynn Kufleitner, and I am a senior Communication Sciences and Disorders major at The College of Wooster. I am conducting a study for my senior thesis to investigate speech-language pathologists’ and applied behavior analysis (ABA) therapists’ perceptions of echolalia and self-stimulatory behaviors in children who have autism. Furthermore, I will investigate how speech-language pathologists and applied behavior analysis therapists address these behaviors during therapy by analyzing what factors may influence choice of intervention methods and how these methods may be used to shape restrictive behaviors into functional communication.

I am interested in posting my survey on your Facebook page, [Title of Page]. The survey will take approximately 10 minutes to complete. The research protocol has been approved by The College of Wooster’s Human Subjects Research Committee (HSRC). If you would allow me to post a link to my survey to your page, I would greatly appreciate it.

Thank you for taking the time to read this message. Please feel free to contact me or my advisor for further information or clarification using my email akufleitner19@wooster.edu or my advisor Dr. Joan Furey at her email JFurey@wooster.edu.

Sincerely,
Ashlynn Kufleitner
Recruitment Message for Participants:

Hello! My name is Ashlynn Kufleitner, and I am a senior Communication Sciences and Disorders major at The College of Wooster. I am conducting a study for my senior thesis to investigate speech-language pathologists’ and applied behavior analysis (ABA) therapists’ perceptions of echolalia and self-stimulatory behaviors in children who have autism. Furthermore, I will investigate how speech-language pathologists and applied behavior analysis therapists address these behaviors during therapy by analyzing what factors may influence choice of intervention methods and how these methods may be used to shape restrictive behaviors into functional communication. The research protocol has been approved by The College of Wooster’s Human Subjects Research Committee (HSRC).

If you are a speech-language pathologist or an applied behavior analysis therapist who is interested in participating in this survey, please follow the link below to access my survey. (Insert link to survey)

If you have any questions or would like further information about the study, you may contact me using my email akufleitner19@wooster.edu. Also, if you know of other professionals who may fit the survey criteria, I would appreciate if you consider forwarding the link to my survey.

Thank you!
APPENDIX B

Survey

Perseveration and Perseverance Survey

Start of Block: Block 1

You are being asked to participate in a research study. We are investigating speech-language pathologists’ and applied behavior analysis therapists’ perceptions of echolalia and self-stimulatory behaviors in children who have autism and how these behaviors are addressed in therapy.

If you decide to participate, you will be asked to answer several questions about your knowledge and opinions of self-stimulatory behaviors, intervention approaches for self-stimulatory behaviors, and reasons for choosing particular intervention methods. You may be asked to describe your own experiences addressing self-stimulatory behaviors in children who have autism and intervention methods you may have used. The survey will take approximately 10 minutes to complete.

There are no risks to participating in this study. If at any time you decide you do not want to answer a question, you can skip the question.

There are no direct benefits to the participants. However, an indirect benefit for participants in this study may be the opportunity to reflect on one’s own practice and possibly learn more about specific topics discussed in the survey, such as self-stimulatory behaviors, intervention methods for self-stimulatory behaviors, and neurodiversity. Further indirect benefits for participation in this study include contributions to research in this field of study and increased understanding of SLP and ABA therapist knowledge and perceptions of self-stimulatory behaviors in children who have autism and how these behaviors are addressed in therapy.

At the end of the survey, participants who completed the survey will be given an opportunity to enter a drawing to win a $25 Amazon gift card. A winner will be chosen at random using an online number randomizer. All participants who take this survey will remain anonymous. Any information provided during the survey will be kept confidential.

There is no cost to you beyond the time and effort required to complete the survey.

You may refuse to participate in the study. If you decide to participate, you may change your mind about being in the study and withdraw at any point during the survey.

If you have any questions, you can contact me by email at akufleitner19@wooster.edu. You may also contact my advisor, Joan Furey, by email at JFurey@wooster.edu.

By clicking the box below, you agree that you have decided to volunteer as a research subject, that you have read and understand the information provided above, and that you are at least 18 years of age.

☐ I agree (1)
APPENDIX B (Continued)

For the purposes of this study, self-stimulatory behaviors include both verbal (e.g., echolalia and other vocal repetitive behaviors) and motor (e.g., behaviors that suggest gesturing, such as pointing or clapping, hand flapping, head weaving, etc.) behaviors that are utilized frequently or repetitively by the client.

End of Block: Block 1

Start of Block: Default Question Block

Q1 What is your gender?

- Male (1)
- Female (2)
- Other (3)
- Prefer not to say (4)

Q2 What is your profession?

- Speech-language pathologist (1)
- Applied Behavior Analysis (ABA) Therapist (2)
- Other (3)

Skip To: End of Survey If What is your profession? = Other

Q3 How many years have you worked in your field?

- Currently in Graduate School (1) ...
- 21+ (22)
APPENDIX B (Continued)

Q4 In what type of setting(s) do you currently work? (Check all that apply)

☐ Public School (1)

☐ Private School (2)

☐ Private Practice (3)

☐ Hospital (4)

☐ Other (please specify) (5) ________________________________________________

Q5 Please choose the statement that best describes your experience working with children who have autism in therapy

☐ I am currently working with a child (or children) who has autism (1)

☐ I am not currently working with a child (or children) who has autism, but I have previous experience working with this population (2)

☐ I am not currently working with a child (or children) who has autism and I do not have previous experience with this population (3)

Skip To: End of Survey If Please choose the statement that best describes your experience working with children who have autism in therapy
APPENDIX B (Continued)

Q6 Have you had an experience addressing self-stimulatory behaviors in children who have autism in therapy?

- Yes (1)
- No (2)

Q7 How knowledgeable do you feel you are about language development in children who have autism?

- Extremely knowledgeable (1)
- Very knowledgeable (2)
- Moderately knowledgeable (3)
- Slightly knowledgeable (4)
- Not knowledgeable at all (5)
APPENDIX B (Continued)

Q8 How knowledgeable do you feel you are about ABA therapy techniques?

- Extremely knowledgeable (1)
- Very knowledgeable (2)
- Moderately knowledgeable (3)
- Slightly knowledgeable (4)
- Not knowledgeable at all (5)

Q9 Do you believe that self-stimulatory behaviors can serve a purpose?

- Definitely yes (1)
- Probably yes (2)
- Might or might not (3)
- Probably not (4)
- Definitely not (5)

Q10 Describe a situation in which a client utilized their self-stimulatory behavior to serve a purpose.

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
APPENDIX B (Continued)

Q11 Do you believe verbal (e.g., echolalia) self-stimulatory behaviors are communicative?

- Definitely yes (1)
- Probably yes (2)
- Might or might not (3)
- Probably not (4)
- Definitely not (5)

Q12 Do you respond to verbal self-stimulatory behaviors as if they are communicative?

- Definitely yes (1)
- Probably yes (2)
- Might or might not (3)
- Probably not (4)
- Definitely not (5)
Q13 Do you believe motor (e.g., gestural movements, hand flapping, head weaving, etc.) self-stimulatory behaviors are communicative?

- Definitely yes (1)
- Probably yes (2)
- Might or might not (3)
- Probably not (4)
- Definitely not (5)

Q14 Do you respond to motor self-stimulatory behaviors as if they are communicative?

- Definitely yes (11)
- Probably yes (12)
- Might or might not (13)
- Probably not (14)
- Definitely not (15)
APPENDIX B (Continued)

Q15 Do you believe that self-stimulatory behaviors affect your client(s)' ability to communicate?

- Definitely yes (1)
- Probably yes (2)
- Might or might not (3)
- Probably not (4)
- Definitely not (5)

Skip To: Q16 If Do you believe that self-stimulatory behaviors affect your client(s)' ability to communicate? = Definitely yes

Skip To: Q16 If Do you believe that self-stimulatory behaviors affect your client(s)' ability to communicate? = Probably yes
### APPENDIX B (Continued)

Q16 How frequently do self-stimulatory behaviors affect your client(s) in the following ways:

<table>
<thead>
<tr>
<th></th>
<th>Always (1)</th>
<th>Most of the time (2)</th>
<th>About half the time (3)</th>
<th>Sometimes (4)</th>
<th>Never (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce speech (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase speech (2)</td>
<td></td>
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</tr>
<tr>
<td>Interfere with social interactions with peers (3)</td>
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</tr>
<tr>
<td>Interfere with social interactions with adults (4)</td>
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<td></td>
</tr>
<tr>
<td>Increase language development (5)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Decrease language development (7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (please specify) (6)</td>
<td></td>
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</tbody>
</table>

Page Break
Q17 How frequently do you use the following intervention approaches to address self-stimulatory behaviors in therapy?

<table>
<thead>
<tr>
<th>Always (1)</th>
<th>Most of the time (2)</th>
<th>About half the time (3)</th>
<th>Sometimes (4)</th>
<th>Never (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discrete Trial Training (1)</strong></td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td><strong>Exercise/Movement-based interventions (2)</strong></td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td><strong>Sensory integration (3)</strong></td>
<td>〇</td>
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<tr>
<td><strong>Replacing behaviors (4)</strong></td>
<td>〇</td>
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<td>〇</td>
<td>〇</td>
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<tr>
<td><strong>ABA techniques (5)</strong></td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td><strong>Other (please specify) (6)</strong></td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
</tbody>
</table>
APPENDIX B (Continued)

Q18
Please indicate your level of agreement with each of the following statements:

<table>
<thead>
<tr>
<th>Strongly agree (8)</th>
<th>Somewhat agree (9)</th>
<th>Neither agree nor disagree (10)</th>
<th>Somewhat disagree (11)</th>
<th>Strongly disagree (12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe it is part of my role to extinguish self-stimulatory behaviors in therapy (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I believe it is part of my role to replace self-stimulatory behaviors in therapy (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I believe it is part of my role to shape self-stimulatory behaviors into functional communication (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
APPENDIX B (Continued)

Q19 Based on your experiences, have clients who gained functional communication had a reduction in self-stimulatory behaviors?

- Definitely yes (1)
- Probably yes (2)
- Might or might not (3)
- Probably not (4)
- Definitely not (5)

Q20 How often do you pursue functional communication skills when working with clients with self-stimulatory behaviors?

- Always (1)
- Most of the time (2)
- About half the time (3)
- Sometimes (4)
- Never (5)
APPENDIX B (Continued)

Q21 When a client has verbal self-stimulatory behaviors, how likely are you to attempt to shape these behaviors into functional communication?

- Extremely likely (20)
- Slightly likely (21)
- Neither likely nor unlikely (22)
- Slightly unlikely (23)
- Extremely unlikely (24)

Q22 When a client has motor self-stimulatory behaviors, how likely are you to attempt to shape these behaviors into functional communication?

- Extremely likely (20)
- Slightly likely (21)
- Neither likely nor unlikely (22)
- Slightly unlikely (23)
- Extremely unlikely (24)
APPENDIX B (Continued)

Q23 Do you believe self-stimulatory behaviors should be extinguished (i.e., completely eliminated) from the client's behaviors during therapy?

- Definitely yes (1)
- Probably yes (2)
- Might or might not (3)
- Probably not (4)
- Definitely not (5)

Q24 Describe an experience where extinguishing self-stimulatory behaviors has produced a desired outcome.

________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

Skip To: Q24 If Do you believe self-stimulatory behaviors should be extinguished (i.e., completely eliminated) fr... = Definitely yes

Skip To: Q24 If Do you believe self-stimulatory behaviors should be extinguished (i.e., completely eliminated) fr... = Probably yes
APPENDIX B (Continued)

Q25 Do you believe self-stimulatory behaviors should be replaced (i.e., substituted with more appropriate behaviors) during therapy?

- Definitely yes (1)
- Probably yes (2)
- Might or might not (3)
- Probably not (4)
- Definitely not (5)

Skip To: Q26 If Do you believe self-stimulatory behaviors should be replaced (i.e., substituted with more appropr... = Definitely yes
Skip To: Q26 If Do you believe self-stimulatory behaviors should be replaced (i.e., substituted with more appropr... = Probably yes

Q26 Describe an experience in which you were able to replace a behavior to produce a desired outcome.

________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

Skip To: Q26 If Do you believe self-stimulatory behaviors should be replaced (i.e., substituted with more appropr... = Definitely yes
Skip To: Q26 If Do you believe self-stimulatory behaviors should be replaced (i.e., substituted with more appropr... = Probably yes
Q27 Please indicate the extent to which each of these factors may affect the intervention technique(s) you choose to address self-stimulatory behaviors in therapy

<table>
<thead>
<tr>
<th>Factor</th>
<th>Definitely will (1)</th>
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<th>Might or might not (3)</th>
<th>Probably will not (4)</th>
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<tr>
<td>Parent religious background (3)</td>
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Q28 Please indicate the extent to which each of these factors may influence you to extinguish self-stimulatory behaviors in therapy

<table>
<thead>
<tr>
<th>Factor</th>
<th>A great deal (1)</th>
<th>A lot (2)</th>
<th>A moderate amount (3)</th>
<th>A little (4)</th>
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</tr>
<tr>
<td>The behavior is distracting to others (6)</td>
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<td></td>
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</tbody>
</table>
The behavior is not typical (7)
APPENDIX B (Continued)

Q29 Please indicate the extent to which each of these factors may influence you to replace self-stimulatory behaviors in therapy

<table>
<thead>
<tr>
<th></th>
<th>A great deal (1)</th>
<th>A lot (2)</th>
<th>A moderate amount (3)</th>
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<td>The behavior is not typical (7)</td>
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APPENDIX B (Continued)

Q30 Rate your agreement with each of the following statements:

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<th>Statement</th>
<th>Strongly agree (8)</th>
<th>Somewhat agree (9)</th>
<th>Neither agree nor disagree (10)</th>
<th>Somewhat disagree (11)</th>
<th>Strongly disagree (12)</th>
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<td>I believe self-stimulatory behaviors can prevent learning (1)</td>
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<tr>
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<tr>
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<td>I believe behaviors that are not typical should be replaced with more typical behaviors (9)</td>
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<td>○</td>
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</tbody>
</table>
APPENDIX B (Continued)

Q31 How familiar are you with the neurodiversity movement?

- Extremely familiar (1)
- Very familiar (2)
- Moderately familiar (3)
- Slightly familiar (4)
- Not familiar at all (5)
Q32 How did you become familiar with neurodiversity?

☐ Client experience (1)

☐ Parent experience (2)

☐ Professional publication (ex: ASHA, ABAI) (3)

☐ Journal article (4)

☐ Popular press (e.g., New York Times, Washington Post, etc.) (7)

☐ Social media (5)

☐ Other (please specify) (6) ________________________________________________
APPENDIX B (Continued)

Q33 If there is anything you feel this survey did not address and would like to leave feedback for the creator or you would like to provide further context for any of your answers above, please feel free to use this text box.

Thank you for taking part in my survey!

________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

Q34 Would you like to enter a drawing for the chance to win a $25 Amazon gift card?

☐ Yes (1)

☐ No (2)

End of Block: Default Question Block
APPENDIX C
Open-Ended Responses to Question 10

- I had a client that would sing/hum. When he was upset, he would sing/hum on his own.
- Escape
- I had a patient who used side gaze (looking out of the corners of his eyes) to engage with people because they had difficulty with eye contact.
- I had a boy who engaged in rocking and flapping who would seem to calm after a period of time
- I've witnessed many instances where self stim behavior was a coping method during stressful or novel situations. For example, client asked to do harder math homework, client began hand flapping and jaw thrusting
- Self-stimulatory behaviors function only to give the person some form of internal sensation that is pleasing or to remove an internal sensation that is displeasing (e.g. pain). For example, a child might rock back and forth because it is enjoyable for them while another child might rub their knee to soothe the pain after accidentally banging it off the corner of a table. In both cases, these children do not engage in either behaviour to obtain any attention, any tangible items or to escape any demands placed on them.
- Self stimulatory behavior can serve to regulate a learner, or assist in escape or avoidance of a task demand.
- A student introduced echolalia into a play schema. While the recalled echolalia was not 100% appropriate it allowed the student to engage with the same materials as peers and gave adults a chance to shape his behavior into a functional play scheme.
- As a self calming technique
- Visually stimming (looking out of corner of eye while walking back and forth) on number line in classroom helped student learn higher Numbers
- Remove “self” from stressful situation.
- When a task was difficult for a child, the child began rocking. That signaled "This is hard."
- Increased verbal echo on day with increased social desire; Increased self-stim (hand rubs) specifically when presented with an undesired task within ability to complete.
- Self stimulatory behaviors can be used as a calming technique that a child is able to control himself.
- I have had several experiences where a child uses self-stim to soothe and calm themselves down in a stressful situation. If a child puts forth effort in a task and I feel that they have earned a reward, I am open to allowing them to have a few moments of self-stim.
- Student engaged in self-stimulatory behavior to calm and regulate self to then participate in classroom/therapy activities.
APPENDIX C (Continued)

- Spinning on a chair for self-regulation after a busy school day
- A client of mine frequently self-stims by vocalizing in a high pitch and clapping his hands together hard. He does this when he becomes overwhelmed as a way to self-sooth (i.e., to get deep pressure from the clapping and intense vibrations in his throat) I have done informal ABC evaluations of this.
- Non-verbal child, very new to Tx environment (well, ANY environment outside the home) who uses stimming to self-calm when he becomes overwhelmed by the level of interaction he is being asked to participate in
- Any behavior communicates about needs and emotions— it just takes an alert partner to read the meaning. When students use hand flapping, for example, they are often telling me that the task is too hard and I need to adjust my level of stimulation toward them, give a break, or allow this as self-organizing/calming behavior.
- Rocking and hand flapping may help to calm people with ASD.
- To complete a functional task utilizing their self-stimulatory behaviors, to complete a routine, or sometimes we shape it to be more functional.
- To express extreme joy. To help calm themselves. Each client is different and their self-stim bx serves different purposes. I allow self-stim (both verbal and physical) as long as it doesn’t not interfere with a current target (i.e., if we’re trying to work on riding a bike and the client is flapping I’d try to decrease the hand flapping bx so they can functionally grab the handle bars and excel at the target) same for a verbal stim. I’ve had a client who simply make repetitive sound almost to self-sooth while alone, so I don’t think all verbal stims are communicative while they do serve a function— each child is so different it’s hard to make blanket statements about why a child engages in a bx.
- Some of my kids need a break from more structured therapy. Stimming seems to help them get their sensory needs met so they can settle back in.
- Self-stimulatory behaviors help to calm (ex. rocking/flapping, spinning, etc.). I allow clients to utilize self-stimulatory behaviors between trials if it helps them maintain focus/control.
- This child would “script” from her favorite TV show. Later her scripting was somehow related to the task we were doing (same animal, used same phrase, etc). I started helping her modify the script (modeled) so the script was even more appropriate to the task.
- All self-stimulatory behaviors serve a purpose by helping the individual regulate themselves. It has a calming effect.
- Flapping hands/arms when sensory overload to calm self.
- hand flapping for proprioceptive input
APPENDIX C (Continued)

• I have a client who uses self stim to regulate excitement and frustration by SIB hand biting.
• Self-stimulatory behaviors may serve the purpose of helping a child decompress or regulate.
• To calm down when in a loud and visually distracting place
• Echolalia is useful for facilitating verbal imitation.
• delayed echolalia that related to internal feelings. (quoted a scene where a cartoon character was in distress about going to the dentist. Client was stressed because he didn’t know how to complete task he was asked to do.)
• Self soothing when upset
• It frequently serves as automatic reinforcement- if clients are bored they engage in self stimulatory behavior to entertain themselves. It can also serve as escape- I worked with a client who started flapping their hands in front of their face when they no longer wished to work on the task at hand. It can also serve to gain attention. I had a child that played with their saliva frequently and one of the primary functions was to gain adult attention.
• Rocking for calming, stereotypies to move through nonpreferred routine.
• Rocking to self-regulate, delayed echolalia for communication
• Using echoed speech or gestalt with intent and communication appropriate to the situation, for example expressing that they are sad by repeating a movie character’s quote about crying or being sad. Flapping and other body movements seem to release tension or reduce anxiety just as neurotypical people might bite their lip, chew their finger nails etc.
• Using echolalia to communicate a need. Using self-stimulatory behaviors when stressed as a way to calm himself down. You need to analyze the triggers/antecedents of these behaviors to truly understand the function of the behavior.
• Hand flapping to calm and organize one’s body.
• During times in which they are experiencing something new.
• Child needed to arm flap and stand for movement.
• Regulate during heightened states of emotion (excitement when playing)
• Often, for self-regulation/calming
• I have observed students use self-stimulatory behaviors (rocking, flapping, vocalizing, etc.) to soothe or calm in stressful situations. For example, a student was flapping his hands and rocking in the cafeteria during a loud assembly.
• Shaping the self-stimulatory behaviors into functional communication
• Kid started scripting when lights were turned on in the room. Got him headphones and he stopped scripting. Scripting was about shapes, so scripting content didn’t give much of a clue, but it was still communicative. His scripting was a sign that an environmental change had happened and was kind of overwhelming.
APPENDIX C (Continued)

- For purposes of self-soothing when in pain, a student hit his jaw repeatedly when molars were growing in. Another situation, a student would tap their AAC device in a repetitive order for the purpose of self-soothing.
- Used to give a student time and space to process language or work through stressful demands.
- The behaviors start as a self calming, self soothing, and then evolve into self stim
- For self-calming
- Right now I have a Kindergarten aged autistic student who repeats his daily schedule over and over and wants to check the posted schedule repeatedly, to the extent that at the beginning of the school year it was difficult for him to participate in any activity for more than a 30 seconds. The purpose for him is to help himself regulate his emotions by knowing what's coming up and how much of the day is left before he gets to go home, and by seeing the proof that he'll be going home at the end of the day. As he has gotten more used to school and the routine, his ability to attend to other things has been increasing and his need for checking and repeating his schedule has been diminishing.
- I have seen children who script (movie lines, songs, or things they've heard other people say) as a way to communicate their current thoughts or emotions. For example, a child was anxious about putting a band-aid on a cut, and was heard singing "Do not be afraid" to herself.
- I have a child that hums when the classroom volume is louder than normal.
- My client used a self-stimulatory behavior where he put two fingers together and "flicked" one nail with the other. He used this behavior when he was asked to attend to an activity where he had to identify objects from a choice of two. I believe this behavior allowed him to participate/attend to the activity longer than if he had not performed this "stim".
- using echolalia to initiate an interaction
- Students use echolalia to communicate how they feel--lines from a movie used in a context to show how they feel that is similar to how the character in the movie was feeling when he/she said the line.
- flapping to self regulate in the classroom
- Most of my students use self stimulating behaviors to help with regulation.
- Some students will work hard in speech sessions, and then start stimming because they need a break...and some because they are getting excited (happy) because I'm using something very motivating (pokemon). I guess students also can use it for escape/avoidance, if they're overwhelmed by the speech session or the noise in an assembly...to escape/avoid by retreating into their own head, not to elope. And sometimes stimming behaviors just feel good - like when my students are on a break and flap or wiggle a string.
- self soothing; orientation and self regulation; communication function like excited flapping
APPENDIX D

“Other” Responses to Question 16

- Show poor knowledge
- Help them to regulate
- They interfere when the communication partner gives up because they find the stimming odd or overwhelming. I believe that most stimming is communicative just like most behavior is communicative. There is usually a reason for the increase and you need to look at the situation to understand the child's reaction
- Reflect sensory processing
- It really depends on the child. Some of the motor movements are calming (sensory). Sometimes the motor movements are there because they have no play skills and that is how they interact in their environment. It really depends on the child how much the stim affects communication
- Interferes with activities
- This is hard to answer. If you try to ascertain the function of the stim, and then treat it as communicating that function and then addressing it, THEN you use that as an opportunity to teach a more functional form for that communication it can always increase language development. But the majority of the time, clients are not with people with those skills so the stims interfere with the social interaction.
- Driven by antecedents, cannot be generalized as increasing or decreasing interactions. Depends on type of self-stimulatory behaviors
- It depends on the individual’s other strengths and weaknesses.
- All of my responses above depend entirely on the client!
APPENDIX E

“Other” Responses to Question 17

- Relation based intervention
- Each of these kids is unique. I really can't make a blanket statement regarding how I deal with the behaviors. Sometimes i just take note of them and then analyze later what happened and how to change the intervention. I've got a lot of aggressive kids. Sometimes I need to relax about the stimming and instead of directly work on it, instead allow it so child can calm and modify my interaction to remove a bit of the demands. Very ZDP
- Responsive, interaction-based intervention
- I know sensory and movement are not EBP but some kiddos dig it just to pair and have fun activities during session
- Modeling
- ESDM approaches
- Mileu teaching
- Floortime
- Use echolalia to build conversation
- Work on language development as per the child's needs, and I believe that this addresses echolalia
APPENDIX F
Open-Ended Responses to Question 24

- I had a client who would hit a table when frustrated. We taught him to squeeze a soft object instead. It worked during my sessions, but not through all contexts.
- I don’t extinguish them unless they are interfering
- I don’t have one
- When they are self injurious
- I've not seen it ever successfully done in aba or speech.
- A child exhibited significant aerophagia that was ruled out as a medical problem and determined to be positive automatic reinforcement (e.g., self stimulatory). This behavior impacted on his ability to vocally/verbally communicate efficiently, engage in leisure activities, complete school work and diminished all opportunities for social engagement by others. A behavior plan was put in place for earning time in the 'heavy breathing' circle area. Baseline rate of this behavior was it occurred in 100% of all wake intervals (even when eating) - after a very intense treatment plan was put in place in clinic and at home (school was uncooperative with the plan), the rate of behavior diminished to less than 60 seconds per hour.
- I don't think behaviors can be completely extinguished but they can be shaped. Sometimes when you try to "extinguish" one, another one pops up. Had one student that preferred to spin pot lids in kitchen area. We facilitated play so that he alternated imitating functional play actions with his preferred spinning activity. We also removed lids from play area periodically. His play skills have grown however he typically has rigid approaches to new play schemas.
- Kept student calm and able to continue the session. Avoided escape.
- Limiting access to self stim material and discussions helped a student shift and maintain his attention to learn new tasks.
- The child's expressive language increased and he could tell his mother that a noise bothered him & he quit humming while waiting for therapy to begin.
- I can't do this, because I don't think I've ever completely extinguished a self-stimulatory behavior. I have been able to shape a repetitive hand-flap into functional communication by tapping the desired expression in an alternative format, and I have seen functional verbal expression increase as delayed echoing replaced immediate echoing (it's almost always possible to use delayed echoes functionally - look at those people you know who only speak in tv or movie quotes).
- If the behavior is so socially inappropriate that it interferes with peers, or makes others uncomfortable, extinguishing it can be necessary to improve peer relationships.
APPENDIX F (Continued)

- Extinguishing reaching down pants led to more socially appropriate presentation in a session.
- When a child uses it to self calm when the demands of Tx have become quite difficult for him. He uses the behavior to calm and is then able to return to the interaction successfully.
- When children learn to play with toys in a new way, rather than simply spinning, lining up, or enjoying the sensory experience, then they are more able to join peers in play activities and receive the language-rich experience of play.
- If a child has echolalia or scripted phrases, I use words already produced and shape the behaviors for more functional language.
- When self-stimulatory behaviors inhibit communication or interaction with others. By extinguishing the self-stimulatory behaviors verbal communication and social interactions increased.
- A client used to self harm stim before functional communication training was implemented, we almost fully reduced the SIB stim for the replacement bx of using a ‘I need a break’ card at school.
- With some clients we may attempt to reduce the amount or frequency by providing appropriate stimulus items or language to express how their feeling (hand flapping when excited might model "excited!" or "I like this!" or "yay!" etc.).
- Behaviors were not extinguished but by increasing play skills this child’s motor stims reduced drastically.
- Extinguishing echolalia while working on functional communication has produced more speech, although it is still scripted.
- This has mostly occurred with students who have mild stim behaviors. We've been able to work together to use words to express feelings, needs and desires - so I suppose we really replaced the behaviors.
- For children with socially unexpected self-stimulators behaviors like playing with their nasal mucous, extinguishing this behavior has made it more likely that others will want to interact with them.
- When they are self-injurious
- I do not work to extinguish them.
- A child who presented with immediate echolalia was modeled several language models to communicate his intent in structured play or book contexts. As child understood the function of these language models in expressing his intent, the expressive language started to be more flexible language and related to the communicative context.
- Increase duration and opportunity to communicate and interact during the day.
- Constantly pushing on toilet was reduced to sign which read pull handle down, count 1,2,3 and it worked.
I assume you don't mean "putting a behavior on extinction" when you say "extinguishing." If so, that would rarely if ever produce a desired outcome other than self-soothing. If you are referring to replacing the self-stimulatory behaviors: I had a client who was extremely sensory-seeking and would self-stim by squeezing every part of her body tightly by crossing her legs, putting her fingers in her ears, squeezing her arms tightly to her body so every possible part of her was getting stimulation. She would squeeze her private parts between her legs tightly and rub against the chair. Once she went there, no matter what I did, I could not get her to attend to anything else. When I was able to stop the behavior before it started happening by providing TOS of sensory stimulation and keeping the session moving really quickly, we were able to work on our language targets.

Focus on language tasks can increase when repetitive self-stimulatory behaviors decrease

Extinguishing non-meaningful vocalizations has lead to an increase in functional communication.

It doesn't. Why would you kick a person's legs out from under them like that? Just results in either the person figuring out other ways to meet their sensory needs (different stims), or shutting down out of distrust or overwhelm. Please show me your sparkle hands so I know you're happy or your head waving so I know you're thinking about something (or whatever your particular stims are).

Student chose to use AAC instead of the self-stim behaviors and communication increased.

Since I work in an elementary school setting, our team decides what we're going to target with a student and how we will do it. So interventions are coordinated and we all implement them. In the case of the student I described in an earlier question, the desired outcome is that he can reduce his anxiety, regulate his emotions and know how to express his anxiety/emotions in a more functional way. I also had a student who was very echolalic. She was seeking input on how to use language to communicate. We use the echolalia to build on her communication skills so she could say the things she wanted to say on her own, and that has indeed happened.

NA

n/a

One child I worked with flapped his hands and was very echolalic when he was younger (4 years of age). Now that the student is in high school, the had flapping has been extinguished completely. He is verbal and has good verbal skills at this time that are functional. He likes to jump on an exercise ball when he needs stimulation.

Can't think of a single one. Whenever we have tried to extinguish a behavior that is a stim, it gets worse, or upsets the child. It's better to shape or replace.
APPENDIX G

Open-Ended Responses to Question 26

- I had a student who would yell inappropriate words when frustrated. We taught him to use heavy work then shaped it so that he would request break to do heavy work when frustrated.
- A patient frequently touched their private area in public, so we gave them a fidget or while sitting, reminded them “hand on table”
- I had a little girl who would scratch her skin until it bled. When she worked with me she learned to “tickle” her skin instead which did not harm soft skin tissues
- None
- Replacing inappropriate touching of items that had various textures in all environments to touching only the scratchy part of velcro adhered to under the student's desk and work tables (the scratchy side was deemed high value for the student in preference assessments). In the home, the scratchy part of velcro was in various parts of the home on the backs of doors.
- A child slapped his mother repeatedly to gain her attention. We taught him to pat her once.
- A child used echolalia during a playtime with a phone. We introduced new comments that could be added to the "conversation". Fortunately, this child's imitation skills are strong and he generalized the play overtime. Other times when echolalia seems to be overwhelming to this student we redirect him to another activity (sometimes outside the room) and then revisit the task later.
- Banging body replaced with back pats or hugs. Used pecs to request
- By building language and through relationship building /work of the OT, child more regulated and saw a decrease in the self stim.
- See previous answer
- See previous box.
- Had a child who would hit when he became overwhelmed. Taught him to take a time out in a quiet room instead.
- Replaced leaning hard into an adult with verbal long requesting a squeeze for deep pressure.
- Echolalia is the most obvious example because I use it to expand language and shape it into functional communication so the child is using unique spontaneous utterances
- I have been able to shape echolalia into requests and questions
- I was able to shape scripting and echolalia into functional language. When a child has motor self-stimulatory behaviors, I also support them by providing language. If they hand flap due to excitement, you can provide language to support them like "I'm excited" or "this is really fun!"
APPENDIX G (Continued)

- Replaced a self-stimulatory behavior with a verbal word to express the same thing, or sometimes instead of hand flapping when excited replaced with giving a high-5 to another person.
- With my newest client he use to climb, kick, and pull therapist’s hair for attention. We (the RBT and myself) replaced that bx with a more appropriate shoulder/leg taps for the same attention.
- Shaping echolalia into functional speech
- Currently have a client who likes to hide toys in his diaper so instead we work on hiding toys in more appropriate ways (in buckets, under pillows, etc.).
- By increasing play skills — modeling what to do with a barn and animal — HOW to interact with them, this child no longer grabs a plastic animals while moving it back and forth between his fingers. He plays appropriately with the animals and barn opening the doors/ having the animals eat/etc.
- Increased work output and attention to task by giving a student a therapy ball to sit on while working. It greatly reduced hand flapping and jumping up and down.
- see previous example
- I’m reading this prompt to indicate replacing maladaptive behavior like hitting someone. In this instance, I have replaced hitting with gestures and/or verbalizations. If you’re asking about self-stimulatory behavior, I usually look for the perceive root/ask about the perceived root of the behavior-tactile, visual, kinesthetic, vocal, auditory, etc. and transition into something more socially acceptable (if need be). It really depends on what the behavior is though and how socially unexpected/undesirable it is and how useful/important it is to the client, family, etc.
- Please see previous example. Behavior replaced with rapid participation in therapy
- "Movie talk" can be shaped into self talk when a student can combine movie talk with syntax appropriate to the situation to produce a more appropriate comment.
- Hand flapping/clapping used during socially appropriate contexts such as song and gesture activities so that child can use them functionally. Echolalia replaced by functional communication as receptive and expressive language increased.
- Constant pulling at crotch area replaced with hand fidget.
- Used a time and place technique
- See previous box
- Replacing vocalizations with verbalizations and verbal approximations produced an increase in functional communication.
- A student likes to scratch people when they get near him. Now he receives a PECS icon and is given wait time to exchange the PECS for a high-preference item. This 'request' exchange is more rewarding for him at that moment than scratching a person.
APPENDIX G (Continued)

• In the previous answer I described a student who was echolalic and produced very little speech that wasn't echolalic. We used her echolalia to tell her what to say during the day, and over the course of 2.5 years, she was able to communicate verbally independently to express most of her needs and to do academic work. She also used lines from songs and shows to express herself early on. By figuring out what she was trying to communicate, we were able to help her say those things, taking advantage of the echolalia to "give" her the language that she was trying to express her needs and ideas.

• Helping children who script develop increased language to talk about more things on that topic.

• Using fidgets so that students were not destructive with my materials. Sitting on a cushion so that the students' sensory needs are better met and they jumped up less. Providing a student with a script card before snack, so that instead of stimming on the chip bag, the student could ask "open this please".
APPENDIX H
“Other” Responses to Question 32

- I’m not familiar
- co-workers
- Close friend is autistic
- family member
- Friends and acquaintances
- Book-Neurotribes
- books like Neurotribes and Far from the Tree. And professional development seminars/webinars
- Reading autistic adults’ writing
- interaction with colleagues who are neurodiverse and part of the movement; book and blog reading
APPENDIX I
Open-Ended Responses to Question 33

- So many answers would depend upon a functional behavior analysis and client variables, so I felt as if I was not answering as well as I could have with other options.
- In my opinion there is a big difference in how self stimulating behaviors are approached based on language level of child and age of the child. I see lots of children who are newly diagnosed. Often there are lots of self stim behaviors that extinguish a the child gains more understanding of how to interact with the world. This is different from a 13 year old that has vocal stim that can potentially be a replaced behavior.
- It is important to remember that all individuals are different. What impacts one’s communication may not impact another. Each child may have different reasons for their self stimulatory behaviors. It’s important for the clinician to determine this reason when deciding what to do about them.
- Some of the multiple choose options did not allow me to answer in the way that I typically would. For example, for the questions on the last page, I might have answer with “never/sometimes/always” instead of “agree/disagree.” Further, the area of self-stimulators behaviors is VERY broad, and for many questions it was hard to answer about self-stimulators behaviors in general, because there is such a huge range. For example, humming could be a stim, but so could hitting yourself in the head.
- In many cases, my response to an in-person interview would be “it depends “. I believe very much in individualized treatment programs that incorporate natural environments to the extent possible and are responsive to each child’s strengths and needs.
- So much of this depends on the client and the situation. In general, however, the client’s needs come first. Behaviors such as stimming which allow a client to limit their discomfort within a situation and may actually lead to improved learning should not be extinguished. As a speech pathologist I seek to help the patient communicate their thoughts and needs as best as possible, and my goal is for these needs to be expressed verbally as much as possible— so that the patient’s needs are best understood by others and social communication can occur. While I believe stimming and other behaviors are communicative in and of themselves, they are not readily understood by others. I may also seek to limit those behaviors which may become harmful to others. However, I will not prevent my student from the only communication they know (“extinguish the behavior”); I will seek to lead the student toward as much verbalization as they are able (“replace the behavior”) but not limit their nonverbal behaviors at the expense of their comfort or pleasure if verbal output is exceedingly uncomfortable and displeasurable. Therefore my goal will often be a mix of verbal and nonverbal behavior if the student is comfortable with such. Above all else should be my patient’s own needs.
- no, great job!
Thanks for the opportunity to reflect on my approach and beliefs on this topic. It was helpful.

I had a little difficulty distinguishing between extinguishing and replacing the behavior. You could never do one without the other.