

An Exploration of Interventions used by Occupational Therapists
for Children with Autism Spectrum Disorder

Nicholas Lee

Appalachian State University

Abstract

Among practices in the field of health care, there exists a common understanding of the importance of evidence-based practice. Evidence-based care, combining rigorous empirical research of a treatment with the desires and goals of the patient, focuses on the implementation of treatments that are proven to be effective and can apply to the best interests of all parties involved. These ideas pervade numerous healthcare fields, including the practice of occupational therapy. Unfortunately, although occupational therapy literature suggests that there are evidence-based treatments available for practitioners to utilize, it simultaneously depicts the popular use of interventions that are less substantial in their level of supporting evidence. One population served by occupational therapists that could be particularly affected by this contradiction is children diagnosed with autism spectrum disorder. In order to decipher what could be provoking occupational therapists to utilize treatments with lesser empirical support, the current study's researchers asked practicing occupational therapists about their common interventions as well as their thoughts on evidence-based practice. The results of these interviews provide further evidence that occupational therapists are indeed utilizing treatments with lesser evidential support, suggesting that the contradictions in occupational therapy literature also reflect in its practice.

Keywords: occupational therapy, autism spectrum disorder, children, evidence-based practice, intervention, sensory integration, applied behavior analysis

Permission is granted to Appalachian State University and the Department of Psychology to display and provide access to this thesis for appropriate academic and research purposes.

An Exploration of Interventions Used by Occupational Therapists for Children with Autism
Spectrum Disorder

The field of health care has, over time, come to acknowledge and promote the importance of evidence-based treatment, instilling value in empirical research and the findings that result from tested hypotheses. (Berwick, 2005). The scientific method itself is an illustration of the importance empiricism holds within numerous scientific practices, including medicine, and evidence-based practice is gradually solidifying itself as one of the hallmarks of quality medical care (Berwick). While empiricism has been fundamental to the many areas of health care practice, the impact has spread throughout other professions as well, from education (Torres, Farley, and Cook, 2012) to environmental science (Hess, Eidson, Tlumack, Raab, and Lubert, 2014) to social work (Wike, Bledsoe, Manuel, Despard, Johnson, Bellamy, and Killian-Farrell, 2014). There is no doubt that the emphasis on evidence and empiricism has found its way into the daily pursuits of much of our society. One of the relatively recent areas to be affected by the growing importance of evidence-based treatment is the field of occupational therapy.

The American Occupational Therapy Association [AOTA, aota.org] describes occupational therapy, often abbreviated as just “OT,” as a practice that helps people across the lifespan participate in the things they want and need to do “through the therapeutic use of everyday activities (occupations).” Occupational therapy is applied across many populations and many circumstances. Examples include working with disabilities to increase patient participation in academic and social situations, assisting people who have sustained an injury in recovering skills, and facilitating coping skill development for older adults dealing with cognitive and physical changes (AOTA). Compared to many other health professions, OT is

a relatively young field; it began only about 100 years ago (Bing, 1981). Could this have led to a relatively recent application of evidence-based practice to OT when compared to other health professions? On the other hand, is it possible that the idea of applying evidence-based practice to OT a contemporary concept in its own right (Gustafsson, Molineux, & Bennett, 2014)? In either case, one important question for a field with only a century of development behind it surfaces: is there enough evidence in occupational therapy to develop its own evidence-based practice?

Evidence-Based Practice in Occupational Therapy

Dirette, Rozich, and Viau (2009) conducted a review of the occupational therapy literature between the years of 1995 and 2005 to determine whether studies of OT techniques were experimentally sound. 788 articles met criterion for inclusion and Dirette et al. classified those articles across five levels of empiricism. What they found was somewhat discouraging. Only 1.8% were considered to be “Level I” or “Level II” studies, classified as having “strong evidence from one or more systematic reviews of multiple well-designed randomized control trials” or having “strong evidence from one properly designed randomized controlled trial of appropriate size,” respectively (p. 783). On the other hand, 67.4% of the studies conducted between 1995 and 2005 were considered as “Level V” research, or “opinions of respected authorities, based on clinical evidence, descriptive studies, or reports of expert committees” (p. 783). Levels III (having evidence from “well-designed trials without randomization, single group pre-post, cohort, time series, or matched case-controlled studies”) and IV (having evidence from “well-designed nonexperimental studies from more than one center or research group”) were 25.3% and 5.5% of the publications, respectively (pg. 783). In summarizing their findings, Dirette et al. suggested

that the experimental rigor of the OT research literature has actually been decreasing over time, considering that more than half of the articles in this eleven-year period contained research based on qualitative data as opposed to quantitative.

Despite this apparent decline of empiricism in the literature, AOTA provides multiple resources to assist practitioners in selection of evidence-based approaches. Resources include the Practice Guidelines series published on the AOTA website and the *American Journal of Occupational Therapy* (as cited in Arbesman, Lieberman, & Metzler, 2014). The practice guidelines cover a range of interventions and strategies appropriate across the lifespan and include tables summarizing the evidence base for any given strategy (Arbesman, Lieberman, & Metzler). This availability of seemingly legitimate and detailed information would suggest that, although evidence-based research has been in an apparent decline in recent years, valuable resources on the subject are still at occupational therapists' disposal.

What do these conflicting perspectives say for those who are actually engaged in the profession of OT—the occupational therapists themselves? Is the supposed decline of evidence-based research, despite access to the information, a reflection of the practitioners' values for empiricism, or does it merely represent the limitations in solid evidence for the still-growing field of occupational therapy? What might the actual practice of OT consist of—are evidence-based interventions used regularly in day-to-day practice? The answers to these questions will undoubtedly depend on factors including, but not limited to, the practitioner's pre-professional training, time spent in the field, history of research engagement, and personal preferences/opinions. Although these questions are applicable to many areas of practice within OT, in this review we focus only on studies examining the

practice of OT with children with a diagnosis of autism spectrum disorder (ASD)—the target of the present study.

Practicing Occupational Therapy with Children with a Diagnosis of Autism Spectrum Disorder

According to the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-V)*, the primary diagnostic criteria for autism spectrum disorder (ASD) include: (a) “persistent deficits in social communication and social interaction across multiple contexts;” (b) “restricted, repetitive patterns of behavior, interests, or activities;” (c) “symptoms [are] present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities, or many be masked by learned strategies in later life);” (d) “symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning;” and (e) “these disturbances are not better explained by intellectual disability or global developmental delay” (American Psychiatric Association, 2013). The behavioral deficits and excesses included in these criteria are common targets of occupational therapy interventions and are considered skills associated with activities of daily living (Scott, 2011). While some of OT interventions focus primarily on one of the aforementioned targets (e.g. using Social Stories to improve social interactions), others focus on multiple targets, such as Sensory Integration’s focus on sensory processing and functional deficits. This variance allows for occupational therapists to use their clinical judgment in utilizing the most appropriate intervention for each individual’s specific needs. The possible interventions in the realm of autism vary, however, in their relevance to OT specifically—a topic of interest to a particular study conducted by Case-Smith and Arbesman (2008).

In a recent review of the literature, Case-Smith and Arbesman (2008) identified 217 (out of 17, 440) articles involving interventions for autism spectrum disorder of varying “relevance” to OT (p. 418). All 217 articles were published between the years 1986 and 2007, were peer reviewed, and were found by searching a number of online databases for key terms including ‘autism’ and ‘occupational therapy,’ among others. Case-Smith and Arbesman also categorized studies as Level I, II, or III, IV, or V. Using this category system, the researchers narrowed the 217 articles down to 49, including only studies classified as Level I, II, or III. Level I studies included randomized controlled trials, systematic reviews, and meta-analyses with effect sizes, Level II consisted of nonrandomized clinical trials such as cohort studies, and Level III consisted of before-after, one group designs. Levels IV and V were excluded and therefore are not relevant to the current study. Based on the final 49 studies reviewed, six groupings of interventions were identified in the review, each varying in its relation to OT and frequency of use among occupational therapists. Although the researchers’ actual determination of ‘relevance’ to OT was not specified, Sensory Integration and Sensory-based Interventions were identified as having the most relevance to OT, followed by Relationship-based Interactive Interventions, then Developmental Skill-based Programs, then Social-cognitive Skill Training, then Parent-directed or Parent-mediated Approaches. At the end of the list was Intensive Behavioral Intervention, which was considered by the researchers to be of the least relevance to OT.

As the focus of sensory integration and sensory-based therapies is to help the individual self-modulate arousal from external stimuli and develop well-organized, adaptive responses to the environment, and a major focus of OT is aiding the individual to adapt to his or her surroundings, these interventions mesh rather well with the profession and are

apparently one of the most popular among occupational therapists (Case-Smith & Arbesman, 2008). In defining the amount of research evidence that supports each intervention, however, the researchers found that sensory integration approaches have “minimal research evidence” to support them (p. 427). On the other hand, intensive behavioral interventions—a technique generally used by behavioral therapists and not by occupational therapists—“have the strongest base of research evidence” (p. 423). The other intervention groupings fell somewhere between these two poles, but were not specifically ranked themselves.

Nevertheless, for the most efficacious treatment to be the one used the least by occupational therapists can be quite concerning. Having said this, the researchers claimed that occupational therapists still indeed use evidence-based treatments, including relationship-based interventions (e.g. structured play activities like block construction) and social-cognitive skill training (e.g. Social Stories)—both of which deemed effective by Case-Smith and Arbesman based on their level of efficacy (p. 420 and p. 422, respectively). Ultimately, these contradictory trends do not seem optimal for a health care field that places importance on evidence-based practice (American Occupational Therapy Association). What could explain these trends and why does it appear that occupational therapists insist on using treatments with less than optimal research to substantiate them?

Statement of the Problem

Prior research suggests that, although resources for practitioners interested in evidence-based practice abound, there may be insufficient research to support many commonly used occupational therapy interventions. What remains unclear is the extent to which familiarity with (and knowledge of) evidence-based approaches affects the actual daily practice of OT. As a first step in addressing this question, the researchers interviewed a

convenience sample of occupational therapists to assess their opinions on the definitions of evidence-based treatment and the importance of such evidence in their practice. Relative familiarity with a range of interventions identified by the Association for Science in Autism Treatment as being commonly used for individuals with ASD were also examined. In doing so, we sought connections among popular treatments in OT practice, practitioner's awareness of evidence—or lack thereof—in their interventions, and the overall efficacy of the tactics used. Perhaps by learning about the occupational therapists' perspectives, some light may be shed on whether or not the field of OT provides sufficient evidence for truly empirical treatments to exist *and*, if so, whether or not the occupational therapists actually choose to use them.

Methods

A retrospective design was utilized for this study. In this design, therapists were asked to reflect on previous experiences and methods used in their practice. Each therapist's beliefs and perceptions about evidence-based interventions and about their own methods used were elicited by asking them a list of roughly 20 interview questions focusing on their prior experiences in working with child/adolescent clients with a diagnosis of autism spectrum disorder.

Participants

A recruitment email was sent to eight occupational therapists. Therapists recruited for this study were selected based on convenience (either by location or prior interaction with the research team) and the population they served (working with children with ASD). Five therapists responded with interest in participating in the study while the remaining three did not respond. As a result, five occupational therapists consented voluntarily to an interview.

Upon conducting the five interviews, the researchers determined that data saturation had been met and agreed to conclude data collection. The therapists interviewed were not compensated for their participation.

Each therapist was asked a group of background questions regarding their history in the field. Time spent in the field ranged from five to fifteen years of experience. One therapist worked in Georgia, one worked in Kentucky, one worked in Pennsylvania, and two worked in North Carolina. Three of the therapists had worked predominantly in clinical settings while the other two worked primarily in school-based settings. Caseload among the therapists ranged from 12 to 50 children a week. Percentage of children diagnosed with autism on caseload ranged from approximately 33% to over 50%.

Data Collection

All study procedures were approved by the Appalachian State University Institutional Review Board. A semi-structured interview format—utilizing a predetermined set of questions while also asking ancillary questions when appropriate—was used as the primary method for data collection. This was done in order to obtain a fairly consistent set of results across interviews with potential for some unique responses and further explanations when needed. The list of interview questions was developed by the research team beforehand, was identical for all participants, and was presented similarly to each participant in order to minimize interviewer influence on responses.

Each interview consisted of approximately twenty questions, beginning with questions covering “background” information including their title, length of time employed in the field, and frequency of young autistic clientele. Upon gaining some background information, the researchers then asked about the participants’ own targets of practice when

working with children with autism, what common methods they used most frequently, and why. Next, each therapist viewed a list of 24 interventions compiled by the research team beforehand. The interventions varied in their level of supplementary research and supporting evidence, yet all were considered commonly used for autism-related disorders by the Association for Science in Autism Treatment (*asatonline.com*). For each intervention, the therapist indicated familiarity with the intervention, whether or not they used that intervention (and why or why not), and to what extent they believed the intervention was effective. Finally, each participant was asked to define evidence-based treatment, rate each intervention previously covered as evidence-based or not, and finally to describe the level of importance he or she places on supporting evidence in treatments used in their practice. Additional follow-up questions were also asked throughout to clarify respondent answers when needed. After the interviews ended, participants were debriefed and thanked for their participation.

The semi-structured interviews were conducted in a one-on-one format with one interviewer (the principal investigator) and one interviewee (the therapist). Each therapist was contacted and informed of the study's purpose via email beforehand. A one-hour meeting was scheduled, after which the researcher met with the therapist at a location of his or her choosing. The therapist was assured of confidentiality in all aspects of the discussion and was informed of the use of an audio recording device before the start of the interview. All data were collected between December 2014 and March 2015. All interviews took place at a time, date, and location of the interviewee's choosing. All participants gave informed, written consent prior to the interview. The interviews were recorded and transcribed verbatim, and upon full transcription, each audio recording was subsequently destroyed.

Data Analysis

Prior to coding interviews, the research team listened to two interviews to develop thematic categories, references between categories, and positive and negative examples within each category. The initial two interviews, and each interview transcript thereafter, was then analyzed for its content and coded based on eight themes. These eight themes can be found in *Table 1*. Two reviewers independently coded each interview and then met to collectively review the coded information. An iterative process was used to develop themes and code interviews such that, after each interview was coded, the research team met to determine whether or not any new themes had emerged. If so, these themes were added to the coding scheme. No additional themes emerged after three interviews had been coded.

Table 1

Semi-Structured Interview Themes

Number	Theme
1.	Occupational therapist's intervention targets and how they decide them
2.	Names of "Go-To" interventions
3.	Therapist's intervention descriptions
4.	Reasons for using a specific intervention
5.	Reasons for <i>not</i> using a specific intervention
6.	Therapist's definition of evidence-based treatment
7.	Support of evidence-based treatments and research
8.	Support of treatments regardless of supporting evidence

After all interviews were conducted, transcribed, coded, and reviewed, commonalities in the existence or absence of themes were noted. Using the eight themes presented (see Table 1), the researchers determined that three topics appeared to be of particular significance for all interviews: the methods by which intervention targets were decided, popular interventions utilized with the autism population (namely Applied Behavior Analysis and Sensory Integration), and the therapists' views on evidence-based research.

Results

The researchers used a content analysis approach to evaluate similarities and differences among all five interviews. Given the number of individual differences among the interviewees/therapists, consistent answers for all five were few in number. Therefore a great deal of importance was placed upon response consistencies, the first of which being the occupational therapists' methods for determining intervention targets.

Before the therapists were given the list of interviews to discuss, the researchers asked them what their common intervention targets for autism spectrum disorder were and how they determined these targets. In regards to the targets themselves, each therapist's answer differed slightly depending on their job setting (school vs. clinic) and personal experiences in the field. One consistency across all interviews, however, was a focus on sensory processing. One therapist described this as a "sensory diet," explaining it as a process of understanding how the child processes sensory information, determining what he or she needs to better adapt and respond to stimuli, and ultimately providing the tools for them to improve and succeed. Other targets, such as problem behaviors, social communication, and schedule formation, all varied from therapist to therapist. Despite this, the methods of determining these goals appeared relatively consistent. All five occupational therapists described an official assessment/evaluation and some type of clinical observation as components in forming their treatment plan. Every therapist also stated that the family's goals were important to the process and were discussed prior to the start of treatment. For each therapist's common targets to differ and their treatment plan formation process to appear so similar presents an interesting discrepancy worth further investigation. Ultimately, however, every therapist seemed to agree on one concept in particular: the process of

treatment in OT is very highly individualized. As one therapist said, “If you’ve met one person with autism, you’ve met one person with autism,” meaning that interacting with one individual diagnosed with ASD will be an experience unique from every other interaction with other individuals with ASD. What works for one child might not work for another; an apparent motif in OT practice.

Another salient theme within the interviews is the interventions themselves and which ones appeared to be the most popular among occupational therapists. As each therapist was given the same list from which to pick interventions that they were comfortable discussing, a pattern began to form for the more—and less—popular options. Of the 24 interventions compiled by the researchers, 16 were discussed to some extent, leaving eight interventions to be removed from data analysis altogether (as shown in *Table 2*). Interviewees were also asked to list any commonly used interventions that were not on the list, leading to eight additional interventions being presented and discussed. Overall, while many treatments were discussed by multiple therapists, only three were discussed by all five: Applied Behavior Analysis (ABA), Sensory Integration Therapy (SIT), and Picture Exchange Communication Systems (PECS). Four out of five therapists also mentioned Auditory Processing Training, Music Therapy, Sensory-Motor Therapies, Social Skills Groups, and Social Stories as familiar therapies while three out of five therapists discussed Auditory Integration Therapy, Alternative and Augmentative Communication, Floor Time, and Vision Therapy to some degree. All of the other interventions were mentioned by a minority of the interviewees. This information provides a fairly noticeable distinction between the most and least popular interventions listed, suggesting that ABA, SIT, and PECS are the most well known, if not the

Table 2

Interventions Discussed by the Occupational Therapist

Intervention	Interview				
	1-1	1-2	1-3	1-4	1-5
Applied Behavior Analysis (ABA)	X	X	X	X	X
Auditory Integration Therapy (AIT)	--	X	X	--	X
Auditory Processing Training	--	X	X	X	X
Alternative and Augmentative Communication (Aug Com)	--	X	X	X	--
Picture Exchange Communication Systems (PECS)	X	X	X	X	X
Attachment Therapy	--	--	--	--	--
Gentle Teaching	--	--	--	--	--
Denver Model/Early Start Denver Social Communication, Emotional Regulation, and Transactional Support (SCERTS)	--	--	--	--	--
Floor Time/ Greenspan Method	X	--	X	X	--
Early Intensive Behavioral Intervention (EIBI)	--	--	X	--	--
LEAP Model	--	--	--	--	--
Music Therapy	X	--	X	X	X
Patterning	--	--	--	--	--
Treatment and Education of Autistic and Related Communication-handicapped Children (TEACCH)	--	X	X	--	--
Psychoanalytic and Humanistic Play Therapy	--	--	--	--	--
Rapid Prompting Method	--	--	--	--	--
Sensory Integration Therapy	X	X	X	X	X
Sensory-Motor Therapies	--	X	X	X	X
Social Skills Groups	X	X	X	--	X
Social Stories	X	X	X	X	--
Video Modeling	--	--	X	X	--
Vision Therapy	X	X	X	--	--
Craniosacral Therapy	--	--	X	--	--
Interactive Metronome	X				
Alert Program	X				
Wilbarger Therapressure Protocol	X			X	
Astronaut Program	X				
Handwriting Without Tears	X				
Animal-Assisted Therapy	X				
Integrative Listening Systems Therapy (ILS)				X	
Debra Beckman OralMotor Protocol				X	

Note. An "X" indicates that the intervention listed was indeed discussed during that interview. A dash (--) indicates that the interview was not discussed at the request of the therapist. A blank space indicates that the intervention was not addressed nor discussed in that interview.

most used interventions in OT. However, when asked if the therapists used these interventions in their practice regularly, SIT was used by all five therapists to some degree, while only two or three of the therapists used components of ABA and PECS, respectively. Coincidentally, the two therapists who utilized some of ABA's ideas were the two who worked predominantly in the school system, leading to a possible influence of job setting on the utilization of this particular intervention. Sensory Integration Therapy, on the other hand, was ubiquitous across all settings.

The third theme of significance in this study became the therapists' opinions of evidence-based practice. This final component of the interview consisted of three main questions. First, the interviewer asked each therapist to define evidence-based practice. Here the therapists gave slightly different, yet overall consistent answers. In one definition, a therapist stated that evidence-based practice is "using peer-reviewed journals to help guide you in your practice. Whether [or not] it's a particular treatment that you're interested in, you want to go to a peer-reviewed journal to find out what did have statistically—how effective [it was]." Another therapist gave a similar answer, saying "evidence-based just mean[s] that in the literature there have been studies that have shown the specific treatment to be effective for a specific functional outcome." Given that the American Occupational Therapy Association (*aota.org*) defines evidence-based practice as an "integration of critically appraised research results with clinical expertise, and the client's preferences, beliefs and values," it would appear that the therapists have a decent grasp of this concept.

The interviewees were then asked how important the idea of evidence-based research was in his or her everyday practice. Here, a major discrepancy was found between the therapists' responses and the beliefs stated in professional occupational therapy sources (such

as AOTA). In this way the beliefs of each individual occupational therapist appeared to parallel the trends in recent OT literature. As every therapist shared their support of evidence-based research in the field, each one also noted their use of certain treatments without substantial research to support them. While one therapist claimed it was the “intuitive” and individualistic (“client-centered”) nature of the profession that allowed for this, another simply stated, “If it [the intervention] works, it works.” No matter the reason, each and every therapist explained the necessity for interventions on both sides of the evidence-based spectrum. This is not to say, however, that any therapist supported the use of pseudoscience or completely unfounded therapy techniques. All interventions used held evidential support to some degree.

In order to gauge the therapists’ perceptions on applications of evidence-based treatments, they were all asked to rate each previously discussed intervention on its level of supporting evidence. The rankings of these interventions are illustrated in *Table 3*. In general, no intervention was considered to be without any evidence basis at all; in other words, all of the interventions discussed were considered to have at least some “emerging evidence.” The intervention considered to be the most consistently evidence-based was ABA, while Music Therapy was the only intervention considered by all therapists who discussed it (three of the five) to hold only some supporting evidence. Sensory Integration Therapy received mixed scores, being considered significantly evidence-based by three of the therapists and being partly evidence-based by the other two. It would seem that these inconsistent findings for SIT match those of others who have tested its efficacy (Case-Smith & Arbesman, 2008).

Table 3

Interviewer Ratings of Interventions' Evidence Basis

Intervention	Interview				
	1-1	1-2	1-3	1-4	1-5
Applied Behavior Analysis (ABA)	2	2	2	2	2
Auditory Integration Therapy (AIT)	--	2	1	--	1
Auditory Processing Training	--	2	1	1	1
Alternative and Augmentative Communication (Aug Com)	--	2	1	2	--
Picture Exchange Communication Systems (PECS)	--	2	2	2	2
Floor Time/ Greenspan Method	2	--	1	2	--
Early Intensive Behavioral Intervention (EIBI)	--	--	1	--	--
Music Therapy	--	--	1	1	1
Treatment and Education of Autistic and Related Communication-handicapped Children (TEACCH)	--	2	2	--	--
Sensory Integration Therapy	2	2	1	1	2
Sensory-Motor Therapies	--	2	1	1	2
Social Skills Groups	--	2	1	--	1
Social Stories	--	2	1	2	--
Video Modeling	--	--	1	2	--
Vision Therapy	--	1	1	--	--
Craniosacral Therapy	--	--	1	--	--
Interactive Metronome	2				
Alert Program	1				
Wilbarger Therapressure Protocol	2			2	
Astronaut Program	1				
Handwriting Without Tears	2				
Animal-Assisted Therapy	1				
Integrative Listening Systems Therapy (ILS)				2	
Debra Beckman OralMotor Protocol				2	

Note. The system illustrated above was on a 0-2 scale, where a 0 indicated that the intervention was “Not evidence-based,” 1 indicated that the intervention had “Emerging evidence,” and 2 indicated that the intervention was “Evidence-based.” The ratings were given by the interviewees and based on each individual’s personal opinion on—and prior knowledge of—the interventions. A dash (--) indicates that the intervention was not given a rating because while it was presented, it was not discussed. A blank space indicates that no rating was given because the intervention was never presented in that interview.

Discussion

As this research topic was being decided nearly one year ago, we were becoming more and more intrigued by the variety of therapeutic techniques at occupational therapy's disposal. Particularly in regards to the autism spectrum disorder population, there appeared to be a great number of interventions with varying degrees of evidence to support them. One would assume, as we did, that the more efficacious the treatment, the higher its popularity of use in the field. We asked ourselves, "How else would it work? Would a health profession actually utilize something other than what is proven to be *most* effective? How would that affect the patient's experience and what would it say about the profession itself?" When we discovered that sensory integration and other sensory motor therapies abounded in OT despite the supporting evidence for these therapies being so inconsistent, we knew we had to see for ourselves if and why this was happening.

While this study was in no way a focus on SIT alone—in fact, we were just as interested in discovering individuals' opinions of other therapies with equally controversial use and substantiation—our findings appear to further support the notion that SIT is the most widely utilized intervention in OT when working with children diagnosed on the autism spectrum. When asked about this intervention and its use in their own practice, every therapist praised its effectiveness. These same therapists went on to describe their understanding of the importance of evidence-based practice for the "integrity of the profession," as one therapist explained it, yet all of them also confessed to using certain techniques with or without substantial evidence behind them. The techniques in question may have either been subject to research with inconclusive results or simply don't have enough research due to their relative novelty; either way, the result is an insignificant evidence basis.

As to explain these decisions, the therapists consistently described that interventions they use don't necessarily need significant evidence to support them if they themselves are seeing positive results in the field. One therapist explained,

“If [a therapy without substantial research] continues to work, then I need to be calling my peers at the university and say ‘Hey this is what I'm doing, you guys, and if you're not researching it yet, you need to start researching it because it's working.’ It's sort of this feedback loop of practice influencing research and research influencing practice so that we are constantly growing together.”

Perhaps the research for these treatments could benefit from the contribution of field data instead of the other way around and still lead to the same result: evidential support for an effective treatment. This logic becomes compromised, however, when considering that a treatment may seem effective in initial practice and lead to research that reveals its inability to hold up in randomized control trials.

According to the results of this study alone, the only other consistently present treatment in occupational therapists' radar is ABA. When directly compared to SIT, ABA and behavior interventions similar to it prove much more effective in multiple areas of autism treatment, namely problem behaviors and stress response (Devlin, Leader, & Healy, 2008; Devlin, Healy, Leader, and Hughes, 2010). It would only make sense that a system of treatment that focuses on behavior would show better results than for decreasing behavioral issues than a system that focuses more on sensory processing. However, the numbers of studies documenting and supporting applied behavior analysis's effectiveness in behavior management far surpass that of sensory integration in sensory processing. While studies with positive results have been published for SIT (Case-Smith, Weaver, Fristad, 2015; Preis &

McKenna, 2014), they cannot negate the large number of those that stress the ineffectiveness of its methods (Hodgetts, Magill-Evans, & Misiaszek, 2011; Sniezyk & Zane, 2015; Watling & Dietz, 2007). This alone suggests that we still have a long way before this discussion of sensory integration—as well as other similarly controversial therapies—can come to an end.

Of course, while we identify the gaps in the current OT literature, the limitations of the current study must also be mentioned. First and foremost, the sample size for this study is far too small to generalize our findings to the entire occupational therapy profession. The interviewees themselves were also recruited through convenience sampling, further limiting our external validity. While we attempted to provide the therapists with a comprehensive list of interventions of our own compilation, we did not include *all* possible interventions for the sake of time, thus limiting the potential responses and capturing only part of a much bigger picture. The small scale for rating evidence basis of interventions (0-2) was also somewhat limiting and could have been expanded to allow for a greater diversity in responses. We also acknowledge that the semi-structured nature of these interviews provides us with much more qualitative data that cannot be analyzed in the same vein as quantitative data, thus limiting our ability to draw statistical correlations. Future research in this area could recognize these limitations in the current study and correct them for more generalizable, quantifiable results.

The consistencies found in this series of interviews are certainly important to note and provide us with avenues worth exploring in the future. The occupational therapists' appeared to share similar methods for determining intervention goals, use many of the same interventions, have similar knowledge of other interventions, and provide strikingly similar opinions on the state of evidence-based practice. Based on these patterns of consistency, there are likely many opportunities to explore other potential patterns in this area of OT. If

we can develop a fuller construct of the collective thought that exists in the field of OT today, it will be a massive step in identifying where to move the conversation in an effort to promote positive growth and change. One possible way to achieve this is through the development of a survey that implements many of the same questions proposed in this study, while also making minor adjustments for relevance (e.g. removing some treatments that are neither of relevance to OT nor to evidence-based practice) and convenience (e.g. implementing Likert-type scales to allow for further statistical analysis). Utilizing a survey format that removes some of the open-ended qualities of the semi-structured interview would streamline the data collection process and allow researchers to reach a larger population. In this way, one would hope that the resulting responses would, in turn, increase and give this information more statistical weight.

One other possibility for expanding this research is to ask an entirely new set of questions that get to the heart of evidence-based practice in OT. Instead of asking *if* therapists are using treatments that are less evidence-based, as we have essentially already answered this question, we should now ask *why* therapists are using these treatments. This is a question that was only hinted at among the current set of interviews, however further research could ask questions that provide a direct explanation for the current study's findings. At this point in time, we can only postulate that the reasons for choosing one therapy over another are generated from at least four sources: (1) the occupational therapist's personal opinion and preference; (2) the therapist's educational experience and the influence of their graduate program, (3) the therapist's work environment; and (4) the nature of occupational therapy as a field. Each of these potential explanations touches upon a different scope of influence, ranging from one's own personal opinion to that of the entire profession. Depending on the

results of the research that would delve into these possibilities, the findings could be quite significant for occupational therapy and the role it plays in healthcare and evidence-based practice.

Once we can understand how occupational therapists utilize and react toward autism interventions—both evidence-based and otherwise—we will be that much closer to creating a professional environment that not only encourages evidence-based practice, but also readily engages in it. To get therapists thinking about the implications of research on the clinical experience of their patients and having these therapists personally contribute to the ever-expanding mass of research in this field is the ultimate goal of this research. This study can hopefully be a foundation for this end-goal. Next, we must look into expanding our participant sample, providing an even more comprehensive list of treatments from which to draw and discuss, and delving deeper into the idea of evidence and what research really means for OT as a health profession. The sooner we can expand our findings, the sooner we can provide the answers occupational therapy needs to become the empirical area of study it wants and needs to be.

References

American Occupational Therapy Association. (n.d.). *Evidence-based practice & research*.

Retrieved from

<http://www.aota.org/Practice/Researchers.aspx#sthash.HhdYLzSb.dpuf>

American Occupational Therapy Association. (n.d.). *What is occupational therapy?*

Retrieved from <http://www.aota.org/About-Occupational-Therapy.aspx>

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*. Washington, D.C: American Psychiatric Association.

Arbesman, M., Lieberman, D., & Metzler, C. A. (2014). Health policy perspectives—Using evidence to promote the distinct value of occupational therapy. *American Journal of Occupational Therapy, 68*, 381–385.

Association for Science in Autism Treatment (n.d.). *Learn more about specific treatments*.

Retrieved from <http://www.asatonline.org/for-parents/learn-more-about-specific-treatments/>

Berwick, D. M. (2005). Broadening the view of evidence-based medicine. *Quality Safety Health Care, 14*, 315-316.

Bing, R. K. (1981). Occupational therapy revisited: A paraphrastic journey. *American Journal of Occupational Therapy, 35*, 499-518.

Case-Smith, J. & Arbesman, M. (2008). Evidence-based review of interventions for autism used in or of relevance to occupational therapy. *American Journal of Occupational Therapy, 62*, 416-429.

- Case-Smith, J., Weaver, L. L., Fristad, M. A. (2015). A systematic review of sensory processing interventions for children with autism spectrum disorders. *Autism, 19*(2), 133-148.
- Devlin, S., Healy, O., Leader, G., & Hughes, B. M. (2010). Comparison of behavioral intervention and sensory-integration therapy in the treatment of challenging behavior. *Journal of Autism and Developmental Disorders, 41*, 1303-1320.
- Devlin, S., Leader, G., & Healy, O. (2008). Comparison of behavioral intervention and sensory-integration therapy in the treatment of self-injurious behavior. *Research in Autism Spectrum Disorders 3*, 223-231.
- Dirette, D., Rozich, A., & Viau, S. (2009). The issue is—Is there enough evidence for evidence-based practice in occupational therapy? *American Journal of Occupational Therapy, 63*, 782–786.
- Gustafsson, L., Matthew, M., & Sally, B. (2014). Contemporary occupational therapy practice: The challenges of being evidence based and philosophically congruent. *Australian Occupational Therapy Journal, 61*(2), 121-123.
- Hess, J. J., Edison, M., Tlumak, J. E., Raab, K. K., & Lubner, G. (2014). An evidence-based public health approach to climate change adaptation. *Environmental Health Perspectives, 122*(11), 1177-1186.
- Hodgetts, S., Magill-Evans, J., & Misiaszek, J. E. (2011). Weighted vests, stereotyped behaviors, and arousal in children with autism. *Journal of Autism and Developmental Disorders, 41*, 805-814.

- Preis, J. & McKenna, M. (2014). The effects of sensory integration therapy on verbal expression and engagement in children with autism. *International Journal of Therapy & Rehabilitation, 21*(10), 476-486.
- Scott, J. B. (2011). *Occupational therapy's role with autism*. Retrieved from <http://www.aota.org/-/media/Corporate/Files/AboutOT/Professionals/WhatIsOT/CY/Fact-Sheets/Autism%20fact%20sheet.ashx>.
- Snieszky, C. J. & Zane, T. L. (2015). Investigating the effects of sensory integration therapy in decreasing stereotypy. *Focus on Autism and Other Developmental Disabilities, 30*(1), 13-22.
- Torres, C., Farley, C. A., & Cook, B. G. (2012). A special educator's guide to successfully implementing evidence-based practices. *Teaching Exceptional Children, 47*(2), 85-93.
- Watling, R. L. & Dietz, J. (2007). Immediate effect of Ayres' sensory integration-based occupational therapy intervention on children with autism spectrum disorders. *American Journal of Occupational Therapy, 61*, 574-583.
- Wike, T. L., Bledsoe, S. E., Manuel, J. I., Despard, M., Johnson, L. V., Bellamy, J. L., & Killian-Farrell, C. (2014). Evidence-based practice in social work: Challenges and opportunities for clinicians and organizations. *Clinical Social Work Journal, 42*(2), 161-170.