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Information available to parents on the internet: A thematic analysis of web pages providing information about occupational therapy for children with autism

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### **Abstract**

**Methods:** An internet search using the Google search engine (www.google.com) was completed. Using the determined inclusion/exclusion criteria, the researcher vetted the first 100 returns on the Google search. One of the web pages presented a collection of links to content-specific web pages and/or PDFs that were accessible within the same website (micro-sites) which were vetted for inclusion, bringing the total of assessed web pages/PDFs to 118. The content of each web page/PDF meeting the inclusion criteria was individually analyzed to determine the topics discussed pertaining to Autism Spectrum Disorders (ASD) and occupational therapy services for children with ASD. The researcher and interrater negotiated agreement for 43 topics. Topics that appeared in the content of five or more websites were deemed *themes*.

**Results:** A total of 118 web pages/PDFs were analyzed according to the inclusion/exclusion criteria. Of the 118 web pages/PDFs analyzed, 16 met the inclusion criteria and were void of any exclusion criterion. After removing a duplicate web page from data analysis, 15 web pages/PDFs were included in the thematic analysis. Twenty two of the content topics were present in five or more web pages, qualifying as themes. Of the 22 themes found, 18 were related to occupational therapy and ASD, and four themes were ASD-specific information that was included in the web pages/PDFs.

**Conclusions:** The information in the web pages analyzed provided a well-rounded picture of ways that occupational therapy can assist children with ASD and their families. The information presents sensory integration as the main symptom that occupational therapists focus on. Intervention for sensory integrative dysfunctions is however delivered in ways that improve other areas of concern, such as socialization; the second focus of occupational therapy intervention as presented in the web pages.

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Children diagnosed with Autism Spectrum Disorders (ASD) receive referrals for occupational therapy services for a variety of reasons. Recently, it has become an increasing occurrence for legislation to specify that occupational therapy is a covered service for children with ASD. As occupational therapy continues to gain acknowledgement as a necessary service for children with ASD, referrals for occupational therapy will likely become more frequent. Parents may turn to the internet to research the relevance of occupational therapy services for the needs of their child with ASD.

With legislation adding occupational therapy to the recognized services for ASDs, it is important to analyze the information available regarding the gamut of services provided by occupational therapy relevant to ASD. Since the internet is a commonly used resource for medical information, analyzing the themes across relevant web pages will assist in obtaining an overview of what information is currently available regarding occupational therapy services for ASD. The purpose of this study was to determine what information regarding occupational therapy services for children with ASD is available to parents on the internet. This was done through the completion of a thematic analysis of web pages returned through an internet search engine.

### **Autism Spectrum Disorder**

The Center for Disease Control and Prevention (CDC) defines Autism Spectrum Disorders (ASD) as “A group of developmental disabilities that can cause significant social, communication and behavioral challenges” (CDC, 2012, paragraph 1). The diagnoses for ASD

are categorized as: Autistic Disorder, Asperger Syndrome, and Pervasive Developmental Disorder, Not Otherwise Specified. Symptoms of ASD affect socialization, communication, and language skill development. Behavioral concerns include repetitive actions, echolalia, and difficulty dealing with unexpected changes (CDC, 2012).

Currently 1 in 88 children are diagnosed with some form of Autism. ASDs are diagnosed more in males than in females (CDC, 2012). To date, the exact cause(s) of autism are unknown. Genetics appears to have a role in increasing the risk (CDC, 2012). With ASD affecting so many children, the need to protect certain rights of those diagnosed has been addressed through legislation to ensure access to education and treatment interventions.

### **Occupational Therapy**

Occupational therapy is one of the disciplines from which children with autism receive services. Under the Individuals with Disabilities Education Act (Department of Education, 2000), occupational therapy is one of the special education related services that can be designated to help a child achieve his/her Individual Education Program. Ohio has recently joined other states that provide legislation to ensure insurance coverage for occupational therapy services for children with ASDs (Autism Speaks, 2013).

Occupational therapists work with children diagnosed with ASD to improve functional skills and performance of occupations, including: activities of daily living, sensory integration, coping skills, behavioral skills, social skills, and motor skills. Tanta (2004) asserts that “peer interaction is a crucial area for occupational therapy to address. Social skills interventions are also necessary for occupational therapists to provide to encourage positive social interaction. Some of the ways occupational therapists provide intervention for social skills include activity-based social skills groups and social stories (Greene, 2004). Play and praxis are also relevant to

the services provided for children with an ASD. Motor planning is an important aspect of full engagement in play occupations (Trecker & Miller-Kuhaneck, 2004). Social skills, peer interaction, play, and motor and praxis skills are ultimately inter-related and interventions for one area will strengthen skills in the others.

Children diagnosed with ASD often have difficulties with processing sensory stimulation. Occupational therapists provide a variety of intervention strategies to improve sensory registration and regulation (Maillouox & Smith Roley, 2004). Sensory-based interventions that seek to decrease sensitivity to tactile, visual and auditory stimuli, include: sensory integration therapy, therapeutic touch, and listening systems (Case-Smith & Arbesman, 2008). Evidence is mixed for the effectiveness of these sensory-based treatments for long term outcomes for children with diagnosed with ASD (Baranek, 2002).

Case-Smith and Arbesman (2008) completed a review of evidence-based interventions for children with ASD. The articles were analyzed for themes of evidence-based treatment and further categorized by the relevance to occupational therapy practice. Only one of the six themes that emerged, *Intensive Behavioral Intervention* was not in the scope of occupational therapy services; however, occupational therapists can provide consultative services to behavioral therapists (Case-Smith & Arbesman, 2008,). The other themes found were: “sensory integrative, relationship-based, developmental-skill based, social cognitive training, and parent directed approaches” (Case-Smith & Arbesman, 2008, p. 423). Case-Smith and Arbesman (2008) address the lack of evidence regarding the effectiveness of occupational therapy for ASD, suggesting that more research is needed to improve the understanding of occupational therapy as services they relate to ASDs.

### **Legislation for Autism**

It has been a relatively short period in the United States history that people with intellectual and physical disabilities have had legal protection of equal rights established through the implementation of laws. It has only been in approximately the last 40 years laws have ensured rights in areas such as public education, accessibility to public places, and employment. The laws that have been enacted have made an impact on improving the quality of live and opening opportunities for individuals with disabilities. The diagnosis of an ASD is included in these laws. Recently, rights specific to ASDs have received the attention of policymakers. Ohio has joined other states in signing legislation that ensures insurance coverage of healthcare for individuals diagnosed with ASD.

At the end of 2012, Ohio became the 33rd state to sign legislation that ensures insurance coverage benefits for the diagnosis of autism and prohibits health insurance companies from excluding coverage of services for autism spectrum disorder diagnoses (Autism Speaks, 2013). The law that will go into effect in 2014 will ensure coverage of 20 visits each of occupational therapy and speech therapy per year, as well as 30 visits of behavioral/mental health services yearly. This law also ensures funding for 20 hours of Applied Behavioral Analysis (ABA) per week (Autism Speaks, 2013).

### **Internet Use for Seeking Medical Information**

The internet has become a readily available resource for seeking information. The Pew Internet and American Life Project conducts research pertaining to internet use among the U.S. population. As of the end of 2012, 81% of American adults report using the internet (PEW, 2012). Of those using the internet, 91% utilize search engines. Information from a 2010 study reveals 80% of American adults using the internet search for medical/health information (PEW, 2012).

Cohen and Adams (2012) present statistics from 2009 internet use. They report that 74% of Americans were using the internet at the time of the survey. Sixty-one percent reported using the internet to search for medical information (Cohen and Adams (2012). The study also found that women between the ages of 25-34 had the highest percentage of reported internet use for seeking medical information. (Cohen and Adams, 2012).

Another study found that using the internet to search for information on disease specific topics was the most common goal of health-related searches (Schwartz, Roe, Northrup, Meza, et al., 2006). Respondents in this study report trying to verify the legitimacy of internet health information by looking for an endorsement of professional organizations or the credentials of the authors. Ninety-eight percent of the study participants reported feeling that the medical information found online was trustworthy and accurate (Schwartz et al., 2006).

### **Internet Search Engines**

Internet search engines develop a list of web pages that match search criteria entered by the user. A search engine is defined as “computer software used to search data (as text or a database) for specified information; *also*: a site on the World Wide Web that uses such software to locate key words in other sites” (Merriam-Webster, 2013). The first search engine was used in 1984 (Merriam-Webster, 2013).

The Google Search Engine is the most used search engine, holding 66.7% of the market in December 2012 (Comscore, 2013). The other 33.3% of search engine use comes from a combination of 4 other major search engines. Google began from the ideas of two Stanford University graduates. It was officially incorporated in 1998 (Google Company, 2012). Google has continued to grow in popularity. It has expanded in use to include 180 internet domains, in 130 languages across the world (Google Company, 2012).

Google presents advertisements at the top, on the side, and at the bottom of search returns for financial profit. The placement of advertisements are based on what is called the Ad Rank, which is comprised of the company's bid and Rank Score (Google Company: AdWords Help, 2013). The advertisements are offered at a cost-per-click (CPC) fee to advertisers. Those appearing at the top of the page cost more than the advertisements placed elsewhere on the page (Google Company: AdWords Help, 2013). None of the advertisements were considered in this study.

## Methods

### Data collection

An internet search using the Google search engine ([www.google.com](http://www.google.com)) was completed using the Advanced Search options. The following parameters were set under the Advanced Search options: 1) *All these words*: "Autism" and "Children", 2) *This exact word or phrase*: "occupational therapy", 3) *Language*: English, 4) *Region*: United States, 5) *Last updated*: anytime, 6) *Terms appearing*: anywhere in page, 7) *Safesearch*: most relevant results, 8) *Reading level*: no reading level displayed, 9) *File type*: any format, and 10) *Usage rights*: not filtered by license. The first 100 results, after the Google Advertisements, were assessed to determine if they met the inclusion criteria for the study (see below). If the main content of a professional organization's web page was via a single link to other web pages within the same website, the content of those links was obtained and assessed for inclusion criteria.

All of the data was collected during the same search on the same day (January 12, 2013). The URL, date accessed, and the date that the web page was last updated/created were recorded in a spreadsheet. Each web page was analyzed for the inclusion/exclusion criteria. Once a web page was determined to meet an exclusion criterion the analysis for that web page ended. The

reason for exclusion was recorded in the spreadsheet. All of the content of the web pages meeting the inclusion criteria was copied and pasted into a word processing document. The name of the organization, the author (if available), the date accessed, the date published/updated, and the URL for each site was also recorded in the document for data analysis. Information outside the main content, such as advertisements, and pictures were removed.

### **Inclusion and Exclusion Criteria**

Inclusion criteria for this study are as follows: 1) The words occupational therapy, children, and autism must appear in the main content of the web page; 2) The web page must be written in English; 3) The website for the web page is developed and maintained by professional organizations within the United States; 4) The web page has professionally written content as evidenced by author credentials; and 5) The web page must be accessible to and targeted at the general public. Web pages were excluded if they met any of the following exclusion criteria: web pages written as blogs, research articles, news articles, classified advertisements, web pages about a treatment method specific, professional presentations, web pages advertising services at specific hospitals/clinics, web pages devoted to providing links to sources outside the website, web pages that were not available, web pages that had restricted access to the content, web pages that could not be determined as written by a professional source, and web pages exclusively citing other sources (second hand). To determine that a web page was written by a professional source, it was evaluated to either be written by a professional organization or the author's credentials must be available. Some websites allow individuals to become authors of web page content as "contributors". If the web page was not: a) written on a professional organization's website, or b) did not provide information regarding the author's credentials, it was excluded. A web page was considered second hand if it had several in-text citations or a reference list for the

information for 75% or more of the information. If a web page was dedicated to linking the reader to other web pages in the same organization, often referred to as a “micro-site”, links were assessed for inclusion/exclusion criteria. In the case of a duplicate web page, the information was analyzed only once in the thematic analysis portion of this study.

## **Data analysis**

### **Inclusion/Exclusion.**

The researcher set the inclusion/exclusion criteria for the web page determination. Using the determined inclusion/exclusion criteria, the researcher vetted the first 100 returns on the Google search. One of the web pages presented a collection of links to content-specific web pages and/or PDFs that were accessible within the same website with a single click (micro-sites) which were vetted for inclusion, bringing the total of assessed web pages/PDFs to 118. The researcher found that 16 of these web pages met the inclusion criteria.

An interrater independently included these 16 search results in vetting all 118 web pages/PDFs against the inclusion criteria. The interrater also excluded 94% of the web pages/PDFs excluded by the researcher. Of the web pages/PDFs that were excluded by the researcher but not the interrater, the interrater included one that the researcher did not have and expressed uncertainty about the others relating to the criteria for professional authorship and original content. The researcher and the interrater met to refine the use of the inclusion/exclusion criteria. The researcher provided further explanation of the authorship criteria. In the second round of assessing the 118 websites according to the refined criteria, the interrater demonstrated 100% agreement with the researcher.

### **Thematic Analysis.**

The content of each web page/PDF meeting the inclusion criteria was individually analyzed to determine the topics discussed pertaining to autism and occupational therapy services for children with autism. The researcher identified 40 unique topics. Web page/PDFs passages were copied and pasted into a word processing document under the appropriate topic heading.

While naïve to the researcher's content analysis, the interrater assessed the content of five randomly selected web pages/PDFs. The researcher provided the inter-rater with the instructions to look for common topics within the content of the web pages/PDFs analyzed. Next, the inter-rater was asked to indicate the topics present in the content of each of the web pages/PDFs analyzed along with an example of why the web page/PDF fits the theme. Within the five web pages/PDFs analyzed, the interrater identified 27 of same topics as the researcher and an additional three topics. The researcher and interrater discussed the content topics and negotiated agreement for 43 topics. See Appendix A.

Using the negotiated topic definitions, each independently reassessed the five web pages/PDFs assigned to the interrater. Thirty nine of the topics were identified by both the researcher and the interrater within these five web pages/PDFs with 100% agreement. The researcher subsequently re-assessed the content of the remaining ten unique included web pages/PDFs. All 43 topics were identified across the collection. Topics that appeared in the content of five or more websites were deemed *themes*.

## **Results**

A total of 118 web pages/PDFs were analyzed according to the inclusion/exclusion criteria. Of the 118 web pages/PDFs analyzed, 16 met the inclusion criteria and were void of any exclusion criterion. After removing a duplicate web page from data analysis, 15 web pages/PDFs

were included in the thematic analysis (See Table 1 and Appendix B). The web pages excluded were either met exclusion criteria or failed to meet all of the inclusion criteria. The search rank of the included web pages/PDFs included for the thematic analysis were: 2, 5, 13, 20, 29, 46, 50, 52, 66, 68, 73, and four micro-sites from 78.

Six of the 15 included web pages/PDFs were from the American Occupational Therapy Association. These were ranked 68 and 78 (microsites), the last in the included web pages/PDFs. Four of the included web pages were from ASD specific websites. Three were web pages/PDFs from general resource sites. One web page came from a state-run website, and the final web page was a hospital maintained web page. This web page did not promote services specific to the hospital that provided the information (See Table 2).

Twenty two of the content topics were present in five or more web pages, qualifying as themes. Of the 22 themes found, 18 were related to occupational therapy and Autism, and four themes were ASD-specific information that was included in the web pages/PDFs. The themes relevant to occupational therapy are presented as they pertain to the Occupational Therapy Practice and Framework, 2<sup>nd</sup> edition (OTPF) domain categories (The American Occupational Therapy Association, 2008). The themes found that are Autism-specific are presented together. Four themes emerged under Areas of Occupation category in OTPF. *Social participation* was addressed in 10 web pages/PDFs. *Play* was also specifically mentioned in 10 of the 15 web pages/PDFs analyzed. Writing for a website entitled *Everyday Health* (search rank 5) Vann (2010), provides a bullet-point list referring to the areas that occupational therapy can assist children with ADS. Web page 5 states occupational therapy can help children with areas including “Playing and socializing better.” (paragraph 3, 2010). Challenges in both areas are commonly affected by the presence of ASD. Activities of Daily Living (ADL) and Education

were each mentioned in seven of the web pages/PDFs. Toileting, dressing, and feeding were the most commonly mentioned ADLs. Handwriting was discussed as an area under education for which occupational therapists commonly provide interventions. See Figure 1.

Six themes were found pertaining to Client Factors and Performance Skills.

*Sensory Functions*, the most common among all of the themes found, was discussed in 11 web pages/PDFs. Difficulty with sensory modulation was commonly discussed among the web pages. On an AOTA web page (search rank 68), Opp Hofman (2009) states “Occupational therapy practitioners can address sensory issues and equip parents to manage their child’s behavior more successfully” (paragraph 3, 2009).

*Mental Functions*, particularly emotional functions, were included in seven of the web page/PDFs analyzed. *Neuromusculoskeletal and Movement-Related Functions*, including muscle tone and control of movement, were found in six of the 15 web pages/PDFs. *Communication Skills and Social Skills*, areas that are affected by definition of ASD, were addressed in 10 of the web pages as relevant to occupational therapy. *Motor and Praxis* was relevant on seven web pages/PDFs. The Southwest Autism Research and Resource Center website has a web page entitled *Treatments and Interventions* (search rank 46), which states that children with ASD often have “motor-planning problems affecting their ability to perform fine-motor tasks such as writing.” and “Occupational therapists are an essential part of the treatment team working on these deficits and primarily work on improving functional skills.” (Southwest Autism Research and Resource Center, paragraph 12, 2012). A theme emerged for *Cognitive Skills* on six web pages/PDFs. The American Occupation Therapy Association provides information to parents regarding how occupational therapists can assist children with ASD in common situations. The web page/PDF the focuses of preschool aged children provides the example that occupational

therapists can help children with ASD with self-care by “Teaching the child new ways of doing things or help link one step of the task to the next.” (Living with an Autism Spectrum Disorder: The preschool child, 2011, p.1, search rank 78). See Figure 2.

*Context and Environment*, focusing on cultural, physical, and social aspects, was a frequent topic. Nine web pages/PDFs referenced the role of occupational therapy with context and environmental needs of children with Autism. Typically information focused on the environmental factors that affect full participation in occupations and the role occupational has to reduce the barriers. One example came from a website maintained by the Maine Public Broadcast Broadcasting Network, written by Michaid (2011, search rank 29) who states that occupational therapists provide services that “Involve modification of the individual’s environment or some alteration of the desired functional activity.” (paragraph 4). Several aspects of the *Activity Demands* category, as established by OTPF, are discussed throughout eight of the web pages/PDFs. References to the demand of objects, space, and social interactions were the most frequently mentioned. Finally, the theme of *Performance Patterns* needs for children diagnosed with Autism Spectrum Disorders and the relationship to occupational therapy services was a topic on five web pages. See Figure 3.

Content related to the settings in which occupational therapy provides services was found on 10 web pages/PDFs. Including parents, caregivers, and teachers is an important aspect of occupational therapy services. This was represented with high frequency, appearing in nine of the 15 web pages/PDFs. For instance, Michaud, (2011) asserts “The dynamic collaboration between a therapist/assistant and caregivers (family or staff) often becomes the most essential element toward achieving desired outcomes.” (paragraph 5, 2011).

As mentioned earlier, laws referencing and protecting the right to occupational therapy services for individuals diagnosed with ASD are becoming more common. In this study, nine web pages/PDFs included information regarding laws that are relevant to occupational therapy and ASD. Laws regarding Individualized Education Program (IEP) and Section 504 are discussed most frequently.

The processes and approaches of intervention were included on six of the web pages/PDFs. This includes references to assessment, goal setting, and intervention strategies. The American Occupational Therapy Association (2011) States “The occupational therapy intervention process is based on the results of the evaluation and is individualized to include a variety of strategies and techniques that help clients maximize their ability to participate in daily activities” (Occupational Therapy’s Role with Autism, paragraph 4, 2011). The last theme found for occupational therapy and ASD was *Funding for Services*. Five web pages/PDFs discussed or mentioned how services are covered; this includes private insurance and public resources. See Figure 4.

The four most common themes found that related more specifically to ASD were *Client-Centered Treatment*, *Social Skills*, *Parent Education/Involvement*, and *Common Disciplines involved in Treatment*. *Client-Centered Treatment* was found in eight of the web pages/PDFs. *Social Skills* was common among six of the web pages/PDFs. Both *Parent Education/Involvement* and *Common Disciplines involved in Treatment* were present in five web pages/PDFs. See Figure 5.

### **Discussion**

On the whole, the information provided in the web pages/PDFs included for analysis in this study is accurate and helpful for parents of children diagnosed with ASD to gain an

understanding of how occupational therapy can provide services for their child. The relevance of occupational therapy services for Autism Spectrum Disorders is addressed in a way that aligns well with the OTPF (AOTA, 2008). Areas of occupation, performance skills, client factors, context and environment, and activity demands were represented frequently across the web pages/PDFs. *Performance Patterns* were discussed or mentioned in 5 web pages/PDFs, qualifying it as a *theme*. The most commonly referenced sub-categories for performance patterns were routines and habits.

The information specific to ASD in the web pages/PDFs also has relevance to the role of occupational therapy. *Client-Centered Treatment* is asserted in the web pages/PDFs in this thematic analysis. *Social Skills* are referred to as an area that children with ASD often require intervention services for. *Parent Involvement/Education* is a theme that appeared, both in relevance to occupational therapy and in general to all treatment for ASD.

There was no misinformation of occupational therapy services and how they relate to ASD treatment in any of the web pages/PDFs analyzed. The information is representative of the literature review of evidence-based practice interventions as presented by Case-Smith and Arbesman (2008). Sensory integration disorder, relationship-based skills, developmental-skills, and social cognitive training are all areas that are discussed and/or mentioned in the web pages/PDFs analyzed. The information in the web pages/PDFs is also consistent with the information presented in by Miller-Kuhaneck (2004) in a comprehensive text that provides a specific intervention recommendations for occupational therapy services for individuals with ASDs.

*Sensory Functions* was the most frequently occurring theme among the web pages, discussed or mentioned in 11 web pages. The role of occupational therapy for children with ASD

for the areas of *Play, Social Participation*, and performance skills of *Communication and Social Skills* were the next frequently occurring themes; with each being discussed in 10 web pages. These areas are specifically affected with a diagnosis of ASD. Occupational therapists are knowledgeable in assessing and implementing effective intervention strategies for all of these areas (Case-Smith & Arbesman, 2008).

Six of the 15 included web pages/PDFs were available through the American Occupational Therapy Association's website and were publically accessible. However, these results were also the last in rank of the 15 included results, with the highest ranking of the AOTA web pages being 65. Because the American Occupational Therapy Association is the national resource for information pertaining to occupational therapy services, the promotion of utilizing the AOTA website for the information that is available without restrictions can improve the accuracy of information that parents receive regarding occupational therapy and Autism. It should be noted that the PDF which was excluded from analysis as a duplicate ranked at 27. The higher ranked PDF was excluded because it was second hand information from the main microsite, AOTA.

The information in the web pages analyzed provided a well-rounded picture of ways that occupational therapy can assist children with ASD and their families. The information presents sensory processing disorder as the main symptom that occupational therapists focus on. Intervention for sensory processing disorder is, however, delivered in ways that may also address other areas of concern, such as socialization. Further, socialization was also presented a focus of occupational therapy intervention, emerging as the second most common theme.

The process of occupational therapy is well represented among the web pages/PDFs in this thematic analysis. The web pages/PDFs frequently had components addressing logistical

factors to assist parents seeking services for their child diagnosed with an ASD. Components regarding *Laws Pertaining to Services for ASD* and *Settings for Occupational Therapy Services* appeared recurrently. *Funding for Services* was discussed less frequently; however, it still represented a theme with five web pages/PDFs. This theme provides information for ASD regarding financial assistance for occupational therapy services, as well as other services. Information regarding the inclusion of parents and caregivers in treatment goals as well as the information pertaining to funding and laws encourages parents to actively participate and advocate for their child's needed services.

The information presented in the analyzed web pages/PDFs can help parents understand the rights for their children diagnosed with an ASD. Further, the information assists parents with how they can obtain assistance for services. Provision of examples of occupational therapy interventions assists parents with understanding how occupational therapy services are related to the care of children with ASD. The majority of the examples were from the American Occupational Therapy Association's web pages/PDFs that were the last in the included search result web pages/PDFs. Parents of children with ASD that have access to the internet and utilize the internet for medical information regarding the diagnosis of ASD can find information that summarizes the services offered by occupational therapy.

### **Limitations**

This study used advanced search options to ensure the information returned in the top 100 web page results had the terms "occupational therapy", "autism", and "children". A basic search may return different web pages in a different order. Using a search engine other than Google may change the results list. Further, the order that web pages/PDFs are listed may change from the date that the search was completed for this study.

Information available on each web page/PDFs can be different at a later date. Internet sources may update or change the information provided. The availability of the web page/PDFs may also change from the date of data collection. Two web pages/PDFs were excluded in the initial inclusion/exclusion analysis due to the web page not being available. One of these web pages was available at a later date.

Some web pages/PDFs that may be utilized by parents were not included in this study. For instance, webmd.com is a commonly used internet source for medical information. It was the first result returned during data collection. Webmd.com was excluded because the information was determined to be second-hand information. Blogs were also excluded from this study. Parents may look to blogs for support and information through other parents' experiences with autism.

### **Need for Future Research**

Research testing occupation-based interventions that are beneficial for treating ASD is needed to provide more support for occupational therapy services. There is research for several of the services which can be provided by occupational therapists; however, limited research is available regarding occupational therapists implementing the services (Case-Smith & Arbesman, 2008). Increasing the evidence-based regarding occupation-based services will help ensure that individuals with ASD are offered the most comprehensive services available. This may motivate coverage of occupational therapy services in legislation for ASDs.

Future research regarding information available on the internet for parents of children diagnosed with autism should also include readability and reliability of information presented. Further, research that aims to understand how parents of children diagnosed with ASD utilize the internet for information pertaining to the diagnosis is suggested. Research that focuses on

gaining information from parents of children diagnosed with autism regarding their knowledge of occupational therapy services would be beneficial for understanding the needs for future occupational therapy advocacy and education on the topic.

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Table 1

*Summary of inclusion/exclusion of web pages/PDFs*

<b>Category</b>	<b>Number of articles</b>
<b>Included</b>	<b>15</b>
<b>Excluded:</b>	<b>103</b>
Research article	22
Advertises specific services specific to a clinic/hospital	17
News article	11
Second hand source for information	11
Product sale focused	7
Treatment specific	7
Blogs	6
Restricted access	6
Source could not be determined as professionally written	6
Page not available	3
The word <i>Autism</i> was not in the text	3
Link specific for micro-site	2
Duplicate web page	1
The word <i>children</i> was not in the text	1
<b>Total</b>	<b>118</b>

Table 2

*Summary of included web pages/PDFs*

<b>Category</b>	<b>Number of Articles</b>
<b>Included:</b>	
Occupational therapy- specific web page	6
Autism Spectrum Disorders-specific web page	4
Resource web page	3
State maintained	1
Hospital maintained	1
<b>Total</b>	<b>15</b>

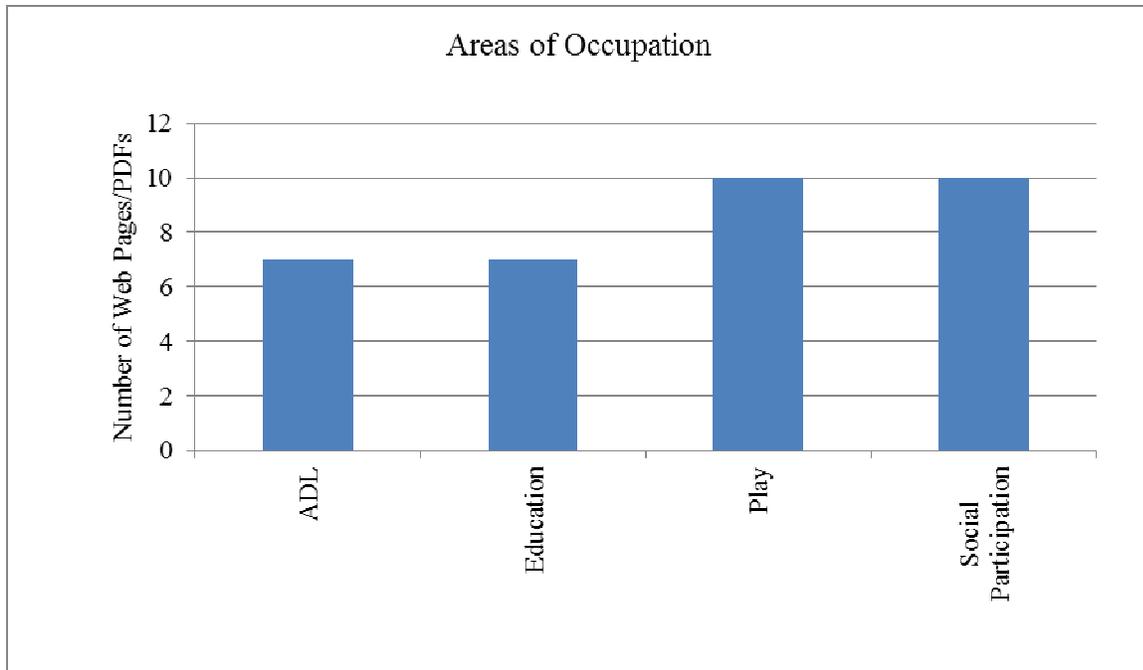


Figure 1. The number of web pages with themes related to Areas of Occupation.

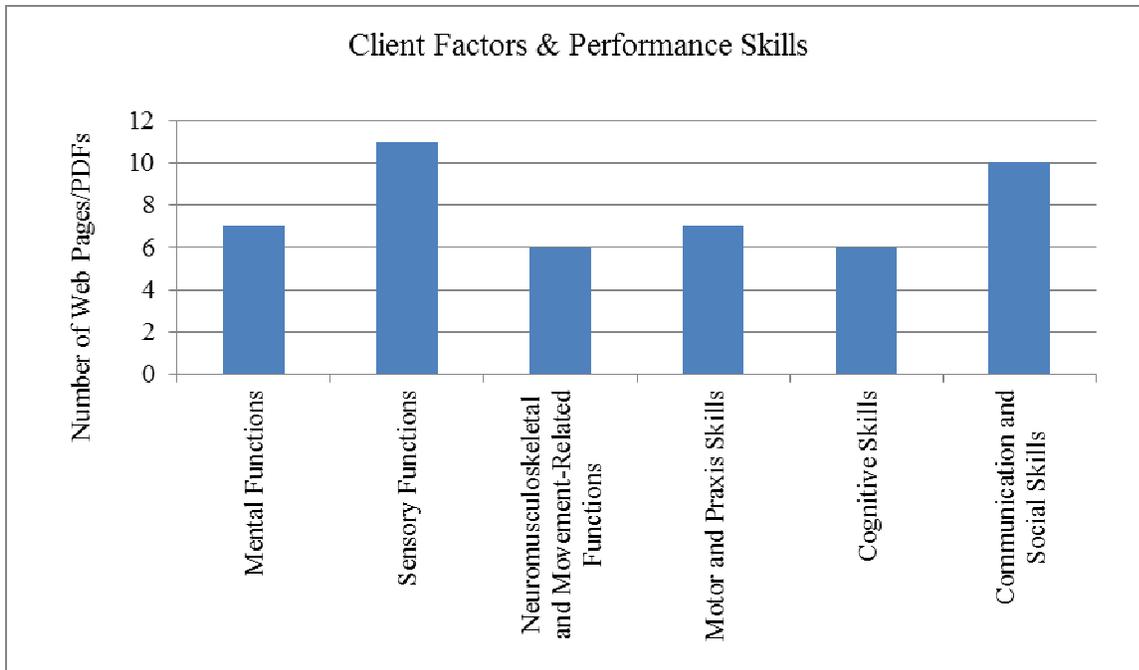
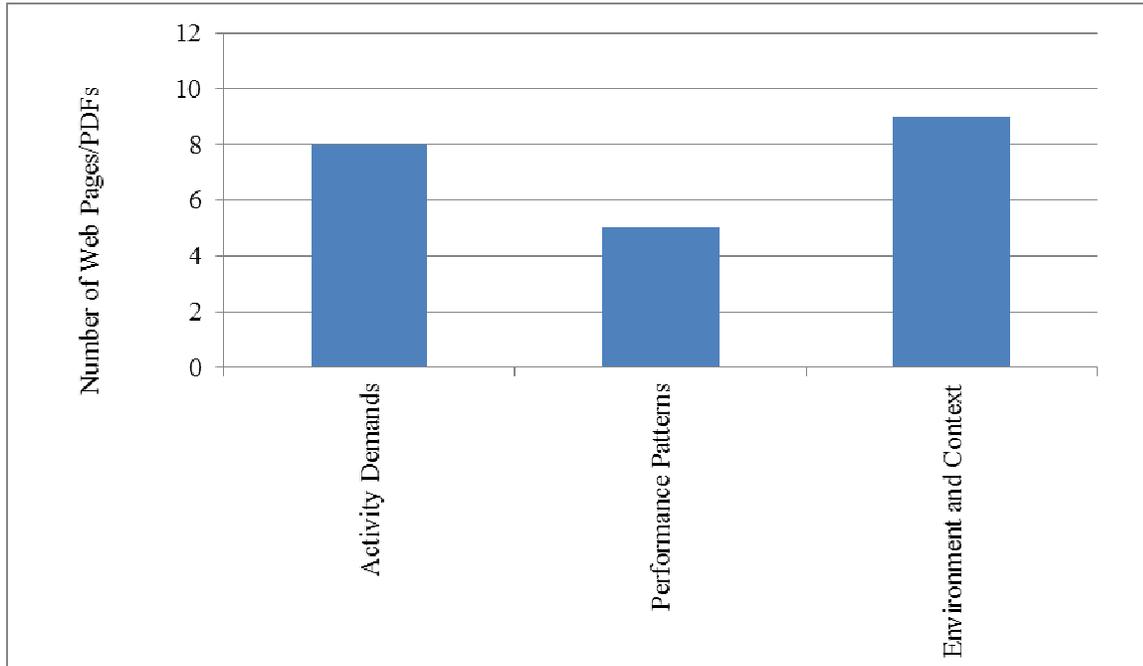


Figure 2. The number of web pages with themes related to Client Factors and Performance skills.



*Figure 3. The number of web pages that include themes of activity demands, performance patterns, and environment and context.*

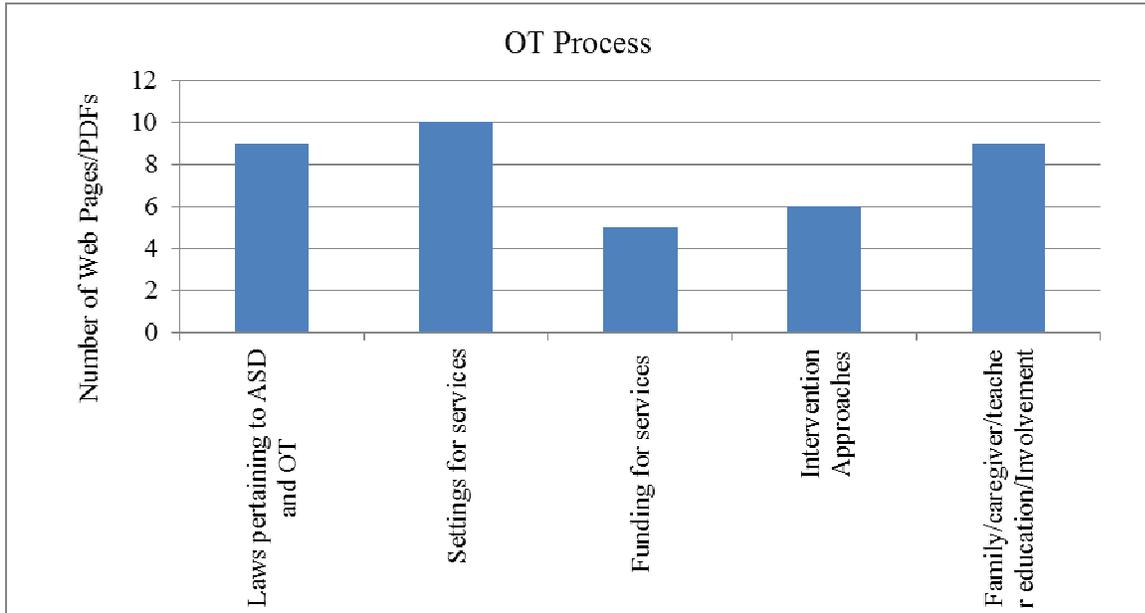


Figure 4. The number of web pages that discuss the OT Process.

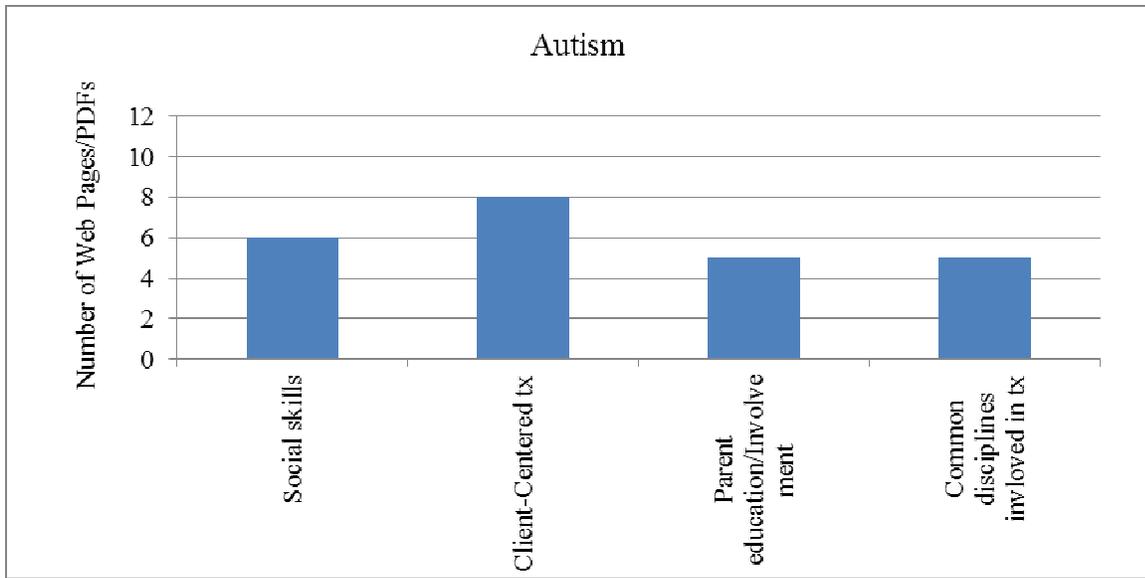


Figure 5. The number of web pages with themes related to Autism.

**Appendix A**  
**Topics**  
**Occupational Therapy Related**

1. ADL
2. IADL
3. Rest and Sleep
4. Education
5. Work
6. Play
7. Leisure
8. Social Participation
9. Mental Functions
10. Sensory Functions
11. Neuromusculoskeletal and Movement-Related Functions
12. Motor and Praxis Skills
13. Sensory-Perceptual Skills
14. Emotional Regulation Skills
15. Cognitive Skills
16. Communication and Social Skills
17. Performance Patterns
18. Activity Demands
19. Context and Environment
20. Definition of Occupational Therapy
21. Type of OT Services
22. Intervention Approaches
23. Examples of OT Services
24. Settings for Services
25. Funding for Services
26. Family/Caregiver/Teacher Education/Involvement
27. Laws Pertaining to ASD and OT

**Appendix A, continued**  
**Topics**  
**Autism Spectrum Disorders**

28. Autism Defined
29. Causes of Autism
30. Early Intervention
31. Social Skills
32. Play Skills
33. Daily Living Skills
34. Communication Skills
35. Sensory Integration
36. Client-Centered Treatment
37. Multi/Inter-Disciplinary Approach to Treatment
38. Common Disciplines Involved in Treatment
39. Co-Morbid Disorders
40. Experienced Therapists/Staff
41. Parent Education/Involvement
42. Links to Resources
43. Prognosis

## Appendix B

### Included URLs with search rank

Lisa Jo Rudy (2007). Occupational Therapy and Autism: The Basics. *About.com*. Retrieved:

1/12/13. <http://autism.about.com/od/whatisautism/a/OTBasics.htm>. (2 /118)

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Retrieved: 1/12/13. <http://www.everydayhealth.com/autism/occupational-therapy.aspx>.

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How Is Autism Treated? *Autism Speaks*. Retrieved:1/12/13.

<http://www.autismspeaks.org/whatautism/treatment>. (13/118).

Autism. *Cincinnati Children's Hospital*. Retrieved:1/12/13.

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Michaud, L. (2011). Occupational Therapy and Autism Spectrum Disorders (ASD). Retrieved:

1/12/13. *Maine Public Broadcasting Network*.

<http://www.mpbnet.com/Television/LocalTelevisionPrograms/MakingOurWayAutismFeaturingTempleGrandin/MakingOurWayAutismResources/OccupationalTherapy.aspx>. (29

/118)

Treatments and intervention. (2012). *Southwest Autism Research and Resource Center*.

Retrieved: 1/12/13. [http://autismcenter.org/treatment\\_interventions.aspx](http://autismcenter.org/treatment_interventions.aspx). (46/118)

Adams, J.B., Edelson, S.M., Grandin, T., Rimland, B., and Johnson, J. (2012 revised). Advice

for Parents. *Autism Research Institute*. Retrieved: 1/12/13.

[http://www.autism.com/index.php/understanding\\_advice](http://www.autism.com/index.php/understanding_advice). (50/118)

Smith, M., Jeanne Segal, J., and Hutman, T. (2012).Helping children with autism. *Help guide*.

Retrieved: 1/12/13. [http://www.helpguide.org/mental/autism\\_help.htm](http://www.helpguide.org/mental/autism_help.htm). (52/118)

Individualized Education Plan (IEP). *Autism Society*. Retrieved: 1/12/13. <http://www.autism-society.org/living-withautism/lifespan/school-age/individualized-education-plan.html>.

(66/118)

Opp Hofman, A. (2009). Supporting parents of children with Autism: The role of occupational therapy. *American Occupational Therapy Association*. Retrieved: 1/12/13.

<http://www.aota.org/Consumers/professionals/WhatIsOT/CY/Articles/41229.aspx>.

(68/118)

Yamkovenko, S. (2011). Innovative interventions help children with Autism participate fully. *American Occupational Therapy Association*. Retrieved: 1/12/13.

<http://www.aota.org/News/Consumer/Autism.aspx>. (73/118)

High School (2012). *American Occupational Therapy Association*. Retrieved: 1/12/13.

<http://www.aota.org/Consumers/consumers/Youth/Autism/ASD-high-school.aspx>. (78-microsite/118)

Preschool (2011). *American Occupational Therapy Association*. Retrieved: 1/12/13

<http://www.aota.org/Consumers/consumers/Youth/Autism/ASD.aspx>. (78,

microsite/118)

Scott, J. (2011). Occupational therapy's role with Autism. *American Occupational Therapy Association*. Retrieved: 1/12/13.

<http://www.aota.org/Consumers/professionals/WhatIsOT/RDP/Facts/38517.aspx>. (78,

microsite/118)

Occupational therapy for young children: Birth through 5 years of age. *American Occupational Therapy Association*. Retrieved: 1/12/13.

<http://www.aota.org/Consumers/Professionals/WhatIsOT/CY/FactSheets/Children.aspx>.

(78, microsite/118)