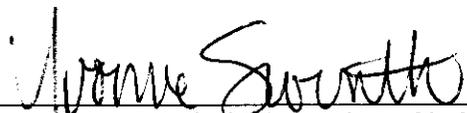


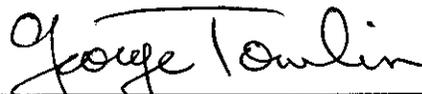
Exploring Occupational Therapists' Use of the Internet as an Intervention Activity

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Abstract

The internet has emerged as a valuable tool for communication and completion of everyday tasks, such as banking and shopping, for many people, including people with disabilities (Dorey, Reid, & Chiu, 2007; Goodman, et al., 2008; Malcolm, et al., 2001; Valentine & Skelton, 2009). The purpose of this study was to survey U.S. occupational therapists to explore their use of the internet as an intervention activity to address areas of occupation as defined by the Occupational Therapy Practice Framework, 2nd edition (American Occupational Therapy Association [AOTA], 2008). Eighty-eight U.S. occupational therapists were included in the study for a response rate of 36%. Forty-two percent of the respondents reported using the internet as an intervention activity, but almost all of the respondents at least somewhat agreed that the internet could be an effective intervention activity for most diagnoses and age groups. Also, occupational therapists responding who had been practicing for fewer years were significantly more likely to report that they had used the internet as an intervention activity than their more experienced peers. Further research is needed to explore facilitators and barriers that may be affecting occupational therapists' use of the internet as intervention activity.

The U.S. Census Bureau began collecting data on internet use in 1997. At that time 22 percent of adults reported that they used the internet, mostly for e-mail communication and information gathering. According to the most recent data, in 2003, that number had increased to 60 percent (U.S. Census Bureau, 2003) and since then the trend has likely continued. Furthermore, it is expected that adult internet use will continue to increase as the internet is currently used more by younger people, age 18 to 24 (71 percent), than older people, age 65 and up (28 percent) (U.S. Census Bureau, 2003). It is safe to say that the internet has become a primary venue for interpersonal communication in America as 55 percent of all adults used e-mail or instant messaging in 2003 (U.S. Census Bureau, 2003). Social networking sites have also become more prevalent. In 2008, Facebook®, the most popular social networking site, reported 250 million users. Facebook® now boasts more than 500 million users worldwide (“Facebook Statistics,” 2010). Considering all of these facts, it seems that the internet has fundamentally changed the way that people communicate and interact with one another in the U.S. and around the world.

In addition to social communication utilizing e-mail, social networking sites, instant messaging, forums, and chat rooms, the internet has a variety of other applications that are becoming more and more widespread in use (U.S. Census Bureau, 2003). Of course, it can be used to gather an abundant amount of information, including news, weather, maps, and movie times. It can also be used to complete instrumental activity of daily living (IADL) tasks such as banking, shopping, trip-planning, and making appointments. It can be assumed that these applications will only continue to increase in number and scope in coming years.

With the internet becoming more and more widespread in its use, it has become an integral part of U.S. and world culture with regard to communication and everyday life activities.

Occupational therapists define occupation as “daily activities that reflect cultural values, provide structure to living, and meaning to individuals; these activities meet human needs for self-care, enjoyment, and participation in society” (Crepeau, E., 2003, p. 1031). According to this definition, use of the internet can be defined as a meaningful and culturally relevant occupation for many people.

Background

People without disabilities often engage in the meaningful occupation of internet use, but people with disabilities find internet use meaningful as well. Research has shown that people who are deaf or hearing impaired find the internet particularly useful in facilitating communication with others and gathering information that is often passed through word of mouth (Barak & Sadosky, 2008; Valentine & Skelton, 2009; Zazove, Meador, Derry, Gorenflo, Burdick, & Saunders, 2004). Specifically, a recent study examined how 419 people who were deaf or hearing-impaired were using the internet (Valentine & Skelton, 2009). Survey and interview respondents reported that the internet had increased their ability to communicate with friends and family and decreased their feelings of isolation from the typical world. They also reported that the internet had increased their independence in communication and they could now communicate with anyone without the help of a hearing person, as opposed to using an interpreter or TTY. It should be noted, however, that this study was limited to participants in the United Kingdom (Valentine & Skelton, 2009).

Several studies have also described the internet’s positive impact on communication and independence among older adults with disabilities (Ballin & Balandin, 2007; Bradley & Poppen, 2003; Fokkema & Knipscheer, 2007; Mann, Belchior, Tomita, & Kemp, 2005; Shapira, Barak, & Gal, 2007; White, McConnell, Clipp, Branch, Sloane, Pieper, et al., 2002). These studies suggest

that internet and computer use can help mitigate feelings of loneliness and sadness for elderly people with disabilities by allowing them to communicate more easily with friends and family members. In particular, a study of physically frail elders in 2001 explored the impact of computer and internet use on several psychosocial factors. Tracking software was loaded on their home computers, they were given some training in basic computer use and their activity was monitored. The participants reported decreased feelings of loneliness and better ability to keep in touch with friends and family members following their training and a period of regular computer use; however, there were only 5 participants, which is a limitation to the generalization of this study's results (Malcolm, et al., 2001).

Research has shown that people with spinal cord injury can also find the internet to be a valuable resource that facilitates their independence (Drainoni, Houlihan, Williams, Vedrani, Esch, Lee-Hood, et al., 2004; Goodman, Jette, Houlihan, & Williams, 2008). This is discussed explicitly in a recent study that looked at computer and internet use by persons after traumatic spinal cord injury (SCI) (Goodman, et al., 2008). Participants used the internet to e-mail, shop, and look up health information and the authors concluded “that the internet has considerable potential for prevention and treatment of secondary complications for persons who have sustained a traumatic SCI” (Goodman, et al., 2008, p. 1496).

A qualitative study, using focused, in-depth interviews of 6 stroke survivors in Canada, described participants' increased independence through the use of the internet to communicate with loved ones, access health information, plan trips, and order groceries (Dorey, Reid, & Chiu, 2007). Another qualitative study of people with mobility limitations in Sweden reported similar findings with an emphasis on the participants' ability to control their environment and choose activities that were meaningful to them without assistance or mediation from someone who was

non-disabled; however, it should be taken into consideration that the participants in this study were recruited from an internet center. This decreased the likelihood of including participants who did not find the internet helpful (Anderberg & Jonsson, 2005).

A study of 85 people with mental illness in India found that providing computers and internet access, along with training to the participants, provided a means for interaction with others without fear of rejection due to the social stigma associated with mental illness. Internet access also allowed the participants to interact with others around the world who also had been given a similar diagnosis. Use of a computer with internet also provided a sense of community that reportedly promoted their social rehabilitation (Sanyal, 2006).

According to the Occupational Therapy Practice Framework (American Occupational Therapy Association [AOTA], 2008), occupational therapists are to approach treatment with the goal of “supporting health and participation in life through engagement in occupation” (p. 626). Given the research describing the positive outcomes related to internet use for people with disabilities and the previously discussed case for internet use as a meaningful occupation, it seems reasonable to expect that occupational therapists would use the internet as an intervention for at least some of their clients. An opinion article in the *British Journal of Occupational Therapy* called for Occupational therapists to incorporate mainstream technology, including the internet, into treatment in order to improve functional independence and occupational performance for clients with disabilities (Verdonck & Ryan, 2008). They argued that information and communication technologies have become meaningful occupations for many people, including occupational therapy clients (Verdonck & Ryan, 2008). This new technology offers a new way for people to participate in IADL, leisure, education, social, and work tasks as well as a

different way for people to participate in their habits, routines, and roles as defined by the Occupational Therapy Practice Framework (2nd ed.).

To date, there has been little research describing to what extent occupational therapists are using the internet as an intervention for their clients. A 2001 survey of 94 AOTA members who had worked with older adult clients in the past 2 years found that the majority of occupational therapists surveyed were not using computer technology with their older adult clients (Ackerman, et al., 2001). While interesting, these results do not provide any information about occupational therapists' use of computer technology and the internet with middle-aged or younger clients. Furthermore, as the internet has become more widespread in its use, occupational therapists' use of the internet in treatment may have changed. Therefore, the purpose of this study was to explore U.S. occupational therapists' use of the internet, including how it is used, the reasons underlying its use or non-use, and their perceptions of its effectiveness, as an intervention to promote social participation and independence with IADL tasks for their clients with disabilities.

Method

Research Design

The purpose of this study was to explore the prevalence among occupational therapists of internet use as an intervention approach as well as to gather reports of how this treatment approach is used, the reasons for its use or non-use, and perceptions of its effectiveness. This information could be obtained through self-report. A survey questionnaire was chosen as the most efficient means of obtaining self-report data for analysis from the large and geographically dispersed population of U.S. occupational therapists.

Participants

The population of interest was all practicing U.S. occupational therapists. Since it was not feasible to randomly survey the ideal population, a systematic random sample of 250 registered occupational therapists was selected by the AOTA from its members in the following special interest sections: Developmental Disabilities, Gerontology, Home & Community Health, Mental Health, Physical Disabilities, Technology, Work and Industry. The Administration & Management, Education, Early Intervention & School, and Sensory Integration special interest sections were excluded as it was felt that these special interest sections and corresponding settings by their very nature did not lend themselves to internet use as an intervention activity. Occupational therapists who were currently practicing or who have practiced for any length of time in the preceding 5 years were eligible for this study. No exclusions were made based on the actual practice setting of the participants.

Instrument

A newly devised survey consisting of closed and open-ended questions was used to obtain information about current occupational therapy use of the internet as an intervention activity to promote social participation and independence with IADL tasks for clients with disabilities. For the purpose of the survey, the term “use of the internet” was defined as “use of a computer or mobile device (e.g. cell phone, tablet PC, PDA) to access and/or send information via a website or e-mail.” The phrase “use of the internet as an intervention activity” was defined as “any time the internet is used in occupational therapy treatment to promote a client’s completion of social participation, ADL/IADL, play/leisure, work, or education tasks.” The survey asked for information regarding frequency of use and manner of use, including information on the type of clients the intervention was used with. A Likert scale was used and participants were asked to mark the extent of their agreement with several statements: Agree (A),

Somewhat Agree (SA), Somewhat Disagree (SD), and Disagree (D). The survey also sought the therapists' opinion of the effectiveness of the internet as an intervention. Participants were asked to describe barriers and supports to their use or non-use of the internet as an intervention activity. Respondents were also asked to provide background and demographic information including education, area of OT practice, and years of experience as an occupational therapy practitioner.

The survey was reviewed by a research committee and then pilot-tested by 3 occupational therapists in order to receive feedback on its clarity and the time it takes to complete. Suggestions, which were few and mostly style related, were incorporated into the final survey. Otherwise, the survey was of unknown reliability and validity.

Procedure

The mailing addresses were purchased from AOTA and delivered via e-mail to a password protected account. The file was saved on a password protected computer and deleted on the date that the reminder surveys were mailed.

Following the study's approval by the university Institutional Review Board, the surveys were mailed on June 8, 2010, with a cover letter explaining the purpose of the study and instructions to complete the questionnaire and return it within 2 weeks. The cover letter contained the phrase "your return of this survey will indicate your consent to participate in this study." Included with the mailing was a business return envelope to improve response rate.

Business return envelopes were coded in tandem with corresponding reminder mailing labels prior to being mailed, in order to ensure that those recipients who had already returned the survey following the first mailing did not receive a reminder. Returned surveys were immediately separated from their envelopes in order to maintain confidentiality. The envelopes and the corresponding reminder mailing labels were then destroyed. On August 9, 2010, a

reminder letter, an additional copy of the survey, and a business return envelope were mailed to the occupational therapists who had not yet responded. Returned surveys received after delivery of the reminder letter were separated from the surveys returned initially in order to allow for the investigation of possible differences between the two waves of responses. Returned questionnaires were accepted until September 3, 2010.

Data Analysis

Data from the returned surveys were entered into a Statistical Package for the Social Sciences (SPSS) software database. If no answer was given or if a mark was unclear, data were recorded as “missing.” In order to inspect the reliability of the data entry, a check was done by a third party to locate possible errors in the data. The third party reviewed the data from all returned surveys for 4 questions, approximately 10% of all data, and did not locate any errors. This suggests that there were few errors in data entry.

Before the main analysis of data, differences between the two waves of responses were investigated to provide a hypothesis about the demographics and response characteristics of the group of non-respondents. A response rate was calculated by subtracting the number of undeliverable surveys and the number of surveys that did not meet inclusion criteria from the 250 total surveys sent out and then dividing the number of surveys that met inclusion criteria by that number. Descriptive statistics such as frequency, central tendency, and variability were then used to analyze the entire pool of survey results and to illustrate the distribution of participant responses and reported practices (Portney & Watkins, 2000). Correlational statistics were used to report on associations between demographics and practice responses and between one practice response and another.

Results

Demographics of Respondents

Of the 250 surveys sent, one was returned undeliverable. Six of the returned surveys did not meet inclusion criteria which left a total of 243 possible respondents. Of these 243, eighty-eight (36%) returned completed questionnaires and were included in the study.

Participants reported currently practicing in 30 different U. S. states. Years of experience ranged from 1.5 to 45 years. Eighty-four percent of participants reported practicing for at least 10 years and less than ten percent of participants had practiced for less than 5 years. With regard to education, 56% of participants reported that the highest level of education they had received was a bachelor's degree while 38% reported their highest level of education to be a master's degree (See Table 1). Additionally, 64% percent reported that it had been over 10 years since they had received their last degree.

When questioned about their current practice setting, most reported currently working in a hospital, inpatient, outpatient, home health, and/or long-term care setting, while few reported working in a mental health, work hardening or school setting (see Table 1).

Finally, participants were asked to provide an average number of hours spent per week working as an occupational therapist. Many participants responded with a range. In this instance, the lowest number in the range was entered into the data set. In this way, the number of participants working "at least" any given number of hours could be stated. Eighty-six percent of participants reported working at least 20 hours per week as an OT. Forty-six percent of participants reported working at least 40 hours per week as an OT (See Table 1).

An independent samples t-test was used to analyze the first wave responses and the second wave responses. No significant differences were found in either the demographics or

response variables of those who responded after the first mailing and those who responded after the second mailing and so both waves of responses were analyzed together.

Use of the Internet as an Intervention Activity

Of the 88 respondents, 37 (42%) stated that they had used the internet as an intervention activity in practice; however, of these participants, 34% stated that they used the internet as an intervention activity in fewer than one treatment session per month and 77% reported that they used it in 3 or fewer treatment sessions per month.

Correlation analysis was used to examine the relationships between demographic variables and internet use as an intervention activity. There was a significant negative correlation between years practicing as an OT and use of the internet as a treatment intervention ($r(88) = -0.261, p = 0.014$). In other words, occupational therapists with less experience were significantly more likely than occupational therapists with more experience to use the internet as an intervention activity with a client. No other significant correlations were found between demographic variables, including caseload, hours working, practice setting, and internet use as an intervention.

Participants who used the internet as an intervention activity were most likely to use it as an intervention for a play/leisure goal (65%), but many (32-41%) used it for a work goal, an ADL/IADL goal, an education goal, and/or a social participation goal (see Table 2). Six respondents (7%) also wrote in that they used the internet as an intervention activity to address cognition. Furthermore, a large majority of occupational therapists (70%) who used the internet as an intervention activity reported using it with clients with cognitive deficits, while fewer reported using it with clients with sensorimotor deficits, mental health diagnoses, visual deficits,

and communication impairments and no one reported using the internet with a client who was deaf or hard of hearing (see Table 3).

With regard to age, most occupational therapists reported using the internet with clients aged 22-40 and 41-64. Very few occupational therapists reported using the internet with clients aged 0-5 or 81 and older (see Table 3).

Most occupational therapists who had used the internet as an intervention activity reported using it in an inpatient rehabilitation or outpatient clinic setting. Fewer reported using it in a hospital/acute or home health setting and still fewer reported using it in long term care, mental health, or work hardening settings (see Table 4).

When using the internet as an intervention activity, 26 respondents (72%) reported using it specifically for information gathering and 23 respondents (64%) reported using it for communication via e-mail. Occupational therapists also reported using the internet as an intervention activity for social networking, such as Facebook®, MySpace or Twitter®, or for trip planning. Fewer reported using it for a job search, online support groups, or grocery delivery (see Table 5). Additionally, three participants reported via write-in that they used it with their clients to play online games.

Opinions on the Effectiveness of Internet Use as an Intervention Activity

All participants were asked to provide their opinion on the usefulness of the internet as an intervention activity to address areas of occupation, per the OTPF-II, regardless of whether they had ever used the internet in treatment. All respondents at least somewhat agreed that the internet could be an effective way to address play/leisure and education tasks while a large majority of respondents at least somewhat agreed that the internet could effectively address work related tasks, social participation, and ADL/IADL tasks (see Table 6).

When addressing internet use as an intervention activity for specific diagnosis categories, most occupational therapists responding felt that the internet could be effectively used with clients with cognitive, mental health, speech, hearing, sensorimotor, and visual deficits (see Table 6).

All participants reported that they at least somewhat agreed that the internet could be effective for use as an intervention activity with clients ages 11-40. All but one participant (99%) at least somewhat agreed that the internet could be an effective intervention activity for use with clients age 41-64. Ninety-four percent of respondents at least somewhat agreed that the internet could be effective for use with clients age 6-10. Eighty-six percent of respondents at least somewhat agreed that the internet could be effective for use with clients age 65-80. Fewer respondents, but still a majority, felt that the internet would be an effective intervention activity for clients aged 0-5 and 81 and older (see Table 6).

Barriers and Supports to Internet Use as an Intervention Activity

The majority of occupational therapists responding reported that the barriers to internet use as an intervention activity included little relevance to treatment goals, little meaning to their clients, and poor availability of resources (see Table 7). Conversely, the majority of occupational therapists reported that relevance to treatment goals, meaningfulness to clients, and good availability of resources were supports to use of the internet as an intervention activity (see Table 7). Meaningfulness to their client was most often cited in both categories as either a barrier or a support. Several respondents further elaborated on barriers, including treatment setting and meaningfulness to clients, in the space for additional comments at the end of the survey.

Discussion

Use of the Internet as an Intervention Activity

Initial observation of the data revealed a large difference between the number of occupational therapists who report using the internet as an intervention activity and the number of occupational therapists who agree that it could be effectively used as an intervention with most clients. This is likely explained by a variety of factors including availability of resources, meaningfulness to clients, and practice setting. In fact, the leading barriers cited by respondents were meaningfulness to clients and availability of resources (see Table 7) and the most common write-in response that addressed barriers described practice settings that did not lend themselves to internet use as an intervention activity.

What is particularly interesting is that the more years of experience the occupational therapist respondents had, the less likely they were to report that they were using the internet as an intervention activity. This seems to support the view that younger people are more likely to use computer and internet technology which is consistent with literature that has shown that internet and computer use is less prevalent after age 44 for people in the U.S. (U.S. Census Bureau, 2003). These findings also suggest that a more recent education, which would include more recent exposure to new technology that can effectively address the needs of people with disabilities, may lead to higher incidence of internet use as an intervention.

Occupational therapists surveyed were most likely to report that they had used the internet as an intervention activity with 41-64 year old (78%) clients with cognitive deficits (70%) and their most common goal of intervention was completion of a play/leisure task (65%). The fact that this age group was the most common may be surprising, until it is considered that this is the beginning of an age group that is likely to work with an occupational therapist

following a change in health status. Fewer older adult clients may have an interest in internet use due to less familiarity with newer technology. This view was supported by write-in responses from two of the participants: “Those over 65 or 70 could care less about computers” and “typically this [older] generation does not use computers... few have/use cell phones.”

Opinions on the Effectiveness of Internet Use as an Intervention Activity

An overwhelming majority of occupational therapists at least somewhat agreed that the internet could be useful for almost every age group, diagnosis, and area of occupation. This was a somewhat surprising finding when compared with the number of occupational therapists who reported actually using the internet as an intervention activity (42%). While internet use may not be appropriate for every client, the fact that most occupational therapists agree that it can be useful for almost any client would create a higher expectation of use by occupational therapists. This discrepancy seems to suggest that there are some barriers to internet use as an intervention activity. This was evident from the responses to the question related to barriers. A majority of occupational therapists cited poor availability of resources as a barrier to their use of the internet with clients (see Table 7). One occupational therapist addressed this barrier in a write-in response: “the internet can be a useful intervention tool in all settings ... with all ages. Unfortunately, limited funding for obtaining ‘high tech’ devices has been a major barrier within the long-term care and skilled nursing facility settings.” This response is consistent with research that points to a lack of resources as the most common barrier to computer technology use (Dobransky & Hargittai, 2006; U.S. Census Bureau, 2003).

The difference between the number of occupational therapists who report internet use as an intervention activity and those who agree that it could be effective in treatment may also reflect some feasibility issues with using the internet in some practice settings. This idea is

supported by the fact that the majority of occupational therapists responding (57%) reported that a reason that they have not used the internet as an intervention activity was that it is not relevant to their client's treatment goals. It is likely that it is not usually important for occupational therapists to address internet use in an acute hospital setting or intensive care unit. Several respondents wrote-in responses that further expanded on this:

- “I currently work ... in an acute care setting. This has limited my scope of treatment modalities.”
- “I would consider use of the internet more if I was consistently following a different patient population [than] I typically have (acute).”
- “In home health, we work to get people safe and more independent with ADLs – computer has a limited place in this.”
- “I am presently working in acute inpatient care and use of a computer in my present job is not appropriate as a treatment modality.”

These responses help explain the difference between occupational therapists' limited reported use of the internet and their majority opinion that it is an effective tool for addressing areas of occupation for all ages and diagnoses.

Implications for OT

Occupational therapists have been helping their clients engage in meaningful occupation for many years and through many technological changes. As internet use has become widespread throughout the U. S. and the world, a very large majority of occupational therapists widely agree that it has many applications for people across a broad range of disabilities and age groups. There remains, however, a large difference between the number of occupational therapists who agree that the internet can effectively be used as an intervention activity and the

number of occupational therapists who actually use the internet with their clients. Some of this difference is appropriately explained by practice setting feasibility and meaningfulness to clients, but it does appear that some barriers to internet use, in particular, poor availability of resources, limit occupational therapists' ability to use the internet as an intervention activity with their clients. It also may not be a priority treatment goal for clients working in many practice settings, such as the acute hospital setting.

As described in the OTPF-II, occupational therapists strive to address their clients' goals through individually meaningful and culturally relevant occupations (AOTA, 2008).

Occupational therapists should use their best judgment when designing intervention activities for clients in all areas of occupation, being sure to consider meaningfulness to their client as well as relevance to their treatment goals (AOTA, 2008). While using the internet may be very meaningful for a client with left hemiparesis, it is likely not relevant for addressing all treatment goals, such as dressing or bathing.

In addition, occupational therapists who are personally very familiar with internet and technology use should not push internet use on clients for whom it is not meaningful or relevant. Conversely, occupational therapists who are not comfortable with internet and computer technology should not dismiss its usefulness as an intervention activity, particularly with clients for whom it has meaning and relevance. Occupational therapists also need to continue to strive to maximize supports and reduce barriers that may affect their use of meaningful and relevant intervention activities, including internet use.

Limitations

This study served to begin the exploration of occupational therapists' use of the internet as an intervention activity, but it was limited by its relatively small sample size. Another

limitation was that the accessible population of AOTA members is a small subset of the ideal population of all U.S. occupational therapists. It is likely that AOTA members are not representative of the population of U.S. occupational therapists and they may have responded differently to the questionnaire. Finally, the reliability and validity of the questionnaire were largely unknown.

Future Research

Further research is needed to identify barriers to internet use as an intervention activity for occupational therapy clients. This will provide a basis for mitigating those barriers in order to promote best practice since occupational therapists seem to agree that the internet could be a useful tool for addressing a variety of diagnoses and age groups. A smaller, more intense qualitative study could also address the meaning of internet use for people with disabilities as opposed to people without disabilities and seek to explore the meaning of internet use for people with disabilities.

Conclusion

Occupational therapists help individuals to engage in activities that are meaningful to them (AOTA, 2008). Although somewhat limited, recent research indicates that the internet has a multitude of applications for people with disabilities (Goodman, et al., 2008; Malcolm, et al., 2001; Sanyal, 2006; Valentine & Skelton, 2009; Verdonck & Ryan, 2008).

Younger, less experienced occupational therapists were more likely to report using the internet as an intervention activity with their clients. This may indicate that older occupational therapists, like the rest of the U.S. population, are less likely to use computer and internet technology than their younger counterparts (U.S. Census Bureau, 2003).

The majority of occupational therapist respondents agreed that the internet could be effectively used as an intervention activity for most of their clients, but fewer occupational therapists (42%) actually use the internet as an intervention activity. While some of this difference is explained by practice setting and relevance to treatment goals, there do seem to be some barriers to internet use in occupational therapy practice which should be further researched and addressed. Research related to computer technology use among people with disabilities indicates that common barriers to use are a lack of resources and limited accessibility of equipment (Dobransky & Hargittai, 2006). Further research is needed to determine whether these barriers inhibit occupational therapists' use of the internet as an intervention activity with their clients.

References

- Ackerman, S. E., Bednarczyk, K. R., Roncolato, K., Schiavone, B. A., Witko, A. L., & Cipriani, J. A. (2001). The use of computer technology with older adult clients: A pilot study of occupational therapists. *Physical & Occupational Therapy in Geriatrics, 20*(1), 49-57.
- American Occupational Therapy Association. (2008). Occupational therapy practice framework: Domain and process (2nd ed.). *American Journal of Occupational Therapy, 62*, 625-683.
- Anderberg, P., & Jonsson, B. (2005). Being there. *Disability & Society, 20*, 719-733.
- Ballin, L., & Balandin, S. (2007). An exploration of loneliness: Communication and the social networks of older people with cerebral palsy. *Journal of Intellectual & Developmental Disability, 32*, 315-327.
- Barak, A., & Sadovsky, Y. (2008). Internet use and personal empowerment of hearing-impaired adolescents. *Computers in Human Behavior, 24*, 1802-1815.
- Bradley, N., & Poppen, W. (2003). Assistive technology, computers and internet may decrease sense of isolation for homebound elderly and disabled persons. *Technology & Disability, 15*, 19-25.
- Crepeau, E. (2003). Analyzing occupation and activity: A way of thinking about occupational performance. In E. Crepeau, E. Cohn, & B. Schell (Eds.), *Williard and Spackman's occupational therapy* (10th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Dobrinsky, K., & Hargittai, E. (2006). The disability divide in internet access and use. *Information, Community, and Society, 9*, 313-334.
- Dorey, B., Reid, D., & Chiu, T. (2007). Stroke survivors' experiences of computer use at home. *Technology & Disability, 19*, 179-188.

Drainoni, M., Houlihan, B., Williams, S., Vedrani, M., Esch, D., Lee-Hood, E., & Weiner, C.

(2004). Patterns of internet use by persons with spinal cord injuries and relationship to health-related quality of life. *Archives of Physical Medicine & Rehabilitation*, *85*, 1872-1879.

Facebook Statistics. (2010). Retrieved September 25, 2010, from

<http://www.facebook.com/press/info.php?statistics>

Fokkema, T., & Knipscheer, K. (2007). Escape loneliness by going digital: A quantitative and qualitative evaluation of a Dutch experiment in using ECT to overcome loneliness among older adults. *Aging & Mental Health*, *11*, 496-504.

Goodman, N., Jette, A. M., Houlihan, B., & Williams, S. (2008). Computer and internet use by persons after traumatic spinal cord injury. *Archives of Physical Medicine & Rehabilitation*, *89*, 1492-1498.

Malcolm, M., Mann, W., Tomita, M. R., Fraas, L. F., Stanton, K. M., & Gitlin, L. (2001).

Computer and internet use in physically frail elders. *Physical & Occupational Therapy in Geriatrics*, *19*(3), 15-32.

Mann, W. C., Belchior, P., Tomita, M., & Kemp, B. J. (2005). Computer use by middle-aged and older adults with disabilities. *Technology & Disability*, *17*(1), 1-9.

Portney, L. G., & Watkins, M. P. (2000). *Foundations of clinical research: Applications to practice* (2nd ed.). Upper Saddle River, NJ: Prentice Hall.

Sanyal, I. (2006). Empowering the impaired through the appropriate use of information technology and the internet. *Medical Care and Compunetics*, *3*, 15-21.

Shapira, N., Barak, A., & Gal, I. (2007). Promoting older adults' well-being through internet training and use. *Aging & Mental Health*, *11*, 477-484.

- U. S. Census Bureau. (2003). *Computer and internet use in the United States: 2003*. Retrieved October 1, 2009, from <http://www.census.gov/prod/2005pubs/p23-208.pdf>
- Valentine, G., & Skelton, T. (2009). An umbilical cord to the world: The role of the internet in D/deaf people's information and communication practices. *Information, Communication & Society, 12*(1), 44-65.
- Verdonck M. C., & Ryan, S. (2008). Mainstream technology as an occupational therapy tool: Technophobe or technogeek? *British Journal of Occupational Therapy, 71*, 253-256.
- White, H., McConnell, E., Clipp, E., Branch, L. G., Sloane, R., Pieper, C., & Box, T. L. (2002). A randomized controlled trial of the psychosocial impact of providing internet training and access to older adults. *Aging & Mental Health, 6*, 213-221.
- Zazove, P., Meador, H. E., Derry, H. A., Gorenflo, D. W., Burdick, S. W., & Saunders, E. W. (2004). Deaf persons and computer use. *American Annals of the Deaf, 148*, 376-384.

Appendix A

Questionnaire Text

The Internet as an Intervention Activity:
A Survey of Occupational Therapists

The purpose of this questionnaire is to explore occupational therapists' use of the Internet as an intervention activity with their clients. Please read each question carefully prior to making a response. At the end of the questionnaire there is space for you to provide additional comments and responses. Please return the completed questionnaire in the provided envelope as soon as possible.

Q1: Have you practiced occupational therapy in any setting in the past five years? (Check one.)

Yes

No

If you answered "yes" to this question, please proceed.

If you answered "no" to this question, *please stop here and mail your questionnaire back in the provided envelope as it is important for me to account for as many surveys as possible.* If you have comments relating to the Internet and occupational therapy, please feel free to write them on the last page in the space provided.

For the purpose of this questionnaire, the term "use of the Internet" will be defined as follows: ***Use of a computer or mobile device (e.g. cell phone, tablet PC, PDA) to access and/or send information via a website or e-mail***

This questionnaire uses Occupational Therapy Practice Framework (2nd ed.) (OTPF-II) terminology. Therefore, the phrase "use of the Internet as an intervention activity" will be defined as follows:

Any time the Internet is used in occupational therapy treatment to promote a client's completion of social participation, ADL/IADL, play/leisure, work or education tasks. These uses may include, but are not limited to, teaching a client to use e-mail to promote social participation or educating a client on how to do their banking or grocery shopping online to complete those IADL tasks.

Q2: Have you ever used the Internet as an intervention activity with any of your clients? (Check one.)

Yes

No

If you answered "yes" to this question, please proceed to Section I.

If you answered "no" to this question, please proceed to Section II.

Section I: Your Use of the Internet as an Intervention Activity

This first section will address how you have used the Internet as an intervention activity with clients in your past. If you have never used the Internet as an intervention activity for any of your clients, please proceed to Section II.

Q3: In approximately how many treatment sessions per month do you use the Internet as an intervention activity with a client? (Please indicate a number.)

Q4: When using the Internet as an intervention activity, what have been your intervention goals? (Check all that apply.)

- | | |
|---|--|
| <input type="checkbox"/> Social participation task | <input type="checkbox"/> Participation in education task |
| <input type="checkbox"/> Participation in ADL/IADL task | <input type="checkbox"/> Other (please list) _____ |
| <input type="checkbox"/> Participation in play/leisure task | <input type="checkbox"/> Other (please list) _____ |
| <input type="checkbox"/> Participation in work task | <input type="checkbox"/> Other (please list) _____ |

Q5: What are the diagnostic category(ies) of the client(s) you have treated using the Internet as an intervention activity? (Check all that apply.)

- | | |
|--|--|
| <input type="checkbox"/> Cognitive deficit | <input type="checkbox"/> Sensorimotor deficit |
| <input type="checkbox"/> Mental health | <input type="checkbox"/> Other (please list) _____ |
| <input type="checkbox"/> Speech/language deficit | <input type="checkbox"/> Other (please list) _____ |
| <input type="checkbox"/> Deaf or hard of hearing | <input type="checkbox"/> Other (please list) _____ |
| <input type="checkbox"/> Visual deficit | |

Q6: Please select age ranges for the client(s) you have treated using the Internet as an intervention activity: (Check all that apply.)

- | | |
|--|--|
| <input type="checkbox"/> 0 - 5 years | <input type="checkbox"/> 41 - 64 years |
| <input type="checkbox"/> 6 - 10 years | <input type="checkbox"/> 65 - 80 years |
| <input type="checkbox"/> 11 - 21 years | <input type="checkbox"/> 81 and older |
| <input type="checkbox"/> 22 - 40 years | |

Q7: Please indicate all practice settings where you have used the Internet as an intervention activity: (Check all that apply.)

- | | |
|--|--|
| <input type="checkbox"/> Hospital/acute setting | <input type="checkbox"/> Work hardening/Industrial rehab |
| <input type="checkbox"/> Inpatient rehab | <input type="checkbox"/> Home health |
| <input type="checkbox"/> Outpatient clinic | <input type="checkbox"/> School |
| <input type="checkbox"/> Mental health | <input type="checkbox"/> Other (please list) _____ |
| <input type="checkbox"/> Long-term care facility | <input type="checkbox"/> Other (please list) _____ |

Q8: Please select the specific activities for which you have used the Internet as an intervention activity with clients in the past: (Check all that apply.)

- Bill paying
- Grocery shopping/delivery
- Social networking (i.e. Facebook®, Twitter ®)
- E-mail communication
- Information gathering (i.e. Google®, WebMD®, Wikipedia, newspapers)
- Job search
- Trip planning
- Online support groups
- Other (please describe) _____

Section II: Your Opinion on the Usefulness of the Internet as an Intervention Activity

In this section you will be asked for opinions related to the usefulness and effectiveness of the Internet as an intervention activity.

Please indicate the extent to which you agree or disagree with each of the following statements by using the scale below:

<i>Use of the Internet as an intervention activity with a client with disabilities could effectively promote:</i>	<i>Agree</i>	<i>Somewhat Agree</i>	<i>Somewhat Disagree</i>	<i>Disagree</i>
Q10: Social participation tasks (Circle one.)	A	SA	SD	D
Q11: Participation in ADL/IADL tasks (Circle one.)	A	SA	SD	D
Q12: Participation in play/leisure tasks (Circle one.)	A	SA	SD	D
Q13: Participation in work tasks (Circle one.)	A	SA	SD	D
Q14: Participation in education tasks (Circle one.)	A	SA	SD	D

<i>Use of the Internet could be an effective intervention activity for:</i>	<i>Agree</i>	<i>Somewhat Agree</i>	<i>Somewhat Disagree</i>	<i>Disagree</i>
Q12: A client with cognitive deficit(s) (Circle one.)	A	SA	SD	D
Q13: A client with mental health diagnosis(es) (Circle one.)	A	SA	SD	D
Q14: A client with speech/language deficit(s) (Circle one.)	A	SA	SD	D
Q15: A client who is deaf or hard of hearing (Circle one.)	A	SA	SD	D
Q16: A client with sensorimotor deficit(s) (Circle one.)	A	SA	SD	D
Q17: A client with visual deficit(s) (Circle one.)	A	SA	SD	D
Q18: A client who is 0-5 years of age (Circle one.)	A	SA	SD	D
Q19: A client who is 6-10 years of age (Circle one.)	A	SA	SD	D
Q20: A client who is 11-21 years of age (Circle one.)	A	SA	SD	D
Q21: A client who is 22-40 years of age (Circle one.)	A	SA	SD	D
Q22: A client who is 41-64 years of age (Circle one.)	A	SA	SD	D
Q23: A client who is 65-80 years of age (Circle one.)	A	SA	SD	D
Q24: A client who is 81 years of age or older (Circle one.)	A	SA	SD	D

Section III: Barriers and Supports to Your Use of the Internet as an Intervention Activity

In this section, you will be asked to provide input regarding factors that may have affected your use or non-use of the Internet as an intervention activity with your clients.

Q25: Please select all factors which have (or may have) *prevented* you from using the Internet as an intervention activity in practice: (Check all that apply.)

- Use of the Internet was not related to my intervention goal
- Use of the Internet was not meaningful to my client
- Device(s) with Internet access (i.e. computers, phones) were not available to me for use in my treatment setting
- My client did not have a device with Internet access (i.e. computer, phone) available to him/her
- Other (please describe) _____
- Other (please describe) _____
- Other (please describe) _____

Q26: Please select all factors which have (or may have) *promoted* your use of the Internet as an intervention activity in practice? (Check all that apply.)

- Use of the Internet was relevant to my intervention goal
- Use of the Internet was meaningful to my client
- Device(s) with Internet access (i.e. computers, phones) were available to me for use in my treatment setting
- Device(s) with Internet access (i.e. computers, phones) were available to my client
- Other (please describe) _____
- Other (please describe) _____
- Other (please describe) _____

Section IV: Demographics Information

Finally, this section will ask questions related to your personal background.

Q27: I currently practice in the state of _____

Q28: I have been an occupational therapist for _____ (number) years

Q29: My degree(s) (specify all majors) and date(s) of completion include: (Please select all that apply.)

Degree	Major/Certificate Title	Year Completed
<input type="checkbox"/> BS or BA	_____	_____
<input type="checkbox"/> Entry level masters	_____	_____
<input type="checkbox"/> Post-professional masters	_____	_____
<input type="checkbox"/> Entry level OTD	_____	_____
<input type="checkbox"/> Post-professional OTD	_____	_____
<input type="checkbox"/> PhD or EdD	_____	_____
<input type="checkbox"/> Other	_____	_____
<input type="checkbox"/> Other certifications	_____	_____

Q30: I have worked for at least one month in the following practice setting(s): (Check all that apply.)

- | | |
|---|--|
| <input type="checkbox"/> Hospital/acute setting | <input type="checkbox"/> Work hardening/Industrial rehab |
| <input type="checkbox"/> Inpatient rehab | <input type="checkbox"/> Home health |
| <input type="checkbox"/> Outpatient clinic | <input type="checkbox"/> School |
| <input type="checkbox"/> Skilled nursing facility | <input type="checkbox"/> Mental health |
| <input type="checkbox"/> Long-term care facility | <input type="checkbox"/> Other (please list) _____ |

Q31: I currently work in the following practice setting(s): (Check all that apply.)

- | | |
|---|--|
| <input type="checkbox"/> Hospital/acute setting | <input type="checkbox"/> Work hardening/Industrial rehab |
| <input type="checkbox"/> Inpatient rehab | <input type="checkbox"/> Home health |
| <input type="checkbox"/> Outpatient clinic | <input type="checkbox"/> School |
| <input type="checkbox"/> Skilled nursing facility | <input type="checkbox"/> Mental health |
| <input type="checkbox"/> Long-term care facility | <input type="checkbox"/> Other (please list) _____ |

Q32: My average caseload is _____ (number) client(s).

Q33: I work as an OT approximately _____ (number) hours per week.

Section V: Additional Comments (Optional)

Please use the space below to provide any additional comments you may have relevant to this topic or to provide us with feedback.

Check here if you would like to be provided with a summary of the results of this survey. Include your e-mail address on a separate slip of paper when you return the survey. Your request and e-mail address will be separated from your survey as soon as the envelope is opened.

Thank you for your help.

Please return completed questionnaires in the provided envelope to:

**Internet Survey
University of Puget Sound
School of Occupational Therapy & Physical Therapy
1500 N. Warner St., CMB 1070
Tacoma, WA 98416**

Table 1

Demographic Information of Respondents

Demographic	<i>n</i>	Response	Frequency (%)
Years in Practice	88		
		1-10 years	26 (29%)
		11-20 years	21 (24%)
		21 or more years	41 (47%)
Highest Degree Achieved	86		
		Bachelor's degree	48 (56%)
		Master's degree	33 (38%)
		OT doctor degree	0 (0%)
		Other doctor degree	5 (6%)
Current Practice Setting	87		
		Hospital/acute	27 (31%)
		Long-term care	25 (29%)
		Outpatient clinic	23 (26%)
		Home health	23 (26%)
		Inpatient rehab	22 (25%)
		Mental health	7 (8%)
		Work hardening	2 (2%)
		School	1 (1%)
		Other	15 (17%)
Approximate Hours per Week Working as an OT	86		
		0-20	15 (17%)

21-39	31 (36%)
40 or more	40 (47%)

Note. The *n* refers to the total number of respondents per question.

Table 2

Occupational Therapists' Reported Goals of Internet Use

Goal (<i>n</i> = 37)	Frequency (%)
-----------------------	---------------

Area of Occupation (per OTPF-II)	
Play/Leisure	24 (65%)
Work	14 (38%)
ADL/IADL	13 (35%)
Social Participation	12 (32%)
Education	12 (32%)
Other	15 (41%)

Note. The *n* refers to the total number of respondents for this question.

Table 3

Clients with Whom Occupational Therapists Reported Using the Internet as an Intervention Activity

Characteristic (<i>n</i> = 37)	Frequency (%)
---------------------------------	---------------

 Deficits

Cognitive	26 (70%)
Sensorimotor	19 (51%)
Mental Health	11 (30%)
Visual	10 (27%)
Speech	6 (16%)
Deaf/hard of hearing	0 (0%)
Other	12 (32%)

Ages

0-5 years	2 (5%)
6-10 years	4 (11%)
11-21 years	8 (22%)
22-40 years	23 (62%)
41-64 years	29 (78%)
65-80 years	14 (38%)
81 years and older	5 (14%)

Note. The n refers to the total number of respondents for these questions.

Table 4

Practice Settings in Which Occupational Therapists Report Using the Internet as an Intervention Activity

Practice Setting ($n = 37$)	Frequency (%)
Inpatient rehab	17 (46%)

Outpatient clinic	10 (27%)
Hospital/acute	7 (19%)
Home health	6 (16%)
Long-term care	5 (14%)
Mental health	3 (8%)
School	3 (8%)
Work hardening	1 (3%)
Other	5 (14%)

Note. The *n* refers to the total number of respondents for this question.

Table 5

Nature of Occupational Therapists' Use of the Internet as an Intervention Activity

Nature of Use (<i>n</i> = 36)	Frequency (%)
Information gathering	26 (72%)
E-mail communication	23 (64%)

Social networking	12 (33%)
Bill paying	9 (25%)
Trip planning	7 (19%)
Job search	6 (17%)
Online support groups	4 (11%)
Grocery shopping/delivery	3 (8%)
Other	18 (50%)

Note. The *n* refers to the total number of respondents for this question.

Table 6

Occupational Therapists' Opinions Regarding Use of the Internet as an Intervention Activity

Internet Use Effective for Addressing (<i>n</i> = 86)	Frequency (%)			
Areas of Occupation (per OTPF-II)	Agree	Somewhat Agree	Somewhat Disagree	Disagree
Education	77 (89%)	10 (11%)	0 (0%)	0 (0%)

	Play/Leisure	70 (81%)	16 (19%)	0 (0%)	0 (0%)
	Work	66 (76%)	18 (21%)	2 (2%)	1 (1%)
	Social Participation	44 (51%)	35 (41%)	2 (2%)	5 (6%)
	ADL/IADL	38 (44%)	30 (35%)	12 (14%)	6 (7%)
Deficits		Agree	Somewhat Agree	Somewhat Disagree	Disagree
	Deaf/hard of hearing	72 (82%)	14 (17%)	0 (0%)	0 (0%)
	Cognitive	68 (78%)	14 (16%)	5 (6%)	0 (0%)
	Speech	66 (79%)	14 (17%)	4 (5%)	0 (0%)
	Mental health	55 (66%)	24 (29%)	4 (5%)	0 (0%)
	Visual	47 (55%)	30 (35%)	7 (8%)	2 (2%)
	Sensorimotor	39 (46%)	35 (41%)	7 (8%)	4 (5%)
Ages		Agree	Somewhat Agree	Somewhat Disagree	Disagree
	0-5 years	26 (31%)	36 (43%)	13 (15%)	9 (11%)
	6-10 years	57 (67%)	23 (27%)	2 (2%)	3 (4%)
	11-21 years	76 (87%)	11 (13%)	0 (0%)	0 (0%)
	22-40 years	78 (90%)	9 (10%)	0 (0%)	0 (0%)
	41-64 years	72 (83%)	14 (16%)	1 (1%)	0 (0%)
	65-80 years	47 (55%)	27 (31%)	7 (8%)	5 (6%)
	81 years and older	36 (42%)	25 (29%)	16 (19%)	9 (10%)

Note. The *n* refers to the total number of respondents.

Table 7

Reported Barriers and Supports to Internet Use as an Intervention Activity

	Nature of barrier/support (<i>n</i> = 88)	Frequency (%)
Barriers		
	Not meaningful to client	56 (64%)
	Resources not available in treatment setting	52 (59%)
	Not relevant to treatment goals	50 (57%)
	Resources not available to client	49 (56%)

Other	15 (17%)
Supports	
Meaningful to client	62 (71%)
Resources available in treatment setting	51 (58%)
Resources available to client	50 (57%)
Relevant to treatment goals	49 (56%)
Other	5 (6%)

Note. The *n* refers to the total number of respondents.