

THE EFFECTS OF A FACILITATED ONLINE BLOG ON THE QUALITY OF
COMMUNICATION LIFE OF ADOLESCENTS AND YOUNG ADULTS WITH AUTISM
SPECTRUM DISORDERS

By

Christine Holyfield

Submitted to the graduate degree program in Speech-Language-Hearing: Sciences & Disorders
and the Graduate Faculty of the University of Kansas in partial fulfillment of the requirements
for the degree of Master of Arts.

Chairperson Jane Wegner

Betty Bunce

Matt Gillispie

Date Defended: April 12, 2013

The Thesis Committee for Christine Holyfield
certifies that this is the approved version of the following thesis:

THE EFFECTS OF A FACILITATED ONLINE BLOG ON THE QUALITY OF
COMMUNICATION LIFE OF ADOLESCENTS AND YOUNG ADULTS WITH AUTISM
SPECTRUM DISORDERS

Chairperson Jane Wegner

Date approved: April 15, 2013

Abstract

The quality of life, specifically the quality of communication life, of individuals with autism spectrum disorders (ASD) is lower than those with no disability or with physical disabilities. This disparity stems from barriers including social isolation and reduced social communication skills for individuals with ASD. Speech-language pathologists should work to eliminate this discrepancy because of the interest individuals with ASD have in communicating as well as the scope of practice and code of ethics outlined for the profession. In the current study, the effect of an online blog facilitated by graduate student speech-language pathologists on the quality of communication life of 6 adolescents (ages 14 –22 years) was examined. No increase in quality of communication life was found when comparing scores on the Quality of Communication Life scale pre- and post-intervention. Some more descriptive data suggests that participants enjoyed the blog and the blog allowed for an increase in participants' social interaction.

Acknowledgements

I am very grateful for Jane, Matt, and Betty, for reviewing this text amidst their busy schedules. They especially and other faculty at the University of Kansas have shown me how social justice can be accomplished for people with disabilities as I always suspected it should. Jane is a mentor every person should have. Not because of her knowledge specific to the field – though she has a lot – but because more than anyone I have known, Jane has taught me how simple (albeit time-consuming) it is to do the right thing. All that is necessary to doing the right thing is holding one's self to this commitment paramount to others; I have seen Jane embody this commitment every day. As I move forward, I will carry with me the skills and ideals that were imparted on me in this program and by these people. As a professional I will work toward making this world more socially just for individuals with disabilities and by extension all people. At least I will make it more safe and fun. And if ever I cannot find an answer, I will look toward what's right and do the hard and obvious thing.

I am lucky Michael Koepf is such a great teammate. His knowledge of Microsoft Word and Excel and patient demeanor were helpful in me retaining whatever sanity I had to begin with through my completion of the Results chapter.

Thanks to my family who taught me curiosity, kindness, and the true value of individuals. Tori, you're the reason I'm in this graduate program, and will always be the coolest person I know.

Table of Contents

Title Page	<i>i</i>
Acceptance Page	<i>ii</i>
Abstract	<i>iii</i>
Acknowledgements	<i>iv</i>
Table of contents	<i>v</i>
List of figures and tables	<i>vii</i>
Chapter 1	
Introduction.....	1
Social Communication Barriers and Autism Spectrum Disorder	1
Quality of Communication Life and ASD	3
Promoting Quality of Communication Life in Autism	4
<i>Technology and Social Support</i>	5
Purpose	9
Chapter II	
Methods.....	10
Participants	10
Materials.....	11
Procedures	15
Measures.....	17
Chapter III	
Results.....	18
Quality of Communication Life Scale Scores.....	18
Participant Feedback	19
Participation Patterns.....	21
Chapter IV	
Discussion.....	27
Quality of Communication Life Scale Scores.....	27
Participant Feedback	28
Participation Patterns.....	30

Limitations and Future Directions.....	41
References.....	45
Appendices	50

List of Figures and Tables

Table 1: Participant Demographics.....	10
Figure 1: “Home” page	12
Figure 2: Sidebar	12
Table 2: Weekly Prompts	13
Figure 3: “We are Fearless Spellers!” blog page	14
Table 3: Participant Quality of Communication Life Scale scores	18
Table 4: Care Provider Quality of Communication Life Scale scores	18
Table 5: Survey responses per participant	19
Table 6: Survey responses across participants	19
Table 7: Favorite aspects of the blog	20
Table 8: Facilitator Contributions	21
Table 9: Totals by participant	21
Table 10: Participation across participants each week	22
Figure 4: Total participant posts, comments, pictures, and videos each weeks	23
Figure 5: Number of visits by day	24
Figure 6: Pages viewed by day	24
Figure 7: Lengths of visits across days	25
Figure 8: Number of pages viewed each visit across days	25
Figure 9: Number of visits and page views as grouped by visit duration	26

Chapter 1

Introduction

Social Communication Barriers and Autism Spectrum Disorder

Social inclusion and relationships are contributors to quality of life. They are often lacking in individuals with ASD because of social barriers and under-developed social communication skills. Social communication involves both social competence and communication competence (Kaczmarek, 2002). Social competence involves skills such as understanding implicit social rules, perspective taking, and identifying others' emotions; communication competence involves language form (e.g., syntax), content (e.g., semantics), and use (i.e., pragmatics).

Cottenceau et al. (2012) found that when compared to adolescents with diabetes and adolescents without disabilities, adolescents with an autism spectrum disorder (ASD) have a much lower quality of life. They differed predominantly in three areas: relationships with friends, leisure, and affective and sexual relationships. The authors posited that the consistently lower scores for the group with ASD in these three areas were a result of the social and communication impairment that is central to the ASD diagnosis in that social and communication skills are important to human relationships. The aforementioned study supported the results of a similar study that examined the quality of life of adolescents and young adults with ASD, including Asperger's and high-functioning autism. Kamp-Becker Schroder, Remschmidt, and Bachmann (2010) found the scores of the group with ASD in the "social relationships" domain to be markedly lower than in the domains of physical health, psychological health, and environment. The scores from the participants with ASD were also significantly lower than a sample from a typical reference population overall and in the three

domains. Stuart-Hamilton and Morgan (2011) conducted an online study with 29 respondents with ASD in their forties with no intellectual disability. They found that a lower quality of life related to social isolation persisted into adulthood for individuals with ASD. Forty-eight percent of respondents indicated they were currently being treated for anxiety and/or depression.

The functional daily impact of under-developed social and communication skills as a social barrier is compounded by the current and historical isolation and marginalization of individuals with disabilities, including ASD. According to the U.S. Department of Education (2012), 9.6% of students with ASD are not educated in a school with their typically developing peers. Of the students with ASD who attend a typical school, 90.5% of those students spend at least some of the school day outside the general education classroom; 34.8% are outside of the general education classroom for 60% or more of the school day (U.S. Department of Education, 2012).

Marginalization persists even when students with ASD are in a general education classroom; "...physical integration is a precondition for social inclusion, not simply an end in itself" (Gomez, 2012, p. 361). Raghavendra et al. (2012) found that children with complex communication needs had the fewest friends and extremely limited social interaction during the limited time they were able to spend in the classroom. This trend of marginal social interaction continued outside the classroom. Forty-six percent of elementary, middle, and high school aged (5-21 years) individuals with ASD experienced bullying (verbal, social, physical, or cyber) at least once a week, and often multiple times a week (Cappadocia, Weiss, & Pepler, 2011). Even those individuals with ASD who are able to overcome social and cultural disadvantages and attend college were welcomed with a less than open and accepting attitude by most peers (Nevill & White, 2011). Whitehouse, Watt, Line, and Bishop (2009) examined psychosocial outcomes

for adults with ASD and found that while every adult without disabilities in the study had at least one close relationship, not one participant with ASD in the study had even one close relationship.

Individuals with ASD value social interaction as highly as any other human; the individuals with ASD just have more barriers to achieving it. Fletcher-Watson, Leekam, & Findlay (2013) displayed images with both social and non-social aspects to 31 young adults with ASD and 35 neurotypical peers. They asked the 66 young adults to talk about the pictures as they were shown. The authors coded the picture commentary of the participants, and found no difference in the amount of social information included by the two groups. The information was also coded by the beginning and second halves of the commentary made by each participant for each picture. The participants all focused on social information in the first half then began to address non-social information more in the second half of their commentary. This study found no difference in interest in social information between individuals with and without ASD. Individuals with ASD are interested in interaction; they just require more support with the process.

Quality of Communication Life and ASD

When targeting a person's level of social communication, it could also be said that the SLP is working toward increasing that individual's quality of communication life. This term is derived from ASHA's Quality of Communication Life Scale (Paul et al., 2005). The scale was created to determine the extent to which an adult's communication disorder impacts her quality of life. It has also been shown to be an effective means for evaluating quality of communication life in adolescents with high-functioning autism and Asperger syndrome.

Burgess & Turkstra (2010) administered the Quality of Communication Life Scale to 15 adolescents with high-functioning autism/Asperger syndrome and 15 peers developing typically

with the goal of examining the utility of the Quality of Communication Life Scale in measuring quality of communication life in adolescents with high-functioning autism/Asperger syndrome and the self-perception these adolescents hold about their quality of communication life. The authors concluded that because of the ease with which participants with high-functioning autism/Asperger syndrome completed the scale, the expected amount of deviations in their scores, and the predictable patterns of their scores, the Quality of Communication Life Scale was an effective measure of quality of communication life for adolescents with high-functioning autism/Asperger syndrome. The participants with high-functioning autism/Asperger syndrome reported having much lower quality of communication life than the peers developing typically.

Promoting Quality of Communication Life in Autism

The American Speech-Language Hearing Association (ASHA) identifies addressing the social aspects of communication and environments affecting communication as clinical services within the speech-language pathologist's (SLP's) scope of practice (2007). ASHA also holds SLPs to the ethical standard of maintaining the highest level of professional competence (2010). Because of the ubiquitous social constraints present in ASD and the pervasiveness of social deficits in the disorder, social communication is essential to meaningful support for individuals with ASD. Subsequently, it is not only within the scope of practice, but the moral imperative of SLPs to target the social aspects of communication of a person with ASD. Fortunately, as a profession, we SLPs are uniquely qualified to do so.

A recent government survey found that 1 in 50 school-aged children have an ASD in the United States (Blumberg et al., 2013). The impact ASD is having on the quality of communication life of our society is not matched by our knowledge about effective social communication intervention (Trepagnier et al, 2011). Recent research, however, outlined some

promising approaches. There is emerging evidence that Augmentative and Alternative Communication (AAC) intervention, for example, is an effective strategy for communication (National Autism Center, 2009). Also, techniques such as the use of Social Stories™, social groups, and video modeling have produced promising results in social communication intervention for individuals with ASD (Karkhaneh et al, 2010, Laugeson et al, 2012, Reichow et al, 2012, Carter, 2011). Professionals have begun utilizing video modeling and other forms of technology as a means for addressing social communication. This trend shadows the increasing importance technology has in social communication for society at large.

Technology and Social Support

Wright et al. (2011) trained boys with ASD to use SketchUp™, a software tool for making three-dimensional sketches or models (Wright et al., 2011). The software program capitalized on the boys' exceptional visio-spatial skills, and all the boys experienced great success and enjoyment with the software. The boys were then able to train their siblings to use SketchUp™, show their parents and grandparents their sketches, and present what they had made using the software to their class. This study is special because it gave the boys with ASD a place where they were safe to be themselves. The goals of the study were not to change the boys. The goals instead were to create a meaningful social environment in which the boys could succeed, show their parents their potential, and build stronger bonds between family members of different generations. These enlightened and socially just goals were met exceedingly according to pre- and post-data from parents, grandparents, and teachers. In seeing their child's success, parents experienced a shift in the expectations for their sons. They were able to see potential future career paths for their children they had not previously dreamed. This realization was life-changing for the parents because, as a parent from the study shared, "We just want them to grow

up to be taxpayers!” In finding an extracurricular activity their sons enjoyed, the parents also felt more successful in parenting. The social aspects of the study also enhanced the conversation and reduced the tension between parents and their sons. The siblings of the sons were also offered a common interest with which they could relate to their brothers. Grandparents were given a new, more dynamic perspective on their grandsons, and were able to increase communication quality with their adult children (i.e., the parents of the boys).

Trepagnier et al. (2011) used a software prototype that simulated conversation with the goal of increasing social skills in adults and adolescents with autism. The software showed the user a realistic avatar with whom she could engage in conversation. The user chose responses within the conversation from scripted lines (e.g., “Yeah, I’m glad I came. This is a cool party.”), and the avatar responded accordingly. After two weeks, the participants reported a positive experience with the virtual conversations, and felt that using the software had benefited their conversation skills. This was reflected by the frequency of use of the software, which for most participants was more than the authors prescribed. Although the difference was not statistically significant, the quality of the participants’ conversation response choices improved after the two weeks of software use. This approach to internet therapy for individuals with autism is useful in that no professionals are required, except perhaps to train individuals how to use the software and to monitor their use.

Online learning has been examined for providing indirect services to individuals with ASD. Wainer and Ingersoll (2012) used the internet to remotely teach therapists and parents how to use evidence-based interventions for children with ASD with significant positive results. A similar, more involved study in Poland which used the internet to assist parents in providing individualized treatment to their children also had positive results (Waligorska et al, 2012).

A few studies have used the internet for direct services for individuals with ASD (Robbins, 2010). With the help of adolescent and young adult participants with ASD and/or ADHD, Wentz, Nyden, and Krevers (2012) developed an online support tool for 12 participants. The study included an initial model of the online support, then a refined model after feedback from participants and the coaches. In the final model, each participant was assigned to her own coach, a psychiatrist or educational therapist. After an initial meeting, the participant and coach had two weekly online chat sessions spanning from thirty minutes to an hour. Participants and coaches could also keep in contact via e-mail between online sessions. An example of subjects during the online coaching was improving daily routine or study strategies. The model allowed for participants to receive online coaching for any social difficulties they were having, but did not create an online (or face-to-face) space where the participants could give and receive support to and from one another. According to self-report data collected six-months after initiating the final model, participants experienced an increase in self-esteem, quality of life, and felt that the online support they received was both important and fulfilling.

Sohlberg, Todis, Fickas, and Ehlhardt (2011) investigated the use of TeenMail, an adapted e-mail interface, in enhancing the social communication of middle school students with disabilities, including one student with autism. The authors' goal was to identify specific language characteristics in the e-mail writing of the students. Surprisingly, the most salient finding was the extent to which the students used the email interface to communicate with peers and school staff. The students sent a total of 1,323 emails throughout the 12 weeks the project spanned. The influx of e-mails created by the students showed the motivation, effectiveness, and accessibility of the context. Teacher report stated that TeenMail became the primary

communication mode between the student with autism and his peers who previously had very limited interactions.

Wyatt (2010) surveyed adult college students with ASD to identify key preferences for the participants in regards to internet writing classes. Ninety-two percent of the male participants and 71% of female participants engaged in creative writing outside of class, indicative of interest in and motivation to write. About 75% of the participants who wrote creatively outside of class shared their writing with others. In alignment with Sohlberg et al.'s (2011) success with TeenMail, another striking result was that participants overwhelmingly wanted e-mail or Rich Site Summary (RSS) based interfaces for communication purposes between professors, colleagues, and themselves. The top three preferences were discussion boards, e-mail lists, and group blogs, respectively. Participants reported a disdain for real-time online interactions (e.g., Skype). They also reported a preference for simple, text only displays with no icons. This preference corresponded with Trepagnier et al.'s (2011) ancillary finding that the layout of the software was perceived as too busy by the participants. Wyatt's participants did not want anything on the website to move or play without the explicit control of the user. The college students with ASD felt that they had auditory processing difficulties that made videos problematic, so any videos on the site would have a text transcript. Due to migraines, seizures, or other difficulties, participants preferred websites to utilize color combinations with little contrast and of low-intensity (e.g., gray-blue backgrounds with darker gray text). They reported a dislike for websites with displays containing pure white or red; however, they noted that the ability to adjust the brightness of the screen usually thwarted much of the frustration tied to this aspect of websites. The majority of participants reported overall positive experiences with internet involvement. Eighty five percent of participants had or have had a blog. Importantly for

social interaction, over 75% of those participants who shared media online reported having responded to comments from others online. The author found differences between genders. Women reported difficulty using computers at much higher rates than male participants. Interestingly, despite increased effort using computers, women were more likely to blog. Participants used both Facebook and LiveJournal at high rates, around 75%. Much more than men, over 90% of women in the study were active in online communities specifically targeting individuals with ASD, and the majority of participants, men and women, reported these online experiences as positive. One female participant shared that such websites gave her an “important sense of community and friendship that I haven’t experienced offline” (p. 186).

The current study drew from the information about technology above. In line with Wright et al. (2011), the current study focused on providing individuals with ASD a context for social interaction rather than aiming to increase social communication skills directly. Like Sohlberg et al. (2011), the current study uses the internet in an attempt to increase social interaction for people with disabilities. Wyatt (2010) informed the formatting of the online interface in the current study.

Purpose

The purpose of the current study is to examine the effect of a facilitated online blog on the quality of communication life of adolescents and young adults with ASD.

Chapter II Methods

Participants

Participants were recruited from the Schiefelbusch Speech-Language-Hearing Clinic and the Kansas Center for Autism Research and Training (K-CART) and Autism Heartland Society Facebook pages (see Appendix A for the announcements on Facebook). Six adolescents and young adults with ASD between the ages of 14 and 22 years ($M = 16.8$, $SD = 3.2$) participated in the study. Participant demographics are presented in Table. 2.1. All participants were white. The participants were all enrolled in an educational program.

Table 1. Participant Demographics

Demographic Information				
Participant	Age	Diagnosis	Gender	Education
1	22	autism	Female	Community College
2	14	Asperger's syndrome	Male	Public High School
3	15	PDD-NOS	Male	Home school
4	19	autism	Male	Community Transition Program
5	17	PDD-NOS	Female	Home school
6	14	PDD-NOS	Male	Public High School

All participants were verbal and able to read and write independently. This was not a requirement for participation; rather, it happened to be characteristic of all participants. All 6 participants also had weekly internet access.

Information about previous experience with a computer was gathered while meeting with participants. Four of the six participants completed both meetings of the study, so only computer

information for those four participants was explored. Functions of previous computer use included work, school, researching information and shopping. Two of the four participants indicated using the computer to write about themselves previous to the study (participants 3 and 5). Three of the four participants had previously used the computer to talk with family (participants 1, 3, and 5); two of the four participants had used the computer to talk to their friends (participants 1 and 5). Participants also reported the frequency with which they used a computer for social purposes (e.g., to tell your cousin about your day). Frequencies varied from “multiple times a day” (participant 1) to “about once a day” (participant 5) to “less than once a month (participants 3 and 4). Two participants indicated previous use of social media sites; Participant 1 had used Facebook, Twitter, and MySpace, and Participant 5 used Facebook and Skype. Two of the participants (participants 1 and 3) had kept a blog. Although the blogs previously kept by the participants were more focused on specific topic information (e.g., music or anime), not aimed toward social interaction or necessarily sharing information with other individuals. When asked to list favorite websites, responses were: Participant 1 – Facebook, AmericanIdol.com, anime websites, newspaper websites; Participant 3 – YouTube; Participant 4 – Google, Wikipedia, ESPN, Hulu; Participant 5 – YouTube, Facebook, Skype.

Materials

The researcher created a blog space on Google Sites for the study. The colors on the blog were in line with the participant information about online interfaces in Wyatt (2010). Use of a blog, as opposed to a real-time interface (e.g., instant messaging or Skype), also met the specification of the Wyatt (2010) participants. The blog included a “Home” page. The “Home” page offered links to any past weeks and the present week, descending from most recent to oldest. See Figure 1.



Figure 1. “Home” page

The “Home” page, along with every other page, also displayed a sidebar to the left. The sidebar included the following links in this order: “Home,” the most recent week to the least recent week in descending order, “Writing on the Blog” and “We are Fearless Spellers.” See Figure 2.

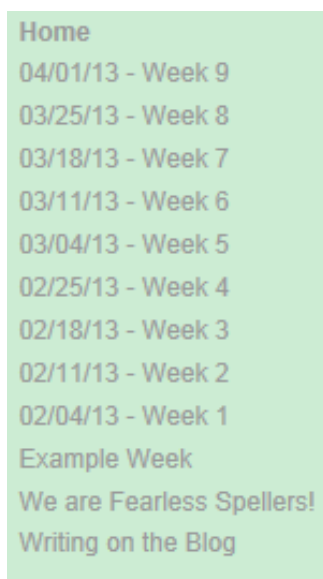


Figure 2. Sidebar

The pages for each of the 7 weeks were similar. Each page had the sidebar described above. Each week’s page was titled with the respective start date of the week and week number of the blog (e.g., “02/04/13 – Week 1”). Below the title, the page for each week contained a prompt. Each week had a different prompt. The prompts were intended to provide participants a starting point to their posts if they needed one. The prompts are listed in the table below.

Table 2. Weekly Prompts

Week	Prompt
1	My favorite things to do are... AND / OR The most exciting thing to happen this year or last year was...
2	Some things I really don't like are... AND / OR Some things I wish didn't exist are...
3	One thing I wish people knew about me is... AND / OR People would be surprised if they knew I...
4	My dream vacation is... AND / OR My best vacation was...
5	If I had a robot, I would make him... AND / OR If I had a million dollars, I would...
6	The best gift I've ever given is... AND / OR The best gift I've ever gotten is...
7	One goal or plan I have for the future is... AND / OR One thing I have worked really hard on is...

Below the prompt for each week was a button that was label “New Post.” By activating this button, a new page appeared where participants could add a title in the line “Untitled Post” and click the area below the title line to write, add photos, and/or add videos. They then saved their posts for them to appear on the site for other participants to view. The participants could also view any other posts from other participants and/or the facilitators on each week’s page. If they clicked on a particular post, the full post appeared. From there, participants could post comments. Participants were also able to reply to specific comments that had already been posted. See Figure 2 for a sample blog page.



Figure 2. Week 6 blog page

The “Writing on the Blog” page contained a Social Story™ about keeping writing on the blog positive, especially toward other participants (Appendix B). The “We are Fearless Spellers!” page was another Social Story™ encouraging the participants not to worry about their spelling while posting on the blog (Appendix C). It urged them to just try their best to spell, and if they didn’t know how to spell a word it was OK because people would usually be able to tell what the word was anyway. The page also contained a picture of Superman in his trademark stance. See Figure 3.

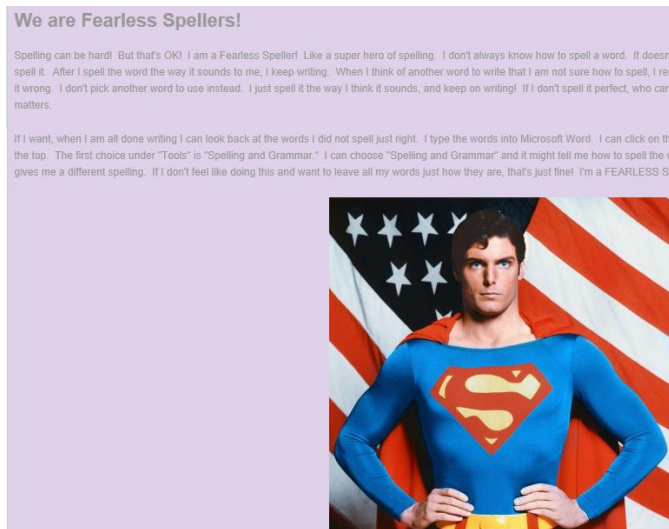


Figure 3. "We are Fearless Spellers!" blog page

Two adapted versions of the Quality of Communication Life Scale, one with a visual scale and one without, were used in the study (see Appendices D and E). A questionnaire about participants' previous use of computers, and a survey of the participants' experiences on the blog were used (see Appendices F and G, respectively).

Procedures

The researcher met individually with the participants and their care providers before the study. During these initial meetings, the researcher obtained informed consent and oral assent from the care providers and participants, administered the Quality of Communication Life Scale to the participants and care providers, conducted a survey with the participants about their previous experience with computers, and showed the participants how to access and navigate the blog. The researcher read the Social Stories™ on the blog with the participants. Participants were given permission through Google Sites to access the blog, and were allowed to submit a post and any comments on the "Example Week" page of the blog. Allowing participants to submit a post on the blog with the researcher present served two purposes: 1) to familiarize participants with the blog, and 2) to see if any participant might benefit from individualized

support (e.g., a list of Cloze phrases). Writing samples on the blog were obtained from participants if they chose to write. Participants were instructed to complete their entries on the “Example Week” page of the blog. Participants were told that in the subject line, they could replace “Untitled Post” with their names if they wanted.

Participants were also able to view previous posts from the facilitators and any participants who had already posted. Some participants even chose to comment on other posts in “Example Week.” The researcher also provided the participants and care providers with a PowerPoint with instructions for finding and using the blog (Appendix H). Five of the initial meetings were face to face while one initial meeting occurred over Skype.

The blog was launched on February 4th, 2013. The researcher added the new page for each week on the Sunday night or Monday morning that began the week. The study lasted for 7 weeks. During this time, the researcher and another graduate student posted and commented on the blog along with the participants. The researcher always submitted the first post of the week to serve as a model for the participants. The researcher commented on every post submitted by a participant during those 7 weeks, and replied to comments when appropriate.

At the end of the 7 weeks, the researcher had another meeting with participants to obtain final data. Parents and participants completed the Quality of Communication Life Scale again. A survey about the blog was conducted during the final meeting which aimed to gain understanding about the participants’ experiences with the blog (e.g., what they liked/didn’t like). Final meetings were completed with four of the 6 participants. The other two participants were not able to meet face-to-face. The researchers e-mailed the final surveys, but the surveys were not returned.

Measures

Participant and care provider scores on the Quality of Communication Life Scale at the beginning of the study were compared to those at the end of the study to determine if the blog had any impact on the quality of communication life of the participants as perceived by themselves and their care providers.

Scores on the survey examining participants' experience with the blog were gathered to determine more specifically the utility of the blog.

Information from Google Analytics was gathered to get an estimate about the time spent on the blog and the frequency with which pages on the blog were viewed by day, week, and overall.

Finally, the researcher analyzed the activity on the blog. The number of posts and comments for each participant were tracked as well as the number of pictures and videos used by the participants. The researcher also examined the level of social interaction on the blog in relation to the different participants, weeks, written convention use, and prior relationships with other participants and/or the facilitators.

Chapter III Results

This study assessed the impact of participation in an online blog on the quality of communication of 6 adolescents/young adults with ASD between the ages of 14 and 22. The blog was facilitated by the researcher and a graduate student in speech-language pathology. For the remainder of this work, the researcher and graduate student will be referred to collectively as facilitators.

Quality of Communication Life Scale Scores

Four of the 6 participants completed both the initial and final meetings. Of the four, one participant's score dropped, one participant's Quality of Communication Life Scale score increased, two participant's scores stayed the same or almost the same. Three of the four care provider's scores increased, while one care provider's scores decreased. See Tables 3 and 4.

Table 3. Participant Quality of Communication Life Scale scores

Participant Quality of Communication Life Scale Scores		
Participant	Pre-intervention	Post-Intervention
1	89	90
3	68	77
4	86	86
5	74	60

Table 4. Care Provider Quality of Communication Life Scale scores

Care Provider Quality of Communication Life Scale Scores		
Care Provider	Pre-Intervention	Post-Intervention
1	80	87
3	69	65
4	76	90
5	53	57

Participant Feedback

All four participants who had a final meeting completed a survey responding using the visual from the Quality of Communication Life Scale (1 as no/never, 3 as some/sometimes 5 as yes/always). See Tables 5 and 6.

Table 5. Survey responses per participant

Item #	Item	Participant 1	Participant 3	Participant 4	Participant 5
1	I am happy I did the blog.	5	5	5	5
2	I want to keep doing a blog.	5	5	1	5
3	I made a friend (or more) on the blog.	5	5	5	4
4	I shared about myself of the blog.	5	5	5	4
5	I like writing on the blog.	5	5	5	5
6	I like talking to people on the blog.	5	5	5	4
7	I like sharing pictures on the blog.	5	5	5	3
8	I like sharing videos on the blog.	5	5	1	3
9	I would rather talk on the blog than in person.	3	3	1	3
10	I would like more people to be on the blog.	5	3	1	3

Table 6. Survey responses across participants

Item #	Item	Mean	Standard Deviation
1	I am happy I did the blog.	5	0
2	I want to keep doing a blog.	4	2
3	I made a friend (or more) on the blog.	4.75	0.5
4	I shared about myself of the blog.	4.75	0.5
5	I like writing on the blog.	5	0

6	I like talking to people on the blog.	4.75	0.5
7	I like sharing pictures on the blog.	4.5	1
8	I like sharing videos on the blog.	3.5	1.9
9	I would rather talk on the blog than in person.	2.5	1
10	I would like more people to be on the blog.	3	1.6

The survey also gathered participants' favorite aspects of the blog from a list provided.

Participants were able to choose as many favorites as possible. See Table 7.

Table 7. Favorite aspects of the blog

Participant Favorites				
Blog Aspect	Participant			
	1	3	4	5
The way it looks				X
Meeting new people	X	X		X
Talking about myself	X	X		X
Learning about other people	X	X	X	X
It was easy to use	X		X	X
The layout of the blog			X	X
The pictures and videos	X			
The other people on the blog	X			X
Other people on the internet could not see it				X
Other: _____	Fixing mistakes			

The participants then chose how often they read other people’s posts and comments. Participants 1 and 3 “always” read other peoples posts and comments. Participants 4 and 5 “sometimes” read other people’s posts and comments.

Participation Patterns

The facilitators posted each week and commented frequently. At least one facilitator commented on every post made by a participant. Facilitators responded to comments when appropriate. One facilitator had more entries than any of the participants, and the other facilitator made about as many entries as the two most active participants. See Table 9.

Table 8. Facilitator Contributions

Blog Contributions per Participant				
Facilitator	Posts	Comments	Pictures	Videos
Christine	7	83	22	3
David	7	49	7	1
	14	132	29	4

Table 8 illustrates each participant’s contributions to the blog in the form of posts, comments, pictures, and videos.

Table 9. Totals by participant

Blog Contributions per Participant				
Participant	Posts	Comments	Pictures	Videos
1	6	39	13	0
2	5	1	2	0
3	8	37	2	1

4	7	7	2	0
5	6	0	0	0
6	2	1	0	0
Total (For Participants)	34	85	19	1

Table 10 and Figure 4 show blog contributions made by participants each week.

Table 10. Participation across participants each week

Blog Contributions per Week					
Week	Posts	Comments	Pictures	Videos	All Contributions
1	4	26	4	0	34
2	6	10	1	0	17
3	6	11	2	1	20
4	5	8	8	0	21
5	5	9	2	0	16
6	4	5	0	0	9
7	4	16	2	0	22

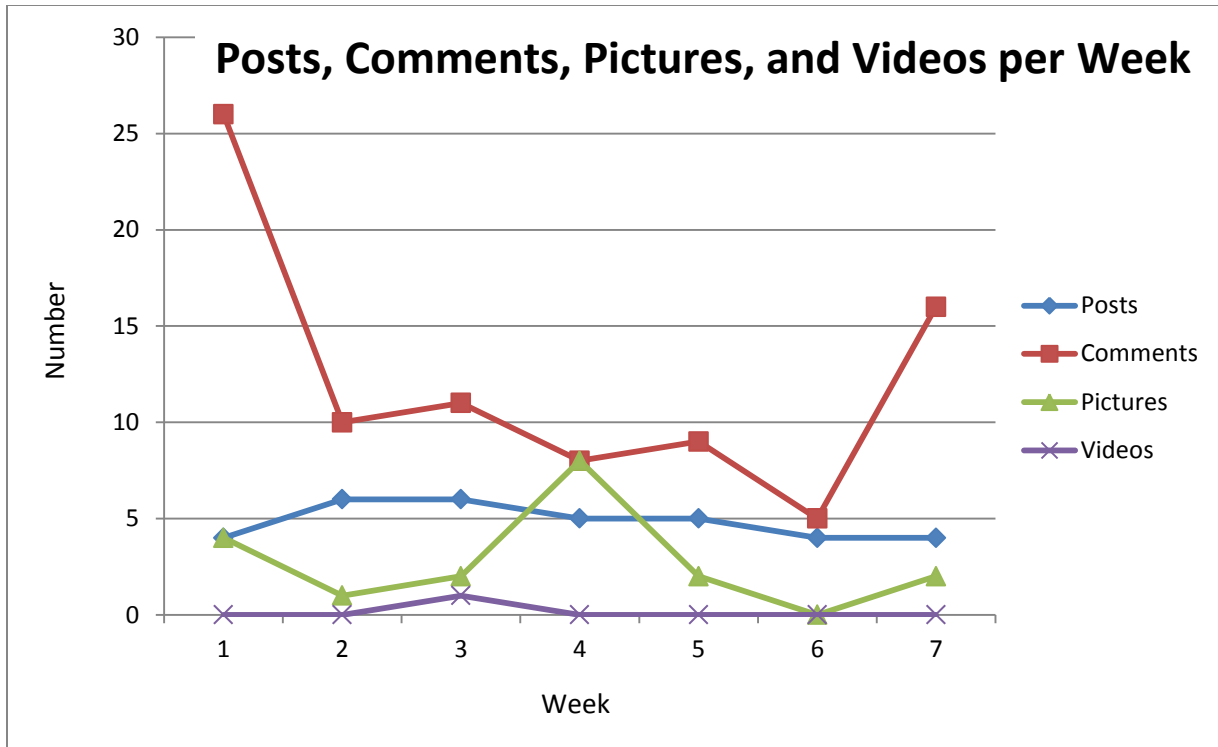


Figure 4. Total participant posts, comments, pictures, and videos each weeks

Google Analytics revealed that the facilitators and participants visited the site 150 times in the seven weeks of the study; they visited pages 1,718 times. Average duration of each visit was 12 minutes and 29 seconds. The average number of pages viewed each visit was 11.13 pages/visit. The graphs below show these findings.

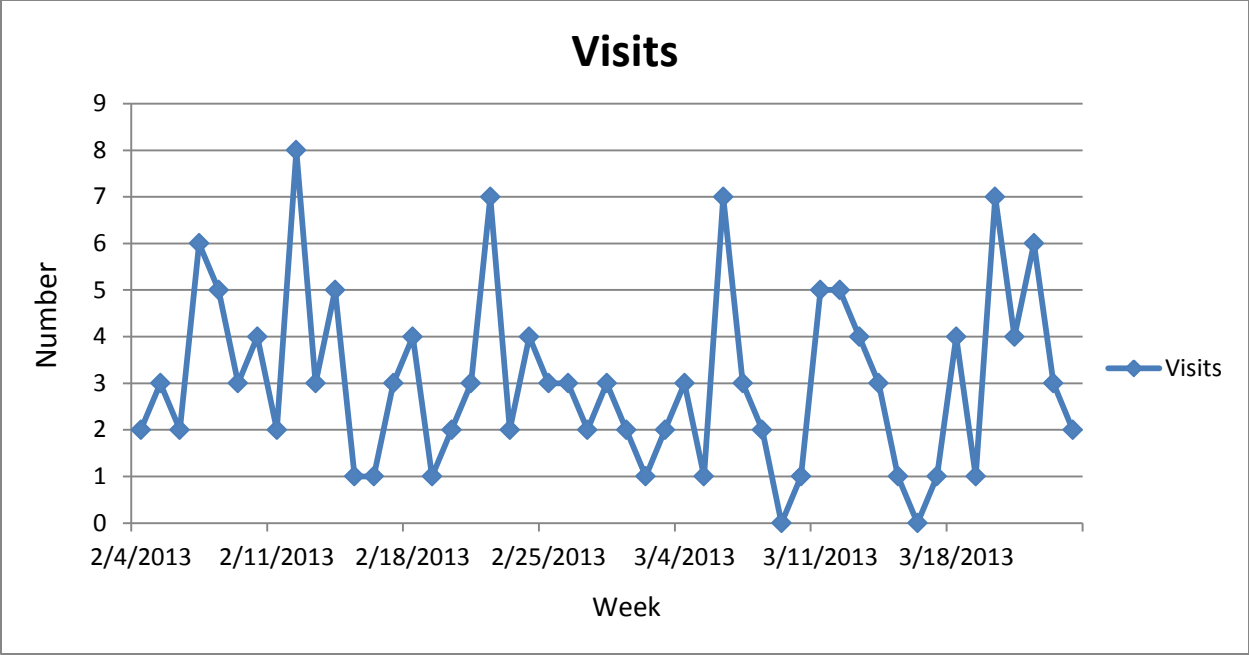


Figure 5. Number of visits by day

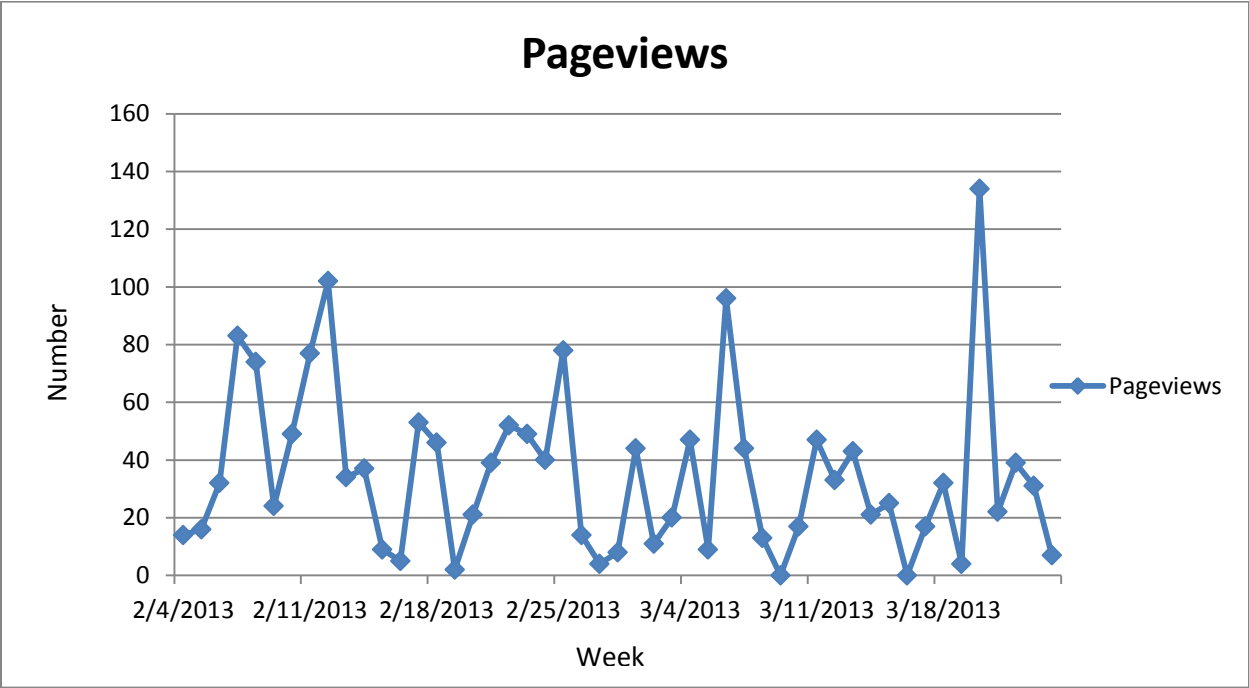


Figure 6. Pages viewed by day

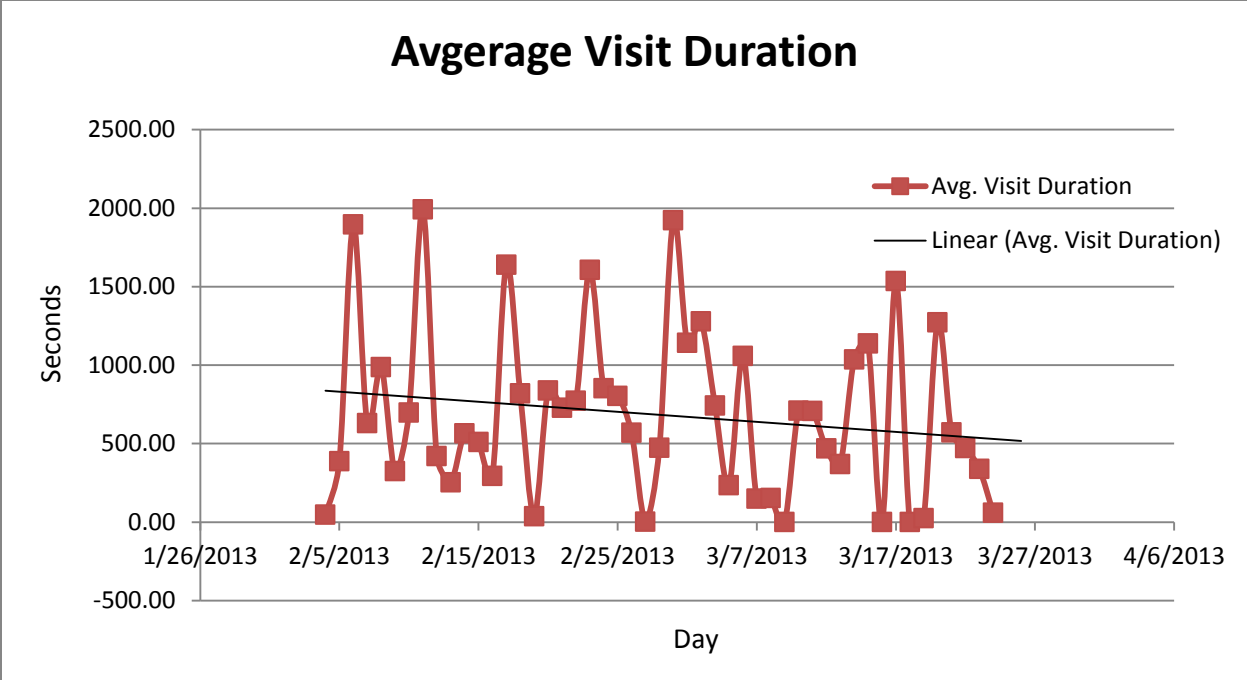


Figure 7. Lengths of visits across days



Figure 8. Number of pages viewed each visit across days

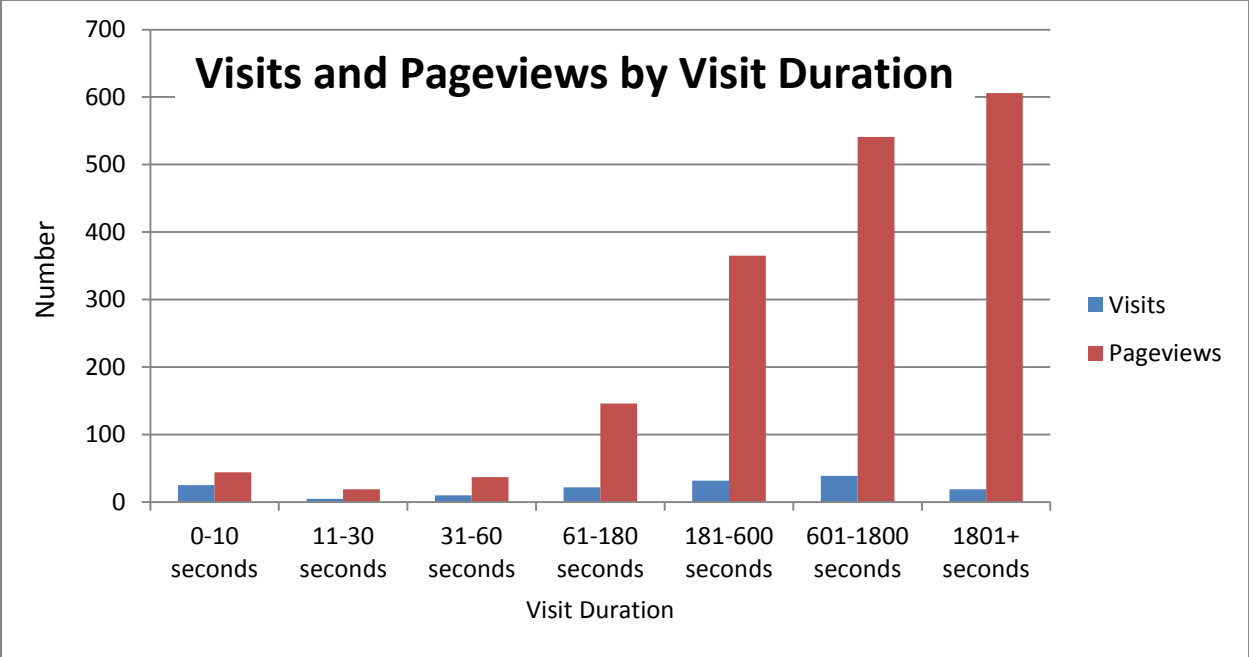


Figure 9. Number of visits and page views as grouped by visit duration

Chapter IV

Discussion

Scores from the Quality of Communication Life Scale did not indicate the intervention was efficacious for increase the quality of communication life of adolescents and young adults with ASD. The scores also dictate that the study could not be generalized. However, participant feedback and participation feedback suggest that participants used and enjoyed the blog and did engage in social interaction.

Quality of Communication Life Scale Scores

After the 7-week facilitated online blog for adolescents and young adults with ASD, no clear changes in the quality of communication life of the participants were found as measured by changes in scores on the Quality of Communication Life Scale (Paul et al., 2005). The biggest observable change across the participants was for the item “I follow news, sports, and stories on TV/movies.” The item increased a total of 6 points across participant and care provider scores. Seven other items increased by a point or more. They are: “I am part of the family, the same as the other people in the family,” “I can do what I'm supposed to do at my job or school (such as: typing, giving and following directions, reading),” “I get out of the house and do things (such as: sports, dinner, shows, parties),” “I have jobs at my house (such as: shopping, cooking, home repairs),” “I use the telephone,” “In general, my life is good,” and “People understand me.” There was no total change for six of the items, and a decrease in score for four of the items.

The lack of meaningful change in Quality of Communication Life Scale scores is likely due to several factors. First, the study was very brief being only 7 weeks. This is a short time to expect a measurable change in a person's quality of communication life. Next, only four of the 6 participants completed the final meeting and were included in the results for the Quality of

Communication Life Scale so not all of the participants were represented in the results. The Quality of Communication Life Scale itself is also a factor as it is broad and may not have captured subtle changes. Many items of the measure are very general (e.g., “I like myself.”), and some items address specific aspects of quality of communication life that may not relate closely to the blog (e.g., “I use the telephone.”). The measure was also a five-point-scale. This type of scoring may not pick up subtle changes in attitudes or skills. Additionally, the self-report format of any questionnaire relies on the imperfect accuracy of self-awareness. Despite the lack of notable findings from the Quality of Communication Life Scale, other results suggest value in the blog in enriching communication life for adolescents and young adults with ASD.

Participant Feedback

In a survey created by the researcher, participants reported they were happy they did the blog, made a friend (or more) on the blog, liked writing on the blog, and liked talking to people on the blog. With the exception of one participant, the participants reported wanting to continue on the blog even though the study was over. Participant 4's care provider reported that he probably viewed continuing the blog as breaking a rule because he was told it was ending after week 7. She added that she thought that without this perception of rule-breaking, the participant would likely want to continue the blog. While these results are only descriptive in nature and involve the same limitations in sample size and self-report as the Quality of Communication Life Scale, results from the survey indicate that the participants enjoyed the increase in social interaction they were afforded by the blog. These results are in line with a recent study which found no difference in interest in social information for young adults with and without ASD, suggesting that individuals with ASD are just as driven as their typically developing peers to

interact socially and have friendships (Fletcher-Watson et al, 2013). The care providers involved expressed similar positive attitudes toward the blog and their support for its continuation.

Participants also shared about the blog. Participant 1 said, “I want to be on track with the blog. I don’t want to miss time.” She also stated that with the blog she was able to “think of my own words.” Participant 3 said “Yay! And it was fun.” Participants 4 and 5 chose not to add any additional input about the blog.

Similarly, the care givers were given the opportunity to say anything about the blog. Participant 1’s caregiver said:

“I think [Participant 1] really enjoyed doing it. She liked it a lot, and I’m glad you included her. She felt bad that she didn’t always remember to do it because I know she really wanted to.”

The researcher and Participant 3’s care provider did not get to talk about the blog during the final meeting due to time constraints. She did quickly share that she thought the blog was “great” and that she hoped it would continue and expand. Participant 4’s care provider shared that Participant 4:

Needed a lot of assistance at first, but by the end was writing it by himself. The last entry, he didn’t even ask for my help. When he was done he said, “Can I post it?” I said, “Yeah. What did you say?” And he told me.

She also shared that Participant 4 wanted to put pictures of himself on the blog, but they were unable to find the camera cord to download pictures onto the computer. She said he wanted to put pictures of him on vacation in Florida, for example. In regards to a post in which Participant 4 wrote that visiting Colorado was his dream vacation, the care provider told the author she was, “So surprised he wrote about going to Colorado. Totally shocked me. I 100% would have said

he wanted to go to Disney World. I told my husband, and he couldn't believe it." She then told the author that she and her husband are now planning a family vacation to Colorado this summer.

The care provider of participant 5 said that "[Participant 5] seemed like she really enjoyed it." She also added about Participant 5 that "her spelling and grammar are atrocious" and that she and others "have worked with her on it." Care provider 5 shared that she felt that she didn't know if other people understood what Participant 5 was saying on the blog. Even though Participant 5 posted consistently and reported enjoying the blog, she had very limited interaction. Her care provider suggested that it was because she was not being understood. Spelling and grammar skills may be important to interacting online.

Both care providers and participants requested that the blog continue past the end of the study.

Participation Patterns

The amount that participants used the blog, and the high number of posts and comments they contributed to the blog, also suggest they enjoyed interacting on the blog. The final weeks of the blog involved less traffic as compared to the initial weeks of the blog. The first and final weeks had the most contributions; week 6 had the least contributions. The participants made a total of 34 contributions in week 1, 17 contributions in week 2, 20 contributions in week 3, 21 contributions in week 4, 16 contributions in week 5, 9 contributions in week 6, and 22 contributions in week 7. This decline probably occurred for a variety of reasons. Three participants were sick at some point during weeks 5 and 6, as reported by care providers, which could account for the lowered participation those two weeks. Also, the final week of the blog coincided with Spring Break for many of the participants and the facilitators. The time off from daily routines may have made it hard to remember to write on the blog. It is also possible that as

time grew further from the initial meetings for the blog. The participants may also have lost some interest as the blog continued.

There was variation in participant social interaction on the blog. The three most active participants on the blog knew at least one facilitator and one participant previous to starting the blog. The third most active participant on the blog focused the majority of his comments on the people he knew before the study. The two most active participants interacted both with members they knew before the study and people who were new to them on the blog. The three most active participants also used the most pictures and videos in their posts and posted consistently. One participant posted on the blog posted consistently, but never made a comment. She did not use any pictures or videos on the blog. The three most active bloggers used pictures, and the two most active bloggers also used a video.

Although the researcher did not measure written language skills explicitly in the study, some observations were made. The participant who did not make any comments on the blog demonstrated the least sophisticated use of written language conventions. Other participants also did very little commenting on that participant's posts. It is likely that this was at least in part due to other participants being confused by the lack of conventions in the participant's posts. This is unfortunate as the participant had many beautiful things to say on the blog. Conversely, one participant who also posted consistently and only made one comment received a large number of comments on his posts. Unlike the previously mentioned participant with limited adherence to the conventions of writing, this participant displayed highly sophisticated form in his writing. He also used pictures in one of his posts; the other participant did not. The three most active participants on the blog all displayed strong use of writing convention, although all 6 participants had some spelling errors. It could be that the development of language and communication are

so closely linked that high language and communication skills coincide. Or perhaps strong language skills such as the use of sophisticated writing conventions create more opportunities for communication and more self-determination toward communication. Or the opposite, more active communicators and those with more communication experiences have more opportunities to practice and hone language skills.

The lack of commenting done by and for the participant with the least developed writing form suggests a relationship between written language skills and social interaction. This relationship is further supported by the relative strength in writing conventions of the three participants who did the most commenting. Although the online blog serves as an alternative to face-to-face communication (e.g., no real-time demands), it appears that the blog is no exception to the need for adequate language skills to successfully interact with others. The participants who were the most active on the blog also used the most facilitative language (e.g., on-topic comments and questions). Even though blogging may be a promising way to augment real-time social interaction for adolescents and young adults with ASD, it is likely that many of the same or additional language skills and learning opportunities are equally important to an online interface such as knowledge of syntax, reasonably accurate spelling, and strategies for supporting and sustaining conversation.

Real and meaningful social interactions occurred on the blog. Three participants had more limited social interaction on the blog as compared to the other three participants – Participant 5, though she posted consistently, did not make any comments; participant 6 made only two posts and one comment; Participant 2 posted five times and submitted one comment. Participant 5's posts were insightful and on-topic with the prompts, but received almost no

comments from other participants. Participant 5's post below is indicative of many of her posts on the blog:

i have a gift when i see a smile a giggles and langher from friends and family lil couisns aunt crazy uncles gandma grandpa my homeschool family my group the greats gift is friends and family i am unstoppable the power from the smiles and happiness keeps my up it is like a hand pulling my up saying you are a ture navy baby girl i was born in a liittle town in fl pencola i smell the sea salty water the breeze going threw my hair the sand between my toes hearing the blue angels the are a navy air show withotu move half my life i wouldn't see what i need to see there are poeple the act like your friennd but they turn a take from you the trust no one can break me cuz i have the power of the love ones around me weather there are up and watching from above and the ones down here i learned those that believe in nature and those that believe in the cycle of life and the ones that believe in bad and good luck they believe the same thing just in the same way those that believe in one jewies and muliusm and jesus we believe in the same thing just in a diffent way we are the same inside and out there is no diffence we are all the same

While the content is sophisticated, the form of Participant 5's posts is much less developed. One care provider commented that she felt the lack of writing conventions in Participant 5's posts were troublesome for her son to read. The facilitators commented on these posts as they did with all the other posts. At times participants would comment in response to one of the comments made by the facilitator, but only one participant, Participant 1, responded directly to Participant 5's posts – she did so three times. The posts made by Participant 5 to which Participant 1 responded were the three shortest posts made by Participant 5. To Participant 5's post, "i hate seeing people crying" Participant 1 commented, "I don't like seeing

people cry when there at funerals or seeing sad movies and plays.” Participant 5 posted “I would go to the mall with my friend Alyssa and shop till we are tired” and Participant 1 commented, “I have a friend named Alyssa too!!! That's neat!!! I love shopping at the mall too!!!” Both of these posts by Participant 5 are only one sentence, and contain more writing conventions than her other posts (e.g., accurate spelling and capitalization). The third post by Participant 5 that got a comment from Participant 1 was longer than the first two, but significantly shorter than her other posts. Participant 5 posted:

Go back to the beach I love the salty air and the wnd in my face see the sun go up and down sand on my feet and fingers just the sound of my voice and the waves I feel home when I am at the beach and it can be in fl or ct born in fl and family in ct

Participant 1’s response was, “Me too!!! I love the beach. I like feeling the waves hit my feet as I walk along the shore.”

Participant 6’s two posts were:

my favorites thing to do from last years was swimming, indephendence day, playing video games, earning money for mowing the grass and helping my grandparents at nebraska, and reading the books for earning a coupon at the library.

And,

The games and movies i does not like when it gives me a nightmare was friday the 13th, resident evil, texas chainsaw, deadspace, walking dead, and others when i never like to watch these movies and play games when it creep me out.

The first post was made in a comment section of one week’s homepages instead of as a post on the week. The other post was made as a conventional post on a week. Both posts were made over a month after the week’s initial posting. Participant 6’s only comment was also made

a month after the post was submitted, and did not spark any further comments. The comment was made on one of the author's posts about video games. The comment said:

I never knew you truly like playing video games like i love playing videos games such as street fighter, batman arkham city, marvel vs capcom, and lego indiana jones.

Participant 6 knew the facilitator from the Schiefelbusch Speech-Language-Hearing Clinic previous to joining the blog, and his comment refers both to the post made by the author as well as the participant's previous experiences with the author.

Before the blog, Participant 6 knew one other participant in addition to the two facilitators. Participant 5 knew one other participant. Participant 2, the third participant to have less social interaction than the three participants who were highly socially interactive on the blog, knew no one going into the study. He posted 5 times, and made one comment. Participant 2's only comment made during the seven weeks of the study on the blog was in response to a funny video posted by an author to which he said, "I'm not sure how to reply to that video," presumably due to the goofiness of the video – it was pretty off-the-wall. His posts received many comments from other participants. One of Participant 2's posts is below:

The best gift I have ever given was a prank gift. I purposely wrapped up my father's least favorite board game and gave it to him. The horror on his face was priceless as he searched for a real present in the box. Even better, the game is my favorite, and he gave me the game a few years ago as a gift. Only after 3 minutes or so did I give him his actual present, a razor. Much less exciting :)

The participant's posts were all about this length, contained highly sophisticated writing conventions, and were often comical in nature. The participants seem to enjoy them. An

example is the comment made by Participant 3 in response to participant 2's post above, "LOL. to funny." Here are other examples of Participant 2's comedic posts:

If I had a million dollars, I would invest it on a particle accelerator/Molecular Disrupter lab, and then create diamonds from dirt. Next, I would sell them and buy robots to do my every bidding, and would send them to find me all the world's chocolate.

Also,

I wish onions did not exist. They are very crunchy and have little taste, and yet still somehow find their way into almost every dish known to man. Why can't chocolate take its place? Or cake? You must see my concerns. Also, onions make us cry. Have any of you ever cried about dessert? I think not. Take that onions.

His post during the example week of the blog was not included in the analysis of the blog because it was not during the seven weeks of the blog, but is included below for the comic relief of the reader:

If I could be any animal, I would most likely be a fish, due to the simplistic lifestyle, easily obtainable goals, and the lack of fear. Unfortunately, this would also cause a lack of emotions and intelligence, and would be a life of nothingness, until a final climax at death.

Participant 2 posted in a more serious tone as well. These posts also received comments from other participants. For example:

One thing people might be surprised to know about me is that I am a programmer in training. I have coded for some basic puzzle games and I am working learning HTML, the code the internet is made up of. People would also more than likely be surprised that I

have a fascination with formal speech, which has almost been eradicated from the modern English language.

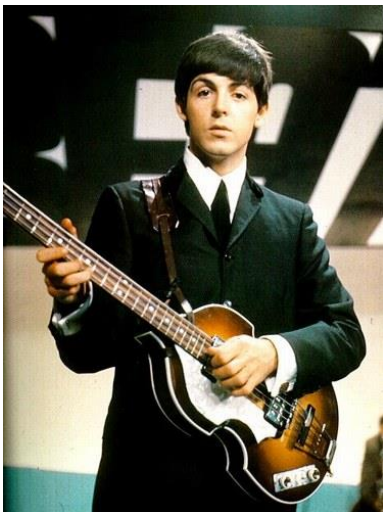
Participant 1, one of the most socially interactive participants, commented, “That's cool!!! I got a Computer Application Specialist Certificate from JCCC. We both like computers!!!” She made a total of 39 comments, more than any other participant on the blog. Her comments included a variety of communication strategies. She related other participants’ posts to herself and her experiences, as demonstrated in the comment above. She expressed differing views to others. For example, when an author commented instead of taking a vacation to Hawaii with a million dollars, the participant could probably live there, Participant 1 responded, “Nay... It would be a nice place to visit, but my family's here!!! HAHA!!!” She expressed interest in many of the posts, pictures, and comments made by others and expanded on those topics. For example, she said “Thanks Christine!!! It will be great celebrating when you graduate too!!! May will be here before you know it. I absolutely dearly loved Daytona Beach. It's so much fun and very relaxing.” She also responded to questions made by other bloggers, and asked follow-up questions herself. For instance, when Participant 3 asked, “is disney world in calforna? Im from ca and Iv never seen it I think,” Participant 1 answered his question and followed it with an additional question, “Disney World is in Florida and Disneyland is in California. Have you been to any Disney Parks?”

Participant 3, the second most socially interactive blogger, used many conversation techniques as indicated by his comment listed above which included a follow-up question and relating the topic to himself. He made 37 comments, almost as many as Participant 1. In addition to utilizing the two techniques previously listed, Participant 3 answered questions from the facilitators and other participants (e.g., in response to participant 1’s question above – “I

don't know. I think I was at one when I was 3 or 4.”), expressed agreement with other participants (e.g., “I would say the same.”) and approval of the content shared by other participants (e.g., he commented “good art” on pictures of original artwork posted by participant 1), and commented on connections between himself and other participants (e.g., “that is 2 that play guitar.”).

Participant 3 created posts too for every week, plus one additional post one of the weeks. His posts included pictures, videos, and information about himself. Most of his posts (and many of his comments) were related to his major interests (e.g., The Beatles, playing guitar, and videogames). For example, for the prompt about a dream vacation, participant 3 posted, “I would like a vac to meet Paul and richerd (known better as ringo starr) from the beatles.” When asked about the best gift he has ever received, participant 3 posted, “the best thing I gift I was given was how to play 2 songs by the beatles, the beatles rock band, and being 5 foot 6 (as tall as ringo.).” Along the same theme, he posted in response to goals for the future:

One goal I have is to be taller then the talles beatle (paul who is 5 feet 11)



paul then.



paul now.

Finally, though not as socially interactive on the blog as Participants 1 and 3, Participant 4 still demonstrated a relatively high level of social interaction. He posted 7 times and made 7 comments on the blog. His posts talked shared about his interests and his life, for instance:

My goal for next year is to be part of Project Search. I will listen to my teachers and try to learn my jobs at KU. I will meet new people and make new friends at KU. I would like to take job classes at Johnson County.

Or,

My favorite thing to do is to go to school. I pay attention to my teachers and spend time with my friends. This year my school is C-Tran. I have several new friends at C-Tran.

Other things I enjoy are acting, doing Zumba, reading, playing music, watching basketball, and going to Advocacy Group.

Or,

People don't know this but I'm a good basketball player. People don't know because sometimes I'm bored during practice. People might be surprised to know that Buffalo Wild Wings is my favorite restaurant.



His comments, though using a variety of communication techniques, generally were also in regards to his own interests. In the following comment, for example, Participant 4 relates another participant's post to his own life, and asks a follow-up question, "K, I hope my family will go to Disney World. I'm interested into seeing all the Disney characters. Which ones did you see?" As with many of the comments, a conversation ensued from this comment by Participant 4. Later on in the conversation around this comment, which included two other participants, he added, "I want to see Mickey and Minnie." Participant 4's comments expanded on topics and related the interests of participants as well as in the comment below:

I listened to the TCU game last night. I hope KU plays better in their next game.

It sounds like everyone likes to read. Cool!

One of Participant 4's comments was also a very affirming and kind response to an author's post – "Christine, you are a great person who works hard. I enjoy blogging with you." Participant 4 tended to comment more on posts made by bloggers whom he knew previous to the study. All of

the three most interactive participants on the blog knew at least one facilitator and one participant before the study began.

The blog participants used the blog consistently and often during the seven week study, and reported an overall positive experience with the blog after the study completed. It is worth noting that as per requests from some participants and care providers, the researcher continued the blog after the study completed.

Limitations and Future Directions

The study included significant limitations. These limitations included short duration and a small sample size. The researcher chose a measure, the Quality of Communication Life Scale, that was probably not sufficient in sensitivity and specificity to accurately measure the blog's effect on participants' social interaction. The researcher also did not screen for writing skills, which would have provided more information about the relationship between language skills and social interaction levels. Additionally, ASD is an umbrella category with a wide range of diagnoses that manifest in a variety of ways. The participants in the study could all read and write independently; not everyone with ASD is independent in those skills.

The researcher has suggested that an online interface such as the blog may be an effective means for supplementing social interaction in adolescents and young adults with autism; it does not replace face-to-face conversation. This study is in no way meant to encourage professionals to provide clients with ASD with opportunities for online interaction instead of supporting them in having successful real-time interactions. Rather, professionals should consider every avenue for enriching the quality of communication life of clients and could provide an online space as an additional context for social interaction based on the enjoyment reported by the participants in this study. Future studies could include typical peers in the blog to both support inclusion and

provide more contexts for social interaction as the posts of participants with more highly developed written language skills may encourage more conversation.

One participant focused his social interaction on individuals he knew previous to the study, so an online blog may be most effective when used in tandem with an in-person group for adolescents and/or young adults with ASD. Future studies should explore this option. The group could meet regularly and just have the blog for additional interaction between participants; the group could meet half the time in person and the other half of the time utilize the blog as a way to communicate; or the blog could be the major means of interaction for the group with occasional in-person meetings to maintain interest in the blog and promote familiarity among group members. These groups could be social in nature, or not. Maybe the short time the group spends together in person is more informative while the time on the blog allows the participants more time to interact – or the setup could be flip-flopped with more instructive aspects of the group happening on the blog while the time in person focuses on social interaction. Group facilitators could use the blog as a place to share information with the group. For example, book club facilitators could post websites, videos, and pictures relative to the contents of the book to activate background knowledge in participants.

It would also be interesting to see if an online social interface could increase social skills – are online social interventions effective? This approach again could be used with a corresponding in-person social group. Skills taught, modeled, and practiced in the social group could be practiced further on the blog after they are used to a certain level of success in person (e.g., making on-topic comments). Or because of the less-demanding nature of blogging as compared to real-time social interaction, perhaps participants would use social skills on the blog that they do not yet demonstrate while interacting in person. Could facilitators use the

communication strategies displayed on the blog as instructional information or modeling to increase the use of those strategies in person? And, would a blog allow for more effective acquisition of communication skills because there are fewer demands on learning? Will the skills acquired on the blog generalize to real-time interactions? How could professionals help facilitate that carry-over?

One way to increase social interaction on a blog may be to center the blog on shared interests or experiences of the blog members. The blog members could go on outings together monthly for example to provide a shared experience. Pictures, videos, and stories from those experiences could be a major source of conversation for the blog. Perhaps more feasible may be to teach a topic of interest to the group (e.g., robots), and allow the bloggers to converse about the topic. Or, in line with the Wright et al. (2011) intervention that trained teenage boys with ASD to use a software tool then allowed the boys to teach the software and share the 3-D drawings with family, an online interface (e.g., a blog) could be a forum for the blog members to educate family and friends about their areas of interest and display knowledge.

The application of the results is in part limited by characteristics of the bloggers. Although the facilitators did not screen for literacy skills, all 6 participants read and wrote independently. For obvious reasons, an online blog for individuals with less developed literacy skills may not be as effective in promoting social interaction. There are ways of off-setting a disparity in language skills, though. The blog could rely more heavily on pictures and videos, for instance. Pictures and videos could support less developed reading and writing skills. Also, researchers or professionals could create a blog consisting either entirely of participants posting videos of themselves communicating instead of typing to communicate, or at least make a video mode of entry an option for participants who may have less success communicating through

typing. Video blogs could eliminate the need for skills in reading and writing, but would require other language skills (e.g., verbal and auditory comprehension). A video blog setup would be particularly interesting for AAC users. This subset of individuals with ASD (and other disabilities) often rely on the messages already on their device, so allowing them to activate their device to interact on the blog would likely be much more efficient and accessible for many AAC users only being able to type on a keyboard.

The researcher created the blog according to specifications for online interfaces outlined by individuals with ASD in a previous study (e.g., minimal color contrast, no moving icons, not in real-time), and the participants reported no criticisms to the look and layout of the blog. The author did not, however, ask participants to rate specific traits of the look and layout of the blog (e.g., color). Future studies could compare the outcomes or feedback of intervention groups using online interfaces with a variety of layouts, appearances, and other features. This information could give professionals a clearer picture of how to structure a place for online interaction for individuals with ASD.

Though limited in scope and conclusions, the qualitative comments from participants and care providers suggest that there is value in further exploring online supports for social interaction opportunities.

References

- American Speech-Language-Hearing Association. (2010). *Code of ethics*. Available from www.asha.org/policy.
- American Speech-Language-Hearing Association. (2007). *Scope of practice in speech-language pathology* [Scope of Practice]. Available from www.asha.org/policy.
- Blumberg, S.J., Bramlett, M.D., Kogan, M.D., Schleve, L.A., Jones, J.R., Lu, M.C. (2013). Changes in prevalence of parent-reported autism spectrum disorder in school-aged U.S. children: 2007 to 2011–2012. National health statistics reports; no 65. Hyattsville, MD: National Center for Health Statistics.
- Burgess, S. & Turkstra, L. (2010). Quality of Communication Life in Adolescents with High-Functioning Autism and Asperger Syndrome: A Feasibility Study. *Language, Speech, and Hearing Services in Schools, 41*(4), 474-487.
- Cappadocia, C., Weiss, J., & Pepler, D. (2012). Bullying Experiences Among Children and Youth with Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders, 42*(2), 266-277
- Carter, M. (2011). Many social skills interventions for individuals with ASD have some supporting evidence, but this review is illustrative rather than comprehensive. *Evidence-based Communication Assessment and Intervention, 5*(2), 67-69.
- Cottenceau, H., Roux, S., Blanc, R., Lenoir, P., Bonnet-Brilhault, F., & Barthelemy, C. (2012). Quality of life of adolescents with autism spectrum disorders: comparison to adolescents

- with diabetes. *European Child & Adolescent Psychiatry*, 21(5), 287-296.
- Fletcher-Watson, S., Leekam, S., and Findlay, J (2013). Social Interest in High-Functioning Adults with Autism Spectrum Disorders. *Focus on Autism and Other Developmental Disabilities*, (28)1, 1-8.
- Gomez, Sharon (2011). Presidential Address 2012 Creating Inclusive Communities: Pathways to the Vision. *Intellectual and Developmental Disabilities*, 49(5), 360-364.
- Kaczmarek, L.A. (2002). Assessment of social-communicative competence: An interdisciplinary model. In H. Goldstein, L.A. Kaczmarek, & K.M. English (Eds.), *Promoting social communication: Children with developmental disabilities from birth to adolescence* (pp. 55-115), Baltimore, MD: Paul H. Brookes Publishing.
- Kamp-Becker, I., Schroder, J., Remschmidt, H., & Bachmann, C. (2010). Health-related quality of life in adolescents and young adults with high functioning autism-spectrum disorder. *GMS Psycho-Social-Medicine*, 7, Doc 03.
- Karkhaneh, M., Clark, B., Ospina, M., Seida, J., Smith, V., & Hartling, L. (2010). Social Stories™ to improve social skills in children with autism spectrum disorders: a systematic review. *Autism*, 14(6) 641-662.
- Laugeson, E., Frankel, F., Gantman, A., Dillon, A., & Mogil, C. (2012). Evidence-Based Social Skills Training for Adolescents with Autism Spectrum Disorders: The UCLA PEERS Program. *Journal of Autism and Developmental Disorders*, 42(6), 1025-1036.

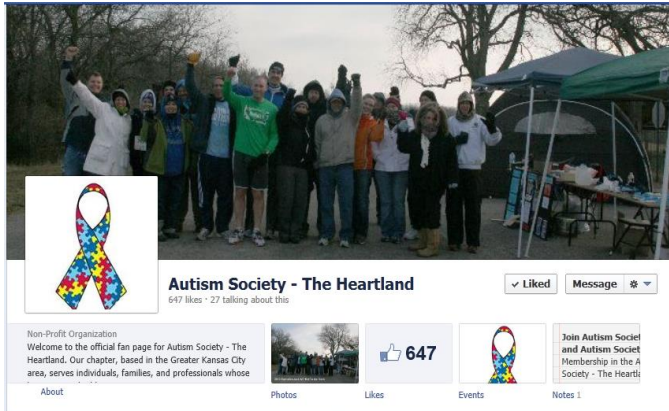
- National Autism Center (2009). National Standards Report. *National Autism Center*, 1-161.
- Nevill, R. & White, S. (2011). College Students' Openness Toward Autism Spectrum Disorders: Improving Peer Acceptance. *Journal of Autism and Developmental Disorders*, 41(12), 1619-1628.
- Paul, D., Frattali, C., Holland, A., Thompson, C., Caperton, C., & Slater, S. (2005). *Quality of Communication Life Scale (ASHA QCL)*. Baltimore: Brookes.
- Raghavendra, P., Olsson, C., Sampson, J., McInerney, R., & Connel, T. (2012). School participation and social networks of children with complex communication needs, physical disabilities, and typically developing peers. *Augmentative and Alternative Communication*, 28(1), 33-43.
- Reichow B, Steiner AM, & Volkmar F. Social skills groups for people aged 6 to 21 with autism spectrum disorders (ASD). *Cochrane Database of Systematic Reviews 2012*, Issue 7. Art. No.: CD008511. DOI: 10.1002/14651858.CD008511.pub2.
- Robbins, L. (2010). *Which is more effective in educating teachers to work with children and autism: An online or face-to-face format of instruction?* Retrieved from ProQuest Digital Dissertations. (ATT 3419506)
- Sohlberg, M., Todis, B., Fickas, S., & Ehlhardt, L. (2011). Analysis of E-mail Produced by Middle School Students with Disabilities Using Accessible Interfaces: An Exploratory Study. *Topics in Language Disorders*, 31(4), 352-372.
- Stuart-Hamilton, I. & Morgan, H. (2011). What happens to people with autism spectrum

- disorders in the middle age and beyond? Report of a preliminary on-line study. *Advances in Mental Health and Intellectual Disabilities*, 5(2), 22-28.
- Trepagnier, C., Olsen, D., Boteler, L., & Bell, C. (2011). Virtual conversation partner for adults with autism. *Cyberpsychology, Behavior, and Social Networking*, 14(1-2), 21-27.
- U.S. Department of Education, National Center for Education Statistics (2012). *Digest of Education Statistics, 2011* (NCES 2012-001), Chapter 2.
- Wainer, A. & Ingersoll, B. (2012). Disseminating ASD Interventions: A Pilot Study of a Distance Learning Program for Parents and Professionals. *Journal of Autism and Developmental Disorders*. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/2254028>
- Waligorska, A., Pisula, E., Waligorski, M., & Letachowicz, M. (2012). AutismPro system in supporting treatment of children with autism in Poland. *Pediatrics International*, 54(5), 693-700.
- Wentz, E., Nyden, A., & Krevers, B. (2012). Development of an internet-based support and coaching model for adolescents and young adults with ADHD and autism spectrum disorders: a pilot study. *European Child & Adolescent Psychiatry*, 21(11), 611-622.
- Whitehouse, A., Watt, H., Line, E., & Bishop, D. (2009). Adult psychosocial outcomes of children with specific language impairment, pragmatic impairment and autism. *International Journal of Language and Communication Disorders*, 44(4), 511-528.
- Wright, C., Diener, M., Dunn, L., Wright, S., Linnel, L., Newbold, K., D'Astous, V., Rafferty,

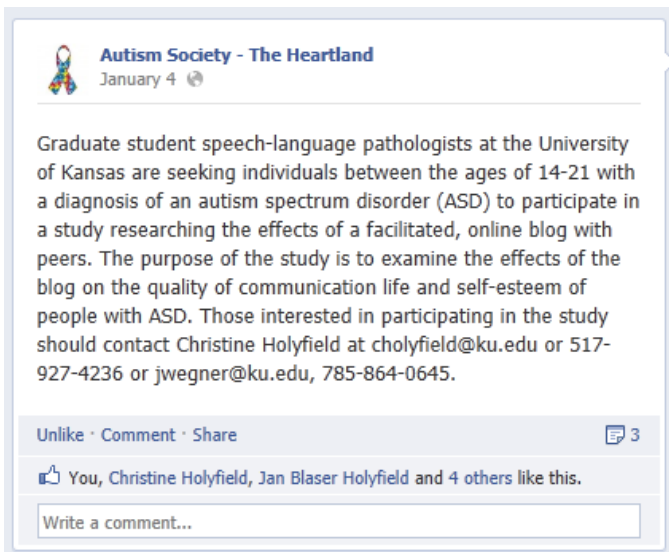
D. (2011). SketchUp™: A technology tool to facilitate intergenerational family relationships for children with autism spectrum disorders (ASD). *Family and Consumer Sciences Research Journal*, 40(2), 135-149.

Wyatt, Christopher. (2010). *Online pedagogy: Designing writing courses for students with autism spectrum disorders*. Retrieved from ProQuest Digital Dissertations. (ATT 3408442)

Appendix A. Study Announcement on Facebook



Heartland Autism Society Facebook page



Study announcement on Heartland Autism Society Facebook page



K-CART Facebook Page

KU Kansas Center for Autism Research and Training
January 22

Graduate student speech-language pathologists at the University of Kansas are seeking individuals between the ages of 14-21 with a diagnosis of an autism spectrum disorder (ASD) to participate in a study researching the effects of a facilitated, online blog with peers. The purpose of the study is to examine the effects of the blog on the quality of communication life and self-esteem of people with ASD. Those interested in participating in the study should contact Christine Holyfield at cholyfield@ku.edu or 517-927-4236 or jwegner@ku.edu, 785-864-0645.

Unlike · Comment · Share

You, Christine Holyfield and 2 others like this.

Write a comment...

Study announcement on K-CART Facebook page

Appendix B. “Writing on the Blog” Social Story

Writing on the blog is a fun way for me to meet and connect with new people. I can talk to the other participants anytime by writing on the blog. I can respond to things the participants say. They can respond to me too. Every week, David and Christine will post a question for me to write about. If I don't like the question, I can write about anything I want. If David and Christine post two questions, I can answer one or both or neither. If I want to answer David and Christine's question and write about something else too, that's fine!

David and Christine and the other participants for the blog are the only people who can read what I write. As soon as I post something, David and Christine and other participants can read it. Sometimes the other people on the blog might read it right away and respond. Other times, it might take other people longer to respond to what I write.

Since the blog is on the internet, it is important for me to only use my first name. If I want to use a fake first name, that's fine too! I know that putting personal information about myself, like my last name, phone number, or address, on the internet is not safe. Instead, I can write about the things I think and feel, the things I like and don't like, or anything else about me that does not tell people my last name or where I live.

I want to make sure that my responses to other participants are positive and kind. This blog is a way for me to have friends to talk to on the internet. Other people like it when I say positive things to them. It makes them want to be my friend. And friends say positive things to each other. The blog is going to be fun, because everyone on the blog is going to be kind to one another!

Appendix C. "We are Fearless Spellers!" Social Story

Spelling can be hard! But that's OK! I am a Fearless Speller! Like a super hero of spelling. I don't always know how to spell a word. It doesn't matter. I think about the sounds in the word, and do my best to spell it. After I spell the word the way it sounds to me, I keep writing. When I think of another word to write that I am not sure how to spell, I remember that I am a Fearless Speller! I don't worry that I am spelling it wrong. I don't pick another word to use instead. I just spell it the way I think it sounds, and keep on writing! If I don't spell it perfect, who cares? People can usually tell what I meant to say, and that's all that matters.

If I want, when I am all done writing I can look back at the words I did not spell just right. I type the words into Microsoft Word. I can click on the words in Microsoft Word. Then I can click on "Tools" in the bar at the top. The first choice under "Tools" is "Spelling and Grammar." I can choose "Spelling and Grammar" and it might tell me how to spell the word. I can then copy and paste the word back into my blog entry if it gives me a different spelling. If I don't feel like doing this and want to leave all my words just how they are, that's just fine! I'm a FEARLESS SPELLER!

Appendix D. QCL Administered to Care Providers

Below is a set of statements. Imagine you are the person for whom you are the major care provider (the participant in the study). Please rate the below statements how you think she/he would rate the statements.

On a scale from 1 - "no" to 5- "yes" please rate the following:

1. I like to talk with people.

1 2 3 4 5

2. It's easy for me to communicate.

1 2 3 4 5

3. My role in the family is the same.

1 2 3 4 5

4. I like myself.

1 2 3 4 5

5. I meet the communication needs of my job or school (such as: typing, giving and following directions, reading).

1 2 3 4 5

6. I stay in touch with family and friends

1 2 3 4 5

7. People include me in conversations.

1 2 3 4 5

8. I follow news, sports, and stories on TV/movies.

1 2 3 4 5

9. I use the telephone.

1 2 3 4 5

10. I see the funny things in life.

1 2 3 4 5

11. People understand me when I talk.

1 2 3 4 5

12. I keep trying when people don't understand me.

1 2 3 4 5

13. I make my own decisions.

1 2 3 4 5

14. I am confident that I can communicate.

1 2 3 4 5

15. I get out of the house and do things (such as: sports, dinner, shows, parties).

1 2 3 4 5

16. I have household responsibilities (such as: shopping, cooking, home repairs).

1 2 3 4 5

17. I speak for myself.

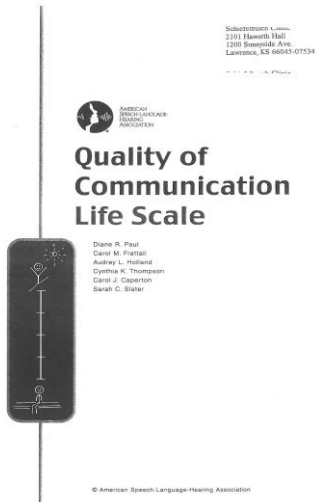
1 2 3 4 5

18. In general, my quality of life is good.

1 2 3 4 5

Note. From Quality of Communication Life Scale, by D. Paul, C. M. Fratalli, M. L. Holland, C. K. Thompson, C. J. Caperton, and S. C. Slater (2004)

Appendix E. CQL administered to participants



Quality of Communication Life Scale (QCL)

Instructions for Use

We are interested in the quality of your life now and how you are getting along and dealing with your ability to communicate.

Please answer the following question:

Is today an especially good, average, or especially bad day for you? Please circle one.

Especially good

Average

Especially bad

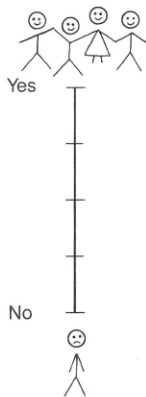
Now we want you to complete this scale about the quality of your life. Please follow these instructions:

- Read each statement
- Mark the line at a point that describes you best.
- If the statement DOES describe you, put your mark as close to the top as you see fit. If the statement DOES NOT describe you, put your mark closer to the bottom. Mark the place that describes you the best.
- Remember, these statements are about you and your ability to communicate.
- Before each item, ask yourself "Even though I have difficulty communicating..."

2

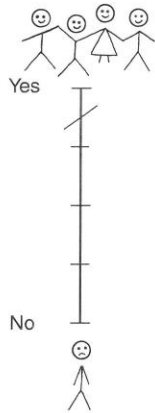
Here is a sample item:

Even though I have difficulty communicating,
"I like to be with people."



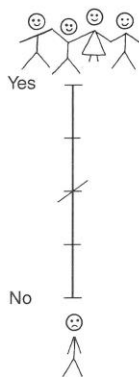
3

If you like to be with people a lot, even though you have difficulty communicating, then your mark goes close to the top, like this.



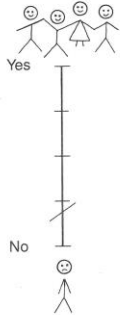
4

If you like to be with others sometimes, then your mark should be nearer the middle of the line, like this.



5

If you do not like to be with people then put your mark closer to the bottom, like this.



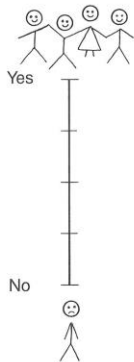
Your mark can go anywhere on the line that seems okay to you.

6

Practice Item:

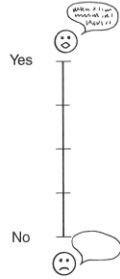
Now you try one.

Even though I have difficulty communicating,
"I like to be with people."



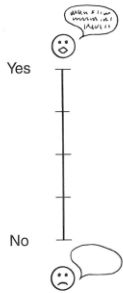
7

1. I like to talk with people.



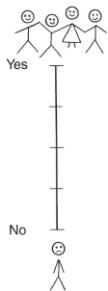
8

2. It's easy for me to get people to understand me.



9

3. I am a part of the family, the same as the other people in the family.



10

4. I like myself.



11

5. I can do what I'm supposed to do at my job or school
(such as: typing, giving and following directions, reading).

Yes ☺

—+—+—+—+—

No ☹

Does not apply

12

7. People include me in talks.

☺ ☺ ☺ ☺

Yes

—+—+—+—+—

No ☹

↑

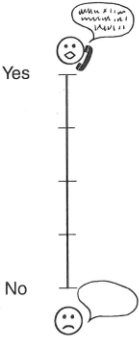
14

8. I follow news, sports, and stories on TV/movies.



15

9. I use the telephone.



16

10. I see the funny things in life.

Yes ☺

—

—

—

—

No ☹

17

11. People understand me.

☺

Yes

—

—

—

—

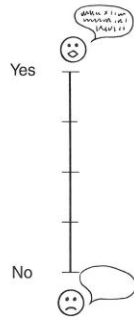
No

?

☹

18

12. I keep trying when people don't understand me.



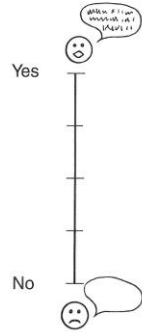
19

13. I make decisions about me.



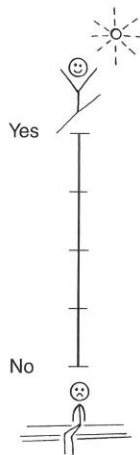
20

14. I know I can always get people to understand me.



21

15. I get out of the house and do things (such as: sports, dinner, shows, parties).



22

16. I have jobs at my house (such as: shopping, cooking, home repairs).

Yes

No

Does not apply

23

17. I speak for me.

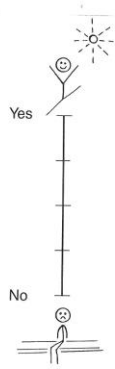
Yes

No

24

In general, my life is good.

18.



Appendix F. Participants' previous experience with social mediate sites

1. Circle any of the social media sites in which you are or have ever been a member:

Facebook

Twitter

LiveJournal

MySpace

Other _____

2. Do you or have you ever kept a blog? (Circle one) Yes No

3. Circle the frequency with which you use email for social purposes (e.g., to tell your cousin about your day):

Multiple times a day

About once a day

About once a week

A couple times a month

Less than once a month

4. Please rate from 1 (highest) to 5 (lowest) the top three reasons you use a computer (Please do not rate any that you do not use):

Talk to family

Talk to friends

School

Work

Shopping

Researching information

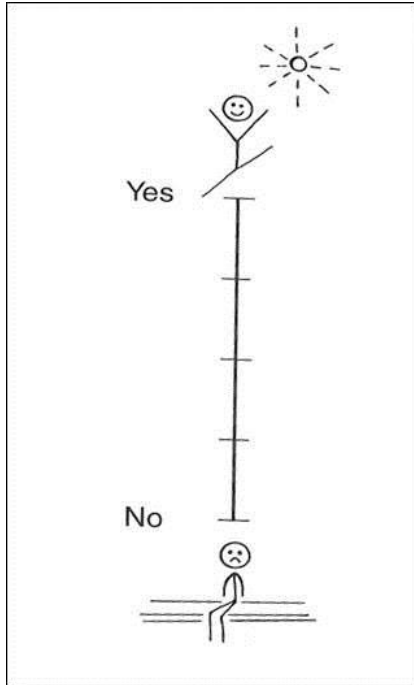
Write about yourself

5. Please list your favorite websites below.

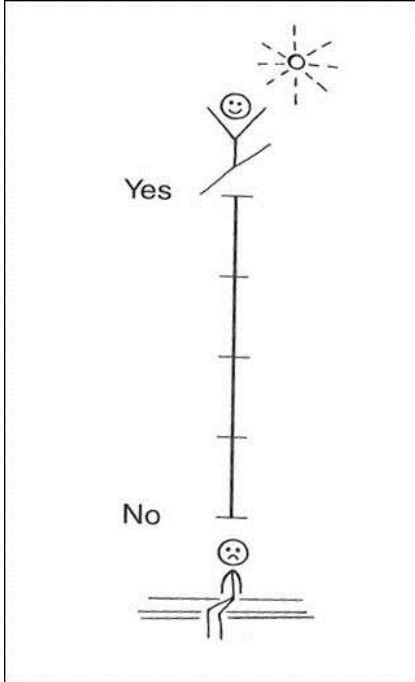
Appendix G. Final survey for participants regarding the blog

Instructions would be given the same as the instructions for the Quality of Communication Life Scale for the first 10 questions.

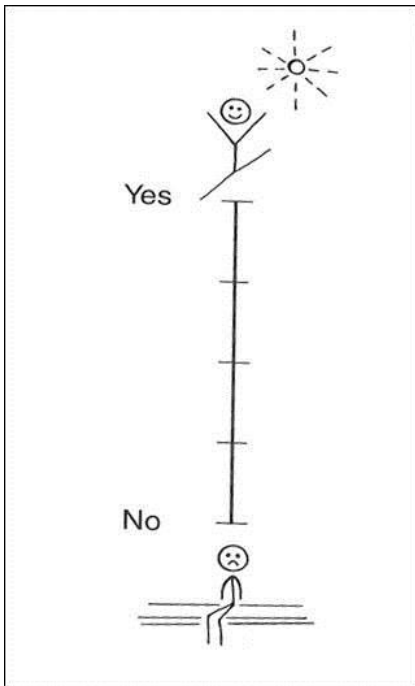
1. I am happy I did the blog.



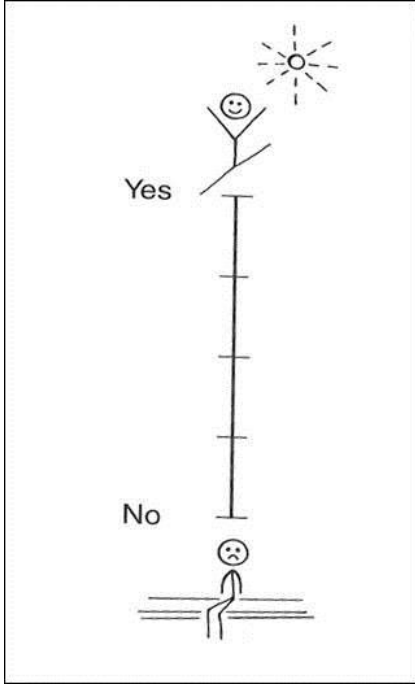
2. I want to keep doing a blog.



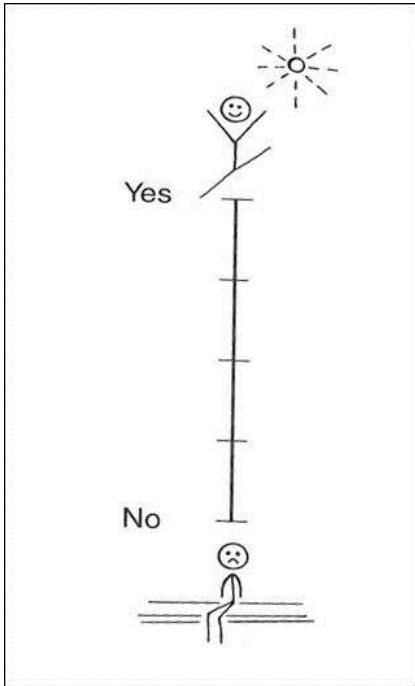
3. I made a friend (or more) on the blog.



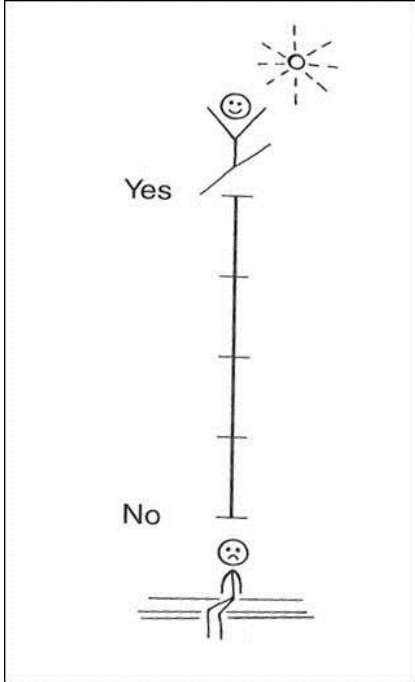
4. I shared about myself on the blog.



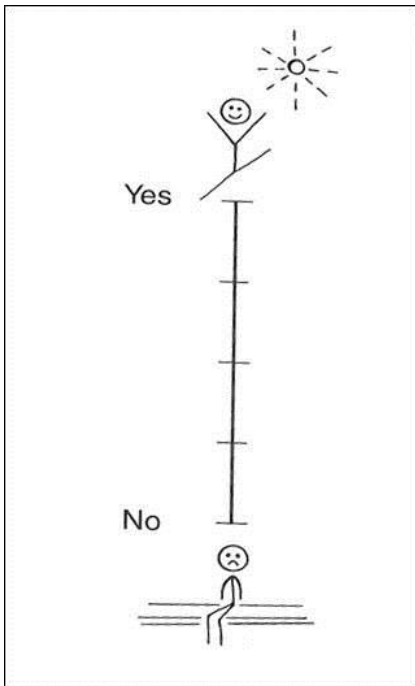
5. I like writing on the blog.



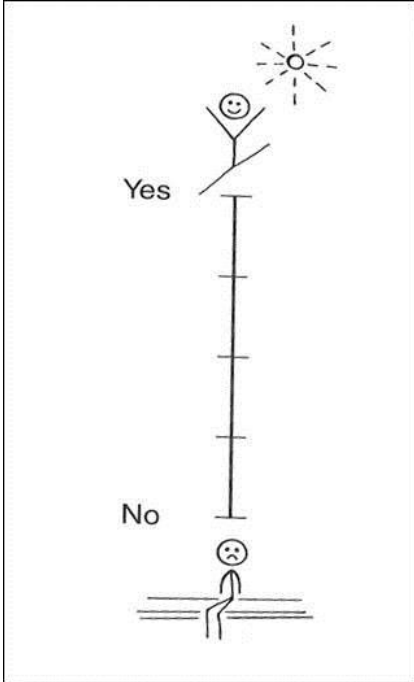
6. I like talking to people on the blog.



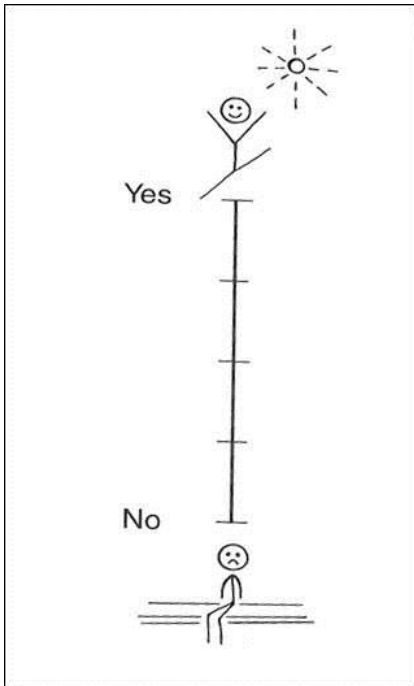
7. I like sharing pictures on the blog.



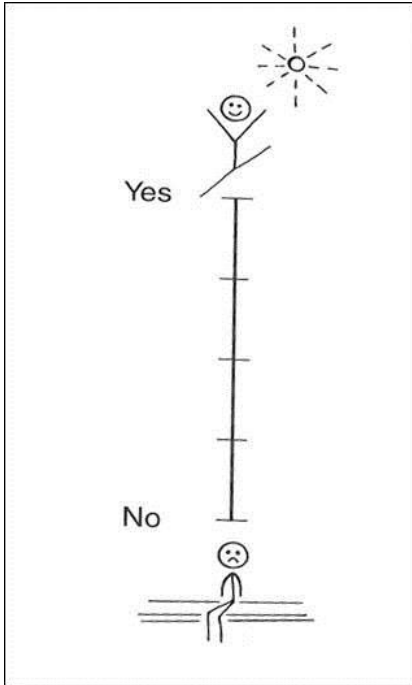
8. I like sharing videos on the blog.



9. I would rather talk on the blog than in person.



10. I would like more people to be on the blog.



11. My favorite thing(s) about the blog was/were...

The way it looks

Meeting new people

Talking about myself

Learning about other people

It was easy to use

The layout of the blog

The pictures and videos

The other people on the blog

Other people on the internet could not see it

Other: _____

12. I read other peoples' ...

Posts

Comments

Always

Always

Usually

Usually

Sometimes

Sometimes

Never

Never

13. Share anything else about the blog.

Appendix H. Blog Instructions

Open and Write on
the Blog



Google

Google Search File Feeding Lucky

Sign In

Go to:

www.google.com



Google

Google Search File Feeding Lucky

Sign In

Click "Sign In" on the top right.



Google

Google Search File Feeding Lucky

Sign In

Type “_____” in the first bar



Signing In

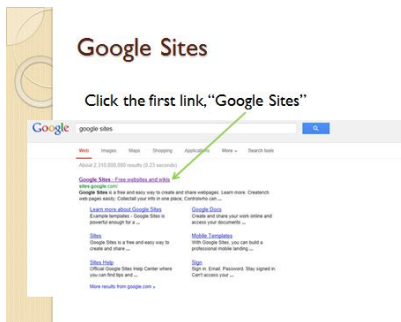
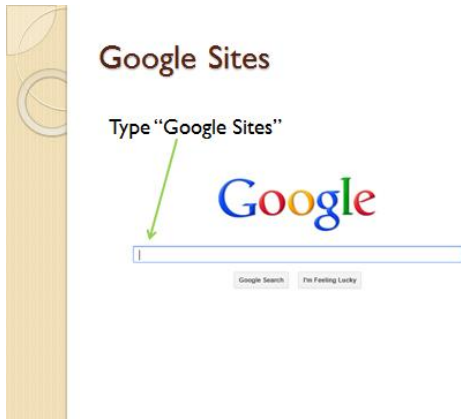
Type “_____” in the second bar



Signing In

Hit “Enter” on the keyboard
Or hit the “Sign In” button.





Write

Read and remember the theme



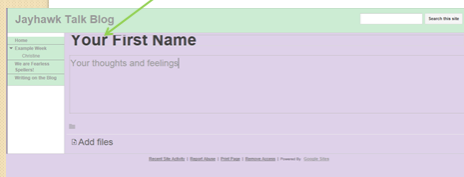
Write

Click "New Post"



Write

Type your First Name in the first line



Write

Type your thoughts and feelings in the second line



Write

Click "Save"

Write

Click "Save"

Make a Comment

Click other posts to read them

Example Week

If I could be any animal, I would be...

Your draft posts: [Untitled Post](#)

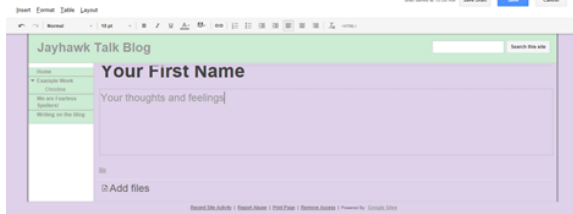
Chickadee

posted on 11/20/2015 11:02 AM by Chickadee (last edited on 11/20/2015 11:02)

If I could be any animal, I would be a chickadee. I would choose to be a chickadee because feathering is one of my favorite things to do. Chickadees get to swim all the time. Chickadees can swim deep down in the ocean because chickadees can hold their breath for 30 minutes. Also, chickadees are very smart and funny.

Make a Comment

Click "Save"



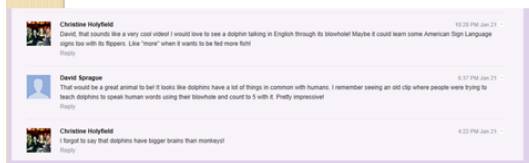
Make a Comment

Think about what you want to say to the person while you are reading



Make a Comment

Read any other comments



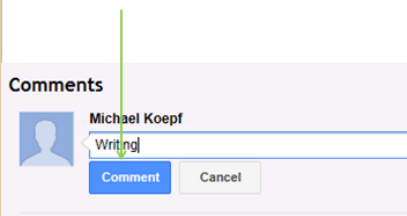
Make a Comment

Write what you think about the post or write about the other comments



Make a Comment

Click "Comment"



Do your thing!

Explore the site often to see other people's posts and comments.

