Abstract: A phenomenological study was conducted to investigate the social experiences and perceptions of friendship among three adolescents with an Autism Spectrum Disorder (ASD) engaged in online videogame play in the context of a massively multiplayer online role-playing game (MMORPG). Semi-structured interviews with three participants, diagnosed with ASD between the ages of 16–21 years, yielded four themes that illustrated the social experiences of participants in this study. Emerging themes and participant comments identified in this study parallel those identified in the most recent research literature that has also sought to identify experiences and attributes that may lead to successful interpersonal relationships for individuals identified with ASD. Participants in this study articulated the desire to socialize, interact, and frequently communicate in a virtual environment; challenges with being misunderstood; issues with identification and perceptions of friends; and awareness of rules specific to face-to-face and virtual environments.

A review of the current research literature related to adolescents with Autism Spectrum Disorder (ASD) revealed a focus on adolescent social challenges and language development as well as strategies to increase the acquisition of functional social skills. However, there was a notable absence of research on the social and relational impact of the use of virtual environments and online gaming for individuals with ASD. The focus of this study was the examination of the social interactions of adolescents with ASD as they engaged in massively multiplayer online role-playing games (MMORPG).

This article begins by providing context for the development of the study rationale through a review of the extant literature on individuals with ASD and participation in virtual environments and online gaming. Next the study’s purpose is connected to the documented social and relational needs of individuals with ASD and the potential of virtual environments and online gaming to meet those needs. A description of the research study and methodology follows along with a summary of results and implications for individuals with ASD. Concluding remarks address the potential implications of an expanded research effort in this area on the postsecondary outcomes of adolescents and young adults with ASD.

Autism Spectrum Disorder

A defining characteristic of ASD is the lack of appropriate social skills, lack of appropriate responses during a conversation, limited social interactions, low to no maintained friendships or interactions outside of school or work that include phone calls or face-to-face interactions (Gihak, 2011; Seltzer, Greenberg, Floyd, & Hong, 2004). An increasing number of individuals are being diagnosed with ASD. Current estimates indicate that 1:68 individuals have some form of ASD (Center for Disease Control, 2014). This increase in prevalence has lead to revision and refinement in
definitions of ASD including these that describe the disorder as:

- A developmental disorder of the human nervous system, (Mintz, Branch, March, & Lerman, 2012) that currently affects 1% of the global population (Charman & Gotham, 2013).
- A developmental disorder categorized by deficits in social interactions and communication skills as well as the presence of stereotypic and repetitive behaviors (American Psychiatric Association, 2013).
- A complex disorder (Schafer et al., 2013) with the degree of challenge individualized and specific to each person – with severity ranging from mild to severe impairment (National Institute of Mental Health, 2012).

In addition to social challenges, individuals with ASD also experience challenges with awareness and emotional recognition that leads to debility of self (Duff & Flattery, 2014). Unaware of how others think and perceive them, individuals with ASD have ever-present difficulties with socialization that often result in social rejection, that follows them throughout their lives, resulting in barriers and challenges in education, postsecondary education, and other aspects of daily living (Carrington, Papinczak, & Templeton, 2003). The purpose of this study was to (1) describe the social interactions of adolescents with ASD in the context of a virtual environment, (2) identify if they are socializing, and (3) describe how they socialized and related information pertaining to their daily living.

Absence of Interventions for Adolescents and Young Adults with ASD

As early as elementary school, educators and other practitioners attempt to remediate social skill difficulties in individuals with ASD. Much of the current research focuses on the impact of early intervention, through techniques such as Discrete Trial Training, for basic communication skills. The National Professional Development Center (2014) and National Research Council have identified 27 evidence-based practices used to support social and behavioral challenges for individuals with ASD. Of the 27, 19 have been evidence based for adolescents and 11 for young adults with ASD up to the age of 22 years. However, these strategies have not proven to be as successful in helping adolescents and young adults with high functioning ASD engage with peers, learn complex communication, and achieve transition post-high school (Schall & McDonough, 2010).

Although childhood research is valuable, research on social skill and communication development beyond this period has been neglected (Schall & McDonough, 2010). Few studies discuss the need to reach adolescents; and even fewer studies have targeted those with high functioning autism as defined by the DSM-V (2014) who would require level one support.

Social and Relational Deficits

Adolescents with ASD have social and relational deficits that differ dramatically from students with other disabilities. Adolescents with ASD are significantly more likely to never see friends outside of school (43.3%), never get called by friends (54.4%), and never be invited to activities (50.4%) “when compared to those with other disabilities such as intellectual disabilities, speech and language impairment, or learning disabilities” (Shattuck, Orsmond, Wagner, & Cooper, 2011, p. 5). In addition, adolescents with ASD are less likely to participate in social activities with friends, or community activities with peers than those in other disability categories (Shattuck et al., 2011).

Social challenges remain problematic through adulthood affecting their postsecondary transitions to college and careers (Church, Alisanski, & Amanullah, 2000). For example, nearly 85% of individuals with ASD live with a family member (NLTS-2 W-5, 2009), only 54% graduate high school (Shattuck et al., 2011) and as a result only 13% go onto postsecondary education, which contributes to having the lowest average wage amongst all other disability categories at $8.70/hr (Wei et al., 2013).

Transition to Adulthood

A large population of individuals with ASD is maturing into adolescence and adulthood; however, there exists a paucity of research on
postsecondary supports and interventions to support success in postsecondary settings (Shattuck et al., 2011). Due to their unique characteristics, individuals with ASD often possess strengths in the area of complex problem solving, attention to detail, the ability to hyper focus on a given task, conceptualization of solutions to often complex problems, and are often high achieving in the areas of science, technology, engineering, and mathematics (STEM) (Baron-Cohen, Wheelwright, Burtenshaw, & Hobson, 2007; Fessenden, 2013; Shattuck et al., 2011; Wei et al., 2013). Adolescents and young adults with ASD choose majors in STEM at a much higher rate than their typically developing peers, yet fail to achieve commensurate with their peers (Wei et al., 2013). As a result of the persistent deficit in social communication and interactions within a group, individuals with ASD hold the third lowest matriculation rate to college and are the lowest of all diverse populations in the area of STEM.

Science, Technology, Engineering, and Mathematics

Predisposed to experience persistent challenges in social skill and soft skill development, individuals with ASD possess a high level of interest and hold the potential to contribute to future science breakthroughs in STEM (Grandin, 2012). However, reports on postsecondary outcomes for individuals with ASD indicate these students have the third lowest matriculation rate (into college) and as a result, are chronically underrepresented in STEM careers (Wei et al., 2013). Many of the characteristics of ASD that often present challenges in social situations can benefit students with ASD in STEM areas. For example, their ability to hyper focus on a specific analytical task and critically and systematically conceptualize solutions to complex problems (Wei et al., 2013) all can enhance their acquisition of STEM knowledge. Despite their demonstrated aptitude for STEM fields, individuals with ASD are not being assimilated into STEM professions (Grandin, 2012). Postsecondary outcomes for individuals with ASD remain grim (Shattuck et al., 2012).

One contributing factor in poor postsecondary outcomes is a persistent deficit in social skills that impedes the ability of adolescents with ASD to socially connect and develop supportive friendships; a highly desirable skill that predicates success in securing and maintaining employment (Alpern & Zager, 2007; Baron-Cohen et al., 2007; Fessenden, 2013; Wei et al., 2013). Soft skills are necessary to support effective communication and social interaction in college and careers. These skills are particularly important in STEM fields.

Virtual Environments and Online Gaming

Over the past several decades, researchers have demonstrated that individuals with ASD are more apt to successfully acquire skills when instruction occurs in community-based and/or naturalistic settings (Alpern & Zager, 2007). The continued evolution of technology and digital communication continues to grow the number and types of collaborative virtual environments (CVE) that serve as platforms for virtual communities that may support the acquisition and use of communication and socialization skills (Moore, Cheng, McGrath, & Powell, 2005). These virtual mediums include a wide range of web-based applications and social media and include platforms such as: email, Skype, Google+, Facebook, Instagram, Twitter, Second Life, MMORPGs and countless others that provide opportunities for virtual interactions and socialization.

Virtual environments such as a massively multiplayer online role-playing game (MMORPG) provide unique opportunities to engage socially without the risk and challenges of face-to-face situations and allow participants to freely develop social connections (Casey & Evans, 2011). Social and communication skills learned by individuals with ASD in a MMORPG may generalize to other environments including face-to-face situations (Bricker & Bell, 2012; Craft, 2012; Gee, 2007; Granic, Lobel, & Engels, 2014; Parsons & Cobb, 2011; Yee, 2006). Despite a desire for friendships and opportunities to socialize through the use of technology, individuals with ASD fail to recognize and accurately interpret social cues or verbal and nonverbal behaviors (Iovannone, Dunlap, Huber, & Kincaid, 2003). Difficulties with interpreting emotions, body language, and facial expression of
peers frustrate individuals with ASD (Morrisson & Blackburn, 2008). Teaching social skills in virtual environments provides opportunities for children with ASD to develop their social communication skills without the challenges of real-world extraneous variables such as the unpredictable face-to-face interactions of others that could increase anxiety (Baker et al., 2009; Beauchamp & Anderson, 2010; Cobb, 2007; Leonard, Withers, & Sherblom, 2011; Parsons, Leonard, & Mitchell, 2006a). In addition MMORPGs provide countless opportunities to interact and replicate social situations through the virtual environment.

Massively Multiplayer Online Role-Playing Games

Social interaction including collaboration and communication are critical components of successful gameplay in MMORPG. These web-based games combine aspects of both role-playing video games and massively multiplayer games creating a virtual environment where large numbers of players interact with one another. The majority of MMORPGs have a variety of tools to facilitate communication between players including chat boxes, webcam rooms, voice chats, and forms of video-chat that can be used to connect participants. Using these players engage in complex dialogues as they collaborate to problem-solve, strategize, and socialize, engaging in the very skills they lack in face-to-face environments (Prensky, 2007; Yee, 2006).

Virtual environments include any digital medium in which individuals are represented as avatars interacting with other avatars or computer agents (Fox et al., 2014). Agents are computer-controlled avatars. While agents respond to the moves and decisions of human-controlled avatars, player-participants do not directly control the responses or movements of agents. In contrast, in virtual environments, human participants control the actions of avatars. These actions simulate real-world situations and dialogue mimicking human expression and body language in the virtual environment. Online gaming environments generally include both computer-controlled agents as well as human-controlled avatars. Massively multiplayer online role-playing games include computer-controlled agents as well as human-controlled avatars that represent each of the game participants. The large number of player-participants in MMORPGs provides opportunities for players to form and build relationships and alliances that can be advantageous in achieving common goals, completing game challenges, and ultimate victory in the game.

Participants, through their avatars, interact with both agents or computer mediated interactions, and other avatars in the online game environment. Social influence plays a role in the responses and decisions of player-controlled avatars as they take offensive and defensive actions based on their perceptions of allies and enemies in the gaming environment. Social influence has been described as change in an individual’s cognitions, attitudes, physiological responses, and behaviors resulting from the belief that another person is present (Allport, 1985). Avatars have a greater social influence on participants in games as compared to the influence of computer-controlled agents (Fox et al., 2014). Avatars elicit a suspension of disbelief on the part of the player, which in turn increases player engagement and the belief that another person is present in the virtual environment (Dieker, Rodriguez, Lignugaris, Hynes, & Hughes, 2013).

Individuals who choose to interact with other players make connections and communicate through their personalized avatars. Players have the option to choose how, when, and how much interaction they want to have with other players through their avatars, which provides a measure of control over extraneous variables that often seem to be unpredictable in real-world situations.

The virtual environment, along with various interaction options, creates a “safe” opportunity for social risk taking and supports increased levels of engagement and social interaction when compared to social interaction by the same participants in real-world environments (Baker et al., 2009; Barrett, 2011; Beauchamp & Anderson, 2010; Bellini & Akullian, 2007; Cobb, 2007; Leonard et al., 2011; Nefdt, Koegel, Singer, & Gerber, 2010; Parsons et al., 2006a).

Collaborative virtual environments have the potential to help individuals with ASD under-
stand social constructs, such as facial recognition and emotional inferences, based upon facial expressions of avatars in the games (Moore, Cheng, McGrath, & Powell, 2005). These virtual environments provide an opportunity for individuals with ASD to independently interact socially with others, receive and respond to feedback, and develop new social/communication skills outside of an often-intimidating face-to-face environment (Cheng, 2005; Mitchell, Parsons, & Leonard, 2011).

The Role of Virtual Environments in Friendships

Massively multiplayer online role-playing games offer an innovative medium where individuals as well as those with ASD can communicate and interact with peers. Several researchers note that when given an opportunity to engage in an environment that does not require constant face-to-face interaction, communication skills that support socialization can be developed by individuals with ASD (Cheng, 2005; Cheng & Huang, 2012; Mitchell et al., 2011). Virtual environments that embed videogame principles such as immediate feedback and player collaboration, hold the potential to support social communication skills (Cheng & Huang, 2012; Fullen, 2012; Schafer et al., 2013) and may transcend into the development of meaningful relationships (Yee, 2006).

Implications for Online Virtual Environments and Videogames

Videogames provide opportunities for people to engage in conversation, assume leadership roles, collaborate, and build social connections with others in a virtual community (Gee, 2007; Fullen, 2012; Yee, 2006); however, little is known about the dynamics of socialization in an MMORPG or virtual environment for individuals with ASD.

The work of early researchers in this area focused on basic communication and task completion skills but provided a glimpse at the potential of these environments to support the development of social and communication skills of individuals with ASD (Moore et al., 2005). To date no study examines the use of virtual environments as a MMORPG to develop meaningful social relationships for individuals with ASD. Examining the social implications of videogames will support the understanding of new opportunities to engage socially; further examination will set the foundation to develop opportunities for individuals with ASD to become socially engaged by utilizing innovative technology and virtual immersive environments such as a MMORPG.

The purpose of this research study was to examine social interactions of adolescents with ASD as they engage in a virtual environment. Understanding the social nature of videogames as a method to engage in a dynamic social community could lead to supporting the development of a platform on a computer or handheld device that could be used specifically for educational use (Craft, 2012; Gee, 2007).

Method

The researchers employed a phenomenological study that used interpretative sociology and emergent coding to describe in detail the meaning of social interactions for three adolescent/young adult boys with a formal diagnosis of ASD. Semi-structured interviews were used to glean information from the participants (n = 3). This approach allowed the participants to freely describe their own experiences. Questions were reevaluated to ensure that participant responses would engender answers specific to the research question. Due to the nature of the participants, they often provided information not related to the questions asked; this information was important to understanding the social experiences and therefore will also be discussed. The goal of this phenomenology study was to understand the experiences of this specific group of adolescents as they constructed meaning from their social experiences (Creswell, 2013).

Participants and Setting

This study was conducted through observations of local gaming events in a Central Florida mall, interviews with participants at a local library, and group observations/focus groups to corroborate the information gathered. Participants were adolescents or young adults...
(16-21 years) currently enrolled in high school, diagnosed with high functioning ASD, who would fall into category one of the DSM-V, requiring minimum support. Three levels of severity have been defined by the DSM-V (2014); level one includes those individuals that require minimum support, level two includes individuals that require substantial support, and level three includes individuals that require very substantial support for social interactions. Prior to the revisions of the DSM–V, Asperger’s syndrome was recognized as a more mild form of ASD and often considered “high-functioning” ASD; however, Asperger’s Syndrome has since been removed. For the purposes of this study adolescents with high functioning ASD were defined as those that fall into level one as defined by the DSM-V (2014).

No two individuals with ASD are alike, and currently there is no consensus as to the definition of high functioning ASD (Lai, Lombardo, Pasco, Ruigrok, & Wheelwright, 2011; Ozonoff, South, & Miller, 2000). “The DSM provides a categorical approach to low and high-functioning and several explanatory models for symptoms exist, yet they do not provide a full explanation for the multiplicity of clinical presentations for ASD or for all the core symptoms” (Tyson & Cruess, 2011, p. 1477). Each participant had a documented deficit in social skills and relationship development. While attending high school, all participants had an Individualized Education Program (IEP) with social goals and received special education services in the context of an inclusive classroom.

**Austin**

Austin is an individual with high functioning autism. Austin is in grade 11 and is 18 years old with an IQ > 100. He attended 70% of his day in a general education inclusive classroom and 30% in a self-contained class working on social personal skills and English class. Austin enjoys playing video games by himself and with his friends. He stated that he has 20 or 30 friends but maybe only three or four. His justification was many people know him and he enjoys talking to them; however, they find him annoying. Austin also enjoys playing with dinosaurs and writing stories, after school he spends time alone at home and only can play videogames when his mother turns on the Internet. On weekends, Austin enjoys volunteering at the zoo. Austin’s mother hopes he will live independently but is unsure of his ability to socialize and maintain appropriate conversations with people in a face-to-face environment. Austin is capable of holding virtual conversations through Skype, Facebook, Face-Time, or Oovoo; however, he does not enjoy using the telephone and struggles with group and individual face-to-face conversations. Austin has a friend Auden, they are able to get together when their mothers can connect their schedules.

**Auden**

Auden is 16 and in grade 10 with an IQ > 90 and has been diagnosed with ASD. Auden attends school full-time in an inclusive setting; he takes one social personal class that is considered part of his Individualized Education Program (IEP). This social personal class is intended to help develop his social and functional communication skills. Auden enjoys videogames, playing matchbox cars, and taking apart computers. Auden stated that he has between two and nine friends but most everyone at school does know him, but realistically he has two friends. Auden spends time after school playing videogames and enjoys talking on Skype with people he met while playing the videogame *Minecraft*. The people he interacts with, he has never met face-to-face, and he only knows them from the virtual world. Auden stated two of his online friends are now from school; however the majority of his friends are from Canada and London. Auden describes talking about cars with his friends in the virtual worlds and building structures in *Minecraft*. Auden primarily plays in the MMORPG, World of Warcraft and enjoys working with others to complete quests and battles. Auden, similar to Austin, does not like to talk to people face-to-face and finds it easier to talk to people over a virtual medium. Auden also uses Skype, Facebook, FaceTime, or Oovoo; he will use a telephone if his mother “demands it”, but prefers other methods of communication.
Taylor

Taylor is a young adult with Asperger’s Syndrome; he identifies himself as an “aspie”. Taylor is 21 years old with an IQ > 100, and despite being enrolled in high school, he currently does not attend school. He informed the researcher that, “there was no functional purpose to high school for him”. Additionally Taylor does not hold a job. Taylor stated that people do not understand him well enough to manage to talk to him, so it has stopped him from getting a job, completing high school, or continuing on to college. Taylor emphasized during the interview that his only friends are gamers, and he frequently speaks to people all over the world in the context of his MMORPG game.

Taylor recently started spending time at the game shop located in a mall in an urban setting. During his visits to the mall he described interacting face-to-face with some of his friends from his local guild in the MMORPG. Taylor has been able to develop friendships online over the game and now feels comfortable to go to the game shop and attend gaming events such as Mega-con held in Orlando. Taylor does not use the telephone often and prefers to talk to people over Skype, Facebook, FaceTime, or through the game chat room.

Research Questions

The study focused on the perceptions of adolescents and young adults with ASD participating in online gaming. The overarching research question was: What are the social identities, interactions, and agendas for participants with ASD playing a MMORPG? A secondary goal was to describe the social interactions that occur between the participants and their friends during game-play.

Procedure

The Institutional Review Board (IRB) at a large urban university approved the study, and the researcher conducted interviews, observations, group observations and discussions with adolescents with ASD. A series of open in-depth interviews, structured interviews, and observations of gaming events that include four or more participants was conducted.

The qualitative design included participants enrolled in an urban high school setting. All participants actively participated in online videogame play using virtual environments (3+ hours a week) (Granic et al., 2014; Yee, 2006) in a MMORPG. In-depth interviews and observations were the primary method of data collection. The interview process began with the researcher conducting a series of open-ended and structured interview questions. The focus of the questions was intended to describe the social experiences of gaming and the correlates to social relationships for young adults with ASD (a copy of the questions can be obtained by contacting the authors). The information obtained subsequently formed the basis for the overall findings of the study. To support the findings from the in-depth interviews, participants completed a review of the transcripts through member-checking and confirmed the transcripts and initial codes with the researcher. Coding categories were developed and refined on an ongoing basis, guided by the study’s conceptual framework. In addition, various strategies were employed, including a search for discrepant evidence, inter-coder reliability in the coding process, and peer review at different stages as the study progressed.

Using emergent coding, themes were developed from the initial codes that describe the social structure and social cultural norms, and tensions between real life and virtual life were recorded. Perceptions of friends and how they differ from a virtual gaming environment to a face-to-face environment and the tension between acceptable conversation and social rules as they differed from gaming to face-to-face encounters were presented. Twelve initial codes were identified, the primary codes included social rules, social norms, social acceptance, social justification, and social diversion. Key themes were identified and developed into overarching themes.

A sample of specific interview questions and prompts included the following:

- Can you describe your friends at school and your social interactions? How many friends do you have?
- Describe how you feel when you game

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Describe your interactions online with people would you rather interact online or face-to-face. Why?

Describe your socialization with people you know face-to-face and those you have never met

Discuss your perspective of the gaming community and socialization that occurs in the game

Describe how you socialize in the game and your sense of being part of a social group

Data Analysis and Emergent Themes

Using emergent coding, four themes were initially identified in the data: comfort and overcoming barriers, socialization with friends and making new friends in the virtual environment, awareness of self and others with recognition of emotions, and learning to interact in a virtual environment and generalizing skills to a face-to-face setting. See Table 1 for details.

Socialization in a Virtual Environment: Comfort and Overcoming Barriers

As noted in the extant literature, a persistent struggle with social skills remains problematic through life transitions for individuals with ASD (Shattuck et al., 2012). Social skills challenges are augmented by face-to-face environments that present situations that potentially cause anxiety which lead to discomfort and anxiety when socially interacting. Through the comments from all three participants involved with this research, it is evident that they struggle with interactions, bullying, and are acutely aware of their challenges and differences. However, all participants described using a virtual environment to interact that allowed them to overcome barriers to socialization and successfully interact with others, develop friendships, and develop an awareness of self and others.

All of the participants described using a virtual environment as places to comfortably interact. The comfort is achieved by the level of anonymity that comes by interacting through the use of an avatar. An avatar is a digital representation of a character that personifies whom the individual would like to portray in the game. For example, that the player can personify his/her ideal self and then interact with others comfortable through his/her avatar. In addition, the virtual space removes extraneous variables that often augment challenges during socialization for individuals with ASD. All participants discuss a feeling of having more control over with whom they interacted and how they interacted in a virtual space using their avatar. A topic that was emphasized by participants was using the MMORPG to interact only with people that did not make them uncomfortable or bully them. For example, one participant stated:

“You know, people don’t pick on me online . . . um well we all can be kind of mean sometimes but we don’t mean to be a bully it is just if they bully me I can delete them or close the chat log. Because then they would like me for who I am and we would be doing the same things Auden and I can be our special names and then everyone likes us.”

Common Topics

Another sub-theme included the use of a MMORPG to identify common topics and engage with people that have the same interests.

All the participants (100%) describe enjoying interactions within the MMORPG because they were focused on topics of interest to all players. In addition, the participants noted how the virtual environment would alleviate the need to try to develop common ground because it was already there in the form of a game. For example, Austin discussed hanging out with his friend while playing the game. Austin identified this as an important part of their friendship so they have the same thing to talk about. “I like to play with James (pseudonym) because then we do something we both like and we can talk about it”. Two of the three participants, Austin and Taylor emphasized that the majority of their friends and people they interact with find them annoying. However, in a game they can say what they want, such as discuss cars or physics in depth, because they describe the game as a place where people do not judge others for their particularities and do not get annoyed as easy. “As if social rules are different in a virtual environment. People don’t care who I am in the game...”
# Table 1

**Themes Identified by the Emergent Codes**

<table>
<thead>
<tr>
<th>Initial Codes</th>
<th>Total Tally</th>
<th>Themes</th>
<th>Justification</th>
<th>Aggregate Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comfort and safety of socialization</td>
<td>28</td>
<td>Comfort and overcoming barriers</td>
<td>The internet was used as a safety net to develop social skills and interact with friends while avoiding bullying.</td>
<td>47</td>
</tr>
<tr>
<td>Barriers to socialization and interaction</td>
<td>14</td>
<td>Barriers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bullying</td>
<td>5</td>
<td>Socialization with friends</td>
<td>The virtual environment served as a platform to socially engage, spend time with friends from all over the world, and communicate with people. The participants developed an understanding of communication and friendships.</td>
<td>62</td>
</tr>
<tr>
<td>Socialization in the game</td>
<td>29</td>
<td>Socialization and development of new friends through virtual connections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions of social communication and technology to communicate</td>
<td>7</td>
<td>New friends through virtual connections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friendships</td>
<td>10</td>
<td>Friendships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friendship perceptions</td>
<td>11</td>
<td>Friendships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Recognition</td>
<td>20</td>
<td>Awareness of Self and Others</td>
<td>Majority of literature notes challenges with self-awareness, emotional recognition, role and rule identification, and self-perceptions. Participants expressed their understanding of emotions, self, and others while interacting in defined roles.</td>
<td>75</td>
</tr>
<tr>
<td>Social Acceptance</td>
<td>6</td>
<td>Others with recognition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awareness of rules roles/rules</td>
<td>22</td>
<td>Recognition of emotions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awareness of others perceptions</td>
<td>11</td>
<td>Others with</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-perceptions of interaction</td>
<td>16</td>
<td>Others with</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaboration/Skills learned</td>
<td>6</td>
<td>Learning to interact in a virtual environment and generalizing skills to a face-to-face setting</td>
<td>Even though this category is small the researcher felt that learning skills in the virtual environment and transferring them to other settings supported their self-advocacy and increased participation in the general education class and with the community.</td>
<td>10</td>
</tr>
<tr>
<td>Self-advocacy</td>
<td>4</td>
<td>Self-advocacy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
or that I’m weird, they just like me and we play.” The findings from this rich research demonstrate that this homogeneous group of individuals with ASD have an awareness of self and others and are more comfortable interacting in a virtual environment. As a result of an increased comfort level and self-awareness that was developed in a MMORPG, all of the participants were able to develop and sustain friendships both in the MMORPG and face-to-face settings.

Socialization with Friends and Development of New Friends through Virtual Connections

Based on the data, the researchers described findings that this group of individuals with ASD actively sought friendships, recognized emotions, and understood roles within the game and real life. All participants identified at least one friend or acquaintance in a face-to-face environment; however, online they identify thousands of other players that they interacted with all around the world. All participants identified between five and eight friends they considered close friends even if they had never met them in real life. One interviewee, Taylor stated:

Well, gaming is my only source of friends. The only people I talk to are gamers in and out of the game. I have had social goals my whole life [in school] but I have lots of friends in the game and we get together in real life too. I can have more friends online and socialize just like you do [emphasized with a louder voice]; we get together at cons like the mega-con that was just here in Orlando. I also use to play with my brother and we were friends but now he does not like gaming and has moved away, we still talk but not as much.

All three participants discussed the number of friends they had in a virtual environment and how comfortable they were talking with friends. All participants sought out friendships and described wanting to socially interact. All participants described being acutely aware that many of their peers in school found them to be annoying, weird, or different; these perceptions of self compounded their challenges with socializing and developing friendship. It was interesting that Taylor emphasized that because of the relationships he had developed online he was able to have the courage to go meet the people face-to-face.

Emerging research has begun to focus on interpersonal relationships and friendships for individuals considered to have high functioning ASD. Researchers have noted that young adults with ASD possess a desire to establish friendships (Bauminger & Kasari, 2000); however, they fail to recognize and accurately interpret social cues to include verbal and nonverbal behavior (Iovannone et al., 2003).

Feelings of exclusion associated with a persistent challenge with social skills can contribute to the dropout rate in a postsecondary setting and job loss in a business/employment environment, especially for young adults with ASD (Fessenden, 2013). However, given the changes occurring with digital communication and socialization, it may be possible to integrate young adults with ASD into a virtual community that may support greater communication in a face-to-face setting (Cheng, 2005).

Awareness of rules related to self and others with recognition of emotions. Within the defined rules and social norms of social interactions in society, some individuals with ASD develop patterns and ritualistic behaviors to ensure that they adhere to them (Cihak, 2011). The rules specific to this group considered interactions in school, the mall, and on public transportation. All participants described learning to interact within a game and transferring those skills to a face-to-face setting. Additionally, by understanding the rules, the participants all described recognizing their emotions as well as the emotions of others. For example, one participant, Austin appeared to struggle with a foot fetish; he really enjoyed feet and had been given a rule by his mother that he could only ask to see people’s feet while playing a videogame, ensuring that interactions were in the form of an avatar. Austin was aware that asking to see feet in a face-to-face setting was inappropriate; however, during the game it was acceptable because feet were individually designed and the armor on the feet was part of the game. During one of the interviews with Austin, a tension between acceptable rules in the online
environment versus the face-to-face environment was experienced and discussed. His mother had discussed appropriate social rules with him, especially when he has a desire to discuss feet. Austin enjoyed developing characters that had neat feet and exotic shoes or footwear and he also enjoyed asking to see other characters’ feet; Austin recognized that he could not ask in a face-to-face setting because it was inappropriate. However, when discussing the MMORPG with the researcher Austin asked to see the researcher’s feet. “Because I like feet and feet are cool, like all my characters have neat feet and maybe you do too,” Austin went on to describe why he had asked the researcher about feet and related it to the gaming discussion. He also became uncomfortable when he realized the situation was only a discussion of the game and it was not acceptable to ask to see the researcher’s feet. This explanation demonstrated that he realized that he was wrong to ask the question about feet; however, could identify when he was permitted by his mother to look at feet. This demonstrates that he could identify delineations between the virtual environments at the face-to-face setting. An example of this is demonstrated through his rationalization, for example:

I can’t paint mine because I am a boy but in my stories and my videogames all my characters have neat feet and cool toenails. I can’t ask to see peoples feet because we are humans and it is not ok but in my game I can and I ask to see peoples shoes, sandals, and feet because it is a game and it is ok. So I shouldn’t ask to see your feet because you are a human and we are not in a game but we are talking about games so maybe it is ok . . . (pause) but I can tell you all the bones in your feet because I learned them from a game.

The researcher diverted foot conversation by noting that Austin could name all the bones in his foot and asked Austin if he wanted to name them. Austin then attempted to reframe the conversation about feet realizing that it was not acceptable in person by asking to move on with the interview. Many individuals with autism are very rule oriented and have a tendency to be rigid and inflexible when rules are presented (Cihak, 2011). All participants discussed having an awareness of rules and how they impact daily living.

In addition to recognition of rules, all participants described their maladaptive behaviors and their behavioral strategies that were in response to a challenging situation that augmented their anxiety. Further, they described using the behavior to overcome their anxiety. They were able to recognize that the behavior was not socially acceptable. For example:

I have to be quite because the bus driver said so because when I get scared or mad I growl like a dinosaur, want to see? Grrrrrrrrrrrrrrrrrrrr – that is a velociraptor they have a claw that digs into your skin and will rip it open and cut you in half. We don’t talk about that as if I were killing you because we are humans and it is not ok but in a game I can pretend to be a dinosaur and it is ok. I can roar and scare people and do all the things dinosaurs do but not in real life.

Austin’s response identifies that he understands the rules provided by others and social rules required for interactions in a face-to-face setting.

Learning to interact in a virtual environment and generalization of skills. A small but significant finding was identified through emergent coding; all participants were recognizing and describing interactions in a virtual environment and how they influenced their face-to-face interactions. For example Auden said, “I like to play with my friends in a virtual environment, then at school we have something to talk about.” All the participants were able to describe using the virtual environment as a common topic to support greater interactions in a face-to-face setting. All participants described their social interactions and how they differed from a face-to-face setting. For example, Taylor said: “To game and have friends you have to have a whole different set of “social skills” [he hand quoted in the air]. Taylor was a perfect example of recognizing that interactions within the virtual environment can be different but also hold some similarities to the real world.

Taylor in particular described how he learned to take turns while speaking because his other team members in the game would...
just delete him if he did not let them speak. A virtual environment was described as a comfortable setting to interact and engage with friends and not just local friends.

I get to meet people from all over the world, everyday which is really cool. Not many people have friends in 10 countries like I do, that they talk with daily and complete quests or goals as you might think of it.

The information provided by the rich data gathered from the researcher presents findings for all participants and their desire to seek friendships in the comfort of the virtual environment, socialize with friends, recognize emotions, and understand rules within the game and real life. Through the rich description of participants and their interactions the researchers present insight into virtual interactions for adolescents with ASD that support community involvement and friendships in a virtual environment that hold the potential to support friendships and communication skills that will ultimately support greater access to postsecondary education and persistence in STEM related courses and careers. The research described lays the foundation for continuing research using virtual environments to support interpersonal relationships that may support greater postsecondary outcomes.

Summary and Implications

The results presented align with previous research by Gee (2007) with gaming described as a highly social interaction between player, game, and other participants. Additionally, the rich descriptions and findings lay the foundation for continuing research using virtual environments to support interpersonal relationships that may support greater postsecondary outcomes.

The data presented a picture of the relationships of three individuals with ASD. Participants described the challenges of developing and maintaining friendships. All three participants reported attending a regular high school in inclusive classrooms. Their responses indicated that they did not interact with peers during the school day except when required by the classroom teacher. All three reported that they maintain online friendships with multiple people in countries around the world but they have few (one to three) people they identify as friends in face-to-face situations. Outside of meeting someone at a game-shop or inviting them to their home for gaming, the participants report that they do not interact with others outside of school, over the phone, or in face-to-face social situations.

The primary purpose of this study was to gain an understanding of the perceptions adolescents with ASD about the socialization that occurs within a MMORPG. Participants reported trying to interact with others socially in face-to-face situations but not getting a response from peers. For example, Austin initially said the he had several friends, but then corrected himself saying “not really”, noting that when he talked to people at school peers would not talk back and he felt they found him annoying. All three participants reported socially interacting with other players in MMORPGs outside of school.

Social rules were found to be one of the most challenging parts of social interaction for the participants. For example, during the interview Austin struggled with appropriate conversation. Austin understood he had a foot fetish and knew he was not allowed to ask people to see their feet in a face-to-face setting, he also knew that during the game play he was able to ask to see feet. Austin engaged in self-talk to help him understand if the interview was an appropriate place to discuss feet or not. Austin rationalized the difference between virtual world and real world and struggled with his responses to interview questions because study questions had a focus on videogames, and he considers those games not real.

One aspect of this study was the investigation of the perceptions about friendships of three individuals’ with ASD. This area focused on the participants’ perceptions of their friends and friendships and how those differ when they are in a virtual gaming or face-to-face environment. Additionally the study explored participant perceptions of the tension between acceptable conversation and social rules as they differed in those environments. Taylor advocated for individuals with ASD to use gaming as a social construct to help individuals like him become more comfortable
communicating. This conversation demonstrates that individuals with ASD can learn social rules and delineate between real-world and virtual worlds. Additionally what is learned in a virtual world may help individuals with ASD rationalize and understand how to engage in social communication that can support social interaction in face-to-face settings.

Taylor, Austin, and Auden all brought up challenges with developing friendships and discussed the social goals related to developing friends and interacting with others that were part of their Individual Education Programs (IEP) at school. In contrast to their documented social deficits was the emergence of a theme in this study that indicated that all participants reported a large network of friends in their virtual gaming environments and that they engaged socially with their friend’s avatars daily within the gaming community.

Virtual environments can assist individuals with social communication challenges in circumventing social barriers and developing meaningful relationships. In this environment the perceived constraints of social/communicative disorders like ASD do not inhibit effective communication or relevant social interactions. The universal proliferation of technology and the exponential growth in MMORPG provides an individual with social communication challenges the opportunity for typical social and participatory interactions for individuals participating in that type of gaming environment.

Implications for Future Research

This study is just a modest beginning to a large-scale exploration by researchers in the field on the impact of participation in online environments (including MMORPGs) on the college and career outcomes of individuals with ASD. There are countless questions to be answered: What percentage of individuals with ASD is participating in online environments such as MMORPG? What are the characteristics of those individuals? What is the impact on the face-to-face relational interactions of participants? How does the acquisition of social and communication skills in the virtual environment impact postsecondary outcomes for these individuals? The questions are endless and the need is critical as this growing population of students with ASD approach their most critical transition, high school graduation and postsecondary college and career choices. How can educators and researchers help these individuals to be better prepared for their independence and responsibilities as productive members of society?

References


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