A proposal for an evidence-based online course to support executive functioning and social skills in postsecondary students with autism spectrum disorder

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Boston University
A PROPOSAL FOR AN EVIDENCE-BASED ONLINE COURSE TO SUPPORT
EXECUTIVE FUNCTIONING AND SOCIAL SKILLS IN POSTSECONDARY
STUDENTS WITH AUTISM SPECTRUM DISORDER

by

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DEDICATION

I dedicate this dissertation to my parents, Mark Matteo and Dawn Matteo, because they have supported and encouraged me to pursue my dreams from an early age. They listened whole-heartedly to my ideas, no matter how lofty, ridiculous, or eccentric… instilling within me a passion for knowledge and curiosity, a fire that would never burn out. They taught me patience, kindness, dedication, and commitment. They unwearily and creatively helped me through late night projects, including, but surely not limited to, midnight rooftop bottle-rocket trials, a duct-taped hula-hoop moon costume, and a self-suspended paper-mâchéed Mars. They let me climb trees, get dirty, and take chances. Thanks, mom and dad, for raising me to be an independent, curious, passionate, committed, and loving individual who understands the value of hard work as well as the importance of “the simple things”. I cannot thank you enough for shaping who I am today and for being the most genuine support team there is. I love you!

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A PROPOSAL FOR AN EVIDENCE-BASED ONLINE COURSE TO SUPPORT EXECUTIVE FUNCTIONING AND SOCIAL SKILLS IN POSTSECONDARY STUDENTS WITH AUTISM SPECTRUM DISORDER

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ABSTRACT

The population of young adults with autism spectrum disorder (ASD) is growing as more individuals with ASD age into adulthood. Almost half of the children diagnosed with ASD who were surveyed in 2010 demonstrated average or above average intelligence (CDC, 2014). Despite promising intellectual abilities, only 17.4% of young adults with ASD enroll in a four-year college, and only 38.8% of students with ASD graduate postsecondary education within eight years of leaving high school (Newman et al., 2011). Therefore, there is a growing niche for postsecondary support programs specifically designed for students with ASD.

This doctoral project includes two parts: the development of an evidence-based online course for postsecondary students with ASD and the proposed evaluation of the online course. There are five theoretical reasons for poor postsecondary outcomes for young adults with ASD: (1) the increasing prevalence of ASD, (2) the absence of a “golden standard” in postsecondary transition for young adults with ASD, (3) the existing differences between educational and disability rights legislation at the secondary and
postsecondary education levels, (4) the diagnostic characteristics of ASD, and (5) the characteristics of collegiate culture.

The proposed online course curriculum will utilize evidence-based content and design from 29 pre-existing postsecondary support programs for students with ASD, and successful executive function and social skills curricula for students with ASD (“Unstuck and On Target”, Cannon, Kenworthy, Alexander, Werner, & Anthony, 2011; “PEERS for Young Adults”, Gantman, Kapp, Orenski, & Laugeson, 2011; “PEERS Curriculum for School-Based Professionals”, Laugeson, 2014). The proposed feasibility study will measure the feasibility and acceptability of participation in an online course for college students with ASD. The proposed feasibility study will also measure preliminary outcomes regarding participants’ executive functioning, social skills, self-determination, and life satisfaction.
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## List of Abbreviations

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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ADA</td>
<td>Americans with Disabilities Act of 1990</td>
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<tr>
<td>AIR-S</td>
<td>The American Institutes for Research Self-Determination Scale—Student</td>
</tr>
<tr>
<td>AOTA</td>
<td>The American Occupational Therapy Association</td>
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<td>AOTF</td>
<td>The American Occupational Therapy Foundation</td>
</tr>
<tr>
<td>ASD</td>
<td>autism spectrum disorder</td>
</tr>
<tr>
<td>BMSLSS-C</td>
<td>Brief Multidimensional Students' Life Satisfaction Scale-College Version</td>
</tr>
<tr>
<td>BRIEF-A</td>
<td>Behavior Rating Inventory of Executive Function-Adult</td>
</tr>
<tr>
<td>BU</td>
<td>Boston University</td>
</tr>
<tr>
<td>BUSOTA</td>
<td>Boston University Student Occupational Therapy Association</td>
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<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
</tr>
<tr>
<td>IDEA</td>
<td>Individuals with Disabilities Education Act</td>
</tr>
<tr>
<td>PEERS</td>
<td>Program for the Education and Enrichment of Relational Skills</td>
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<tr>
<td>SELSA-S</td>
<td>Social and Emotional Loneliness Scale for Adults</td>
</tr>
<tr>
<td>SIAS</td>
<td>The Social Interaction Anxiety Scale</td>
</tr>
<tr>
<td>SRS-2</td>
<td>Social Responsiveness Scale—Second Edition, Adult</td>
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<tr>
<td>SUCCESS</td>
<td>Success during University: Concentrate on Culminating Executive function and Social Skills</td>
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Chapter 1: Introduction

In 2010, it was measured that one in 68 8-year-old children had a diagnosis of autism spectrum disorder (ASD)—a 29% increase from the 2008 estimate of one in 88 children, and a 123% increase from the 2002 estimate (one in 150) (Centers for Disease Control and Prevention [CDC], 2014). Almost half (46%) of the children with ASD in the 2010 estimate were reported to have average or above average intellectual ability (CDC, 2014). If 46% of 8-year-olds with ASD have average to above average intellect, one might predict that a reasonable percentage of these children will enter postsecondary education. Despite the statistics, only 17.4% of young adults with ASD enroll in a four-year college (Newman et al., 2011). Currently, there are 29 four-year postsecondary institutions with support programs for students with ASD (see Appendix A); however, to date, none of the programs have published peer-reviewed outcomes.

The purpose of this doctoral project is to facilitate a successful college experience for postsecondary students with ASD via the participation in an evidence-based online course “BU SUCCESS 101-102” (Success during University: Concentrate on Culminating Executive Function and Social Skills 101-102). “SUCCESS 101-102” will be a one-credit online course proposed to be offered to all Boston University students through the Office of Distance Education at Boston University. However, the course is designed for matriculating students with ASD and will address underlying barriers to success in the college environment as they relate to students with ASD. This doctoral project is designed to provide insight into the feasibility and outcomes of an online intervention for postsecondary students with ASD, and set a preliminary standard for
evidence-based practice in this topic area.

The explanatory model (see Chapter 2, Figure 1 or Appendix C) developed to describe the need for this type of program outlines five primary factors hypothesized to contribute to the low rates of postsecondary attendance and success for students with ASD: (1) the increasing prevalence of ASD, which will likely lead to increased pursuit of postsecondary programs, (2) the absence of a “golden standard” in postsecondary transition for young adults with ASD, (3) the existing differences between educational and disability rights legislation at the secondary and postsecondary education levels, (4) the diagnostic characteristics of ASD which may impact social/educational/ vocational success in adulthood, and (5) the characteristics of collegiate culture which do not appear to support the needs of students on the autism spectrum.

In summary, the proposed online course for postsecondary students with ASD will strive to improve this population’s postsecondary education outcomes. According to research published by Newman and colleagues (2011), only 38.8% of students with ASD who pursue post-secondary education graduate. The proposed online course would target the five foundational concerns contributing to poorer postsecondary outcomes for young adults with ASD. The program aims to facilitate better outcomes in postsecondary education for students with ASD, by providing this growing population with evidence-driven supports and trainings to aid in their executive functioning, social, and self-advocacy skills.
Chapter 2: Theoretical and Evidence Base to Support the Proposed Project

The online course, “BU SUCCESS 101-102,” will support students with ASD as they transition to postsecondary education. The proposed college transition course will draw upon two theoretical frameworks: situated cognition theory (Brown, Collins, & Duguid, 1989) and the Person-Environment-Occupation (PEO) model (Law et al., 1996). The design of the course is also influenced by five primary factors, selected from evidence to describe the foundation of the problem. The five primary factors are described in the first section of this chapter, and are included in the explanatory model (see Figure 1). The course curriculum and delivery methods were developed after an in-depth examination of current postsecondary ASD support programs and a literature review of effective teaching approaches for adolescents and young adults with ASD. Existing postsecondary transition programs for students with ASD and best practice guidelines for this population are discussed in the second section of this chapter.

Situated cognition theory is shaped by three major principles. The first principle, “legitimate peripheral participation,” proposes new learners gain essential knowledge by observing skilled individuals (Brown, Collins, & Duguid, 1989, p. 40). The second principle, “cognitive apprenticeship” suggests a student learns via participation in “authentic activity” (Brown, Collins, & Duguid, 1989, p. 40); in other words, practicing skills in real-life environments solidifies the learning process. The third principle of situated cognition theory is the idea of “enculturation,” or the concept that work environments generate their own culture (Brown, Collins, & Duguid, 1989, p. 40); therefore, learning a skill is akin to cultural assimilation. The proposed online course will
incorporate the three major principles of situated cognition to facilitate successful integration of students with ASD into the college environment. Use of video modeling intervention parallels the first principle, legitimate peripheral participation. The opportunity for peer mentorship and the completion of community-based assignments are two examples of authentic activity. Lastly, viewing college as its own cultural environment corresponds with the principle of enculturation.

The Person Environment Occupation (PEO) model is derived from the occupational therapy profession and is rooted in environmental-behavior theories (Law et al., 1996). Within the PEO model, the “person” is described holistically as a unique individual with a particular skillset, who has an array of roles to fill at any given time. “Environment” is defined as cultural, socio-economic, institutional, physical, and social aspects of the person’s surroundings. Lastly, “occupations” are sets of activities that are meaningful to a person, fulfilling various inner needs. The PEO model implies that success occurs when there is an optimal fit between the person, environment, and occupation factors; dysfunction occurs when there is poor congruence between PEO factors (Law et al., 1996). The proposed transition course will utilize a PEO approach to provide contextual perspective regarding the personal, environmental, and occupational demands of postsecondary education.
Overview of the Problem

The explanatory model (see Figure 1), developed to describe the need for this doctoral project, hypothesizes five primary factors that are likely influencing the lower rates of postsecondary attendance and success for students with ASD: (1) the increasing prevalence of ASD, (2) the absence of a “golden standard” in postsecondary transition for young adults with ASD, (3) the existing differences between educational and disability rights legislation at the secondary and postsecondary education levels, (4) the diagnostic characteristics of ASD, and (5) the characteristics of collegiate culture.
Prevalence of autism spectrum disorder diagnoses

There is an increased number of individuals with autism spectrum disorder aging into adulthood

Lack of college transition programs for young adults with autism spectrum disorder

Colleges are not legally required to offer “free and appropriate public education”

Current legislation

ADA requires colleges to explore accommodations for students who document a qualifying diagnosis

Characteristics of autism spectrum disorder

Students may not disclose a diagnosis

Collegiate culture

Students with autism spectrum disorders may require additional support to succeed in college

Figure 1: Explanatory Model

Young adults with autism spectrum disorder are less likely to succeed in the college environment.
The first explanatory factor is the increasing prevalence of ASD diagnoses in the United States. The most recent data indicate that one in every 42 boys, or one in 68 children, is diagnosed with ASD (CDC, 2014). Children who are presently diagnosed with ASD demonstrate higher intellectual abilities than children who were diagnosed with ASD 10 years ago (CDC, 2014), resulting in a potential increase in students with ASD seeking postsecondary education. Research has shown an increase in postsecondary attendance by students with ASD over the last 20 years (VanBergeijk, Klin, & Volkmar, 2008; White, Ollendick, & Bray, 2011; Gobo & Shmulsky, 2014; Wagner, Newman, Cameto, Garza, & Levine, 2005; Newman et al., 2011; Raue & Lewis, 2011). The growing prevalence of postsecondary students with ASD indicates a need for increased services.

The second explanatory factor describing the problem is the absence of a “golden standard” in postsecondary transition for young adults with ASD. There are currently 29 four-year colleges and universities in the United States providing support specific to matriculated students with ASD (see Appendix A for a list of current programs). The majority of programs listed in this doctoral project were identified via a list on the College Autism Spectrum (CAS) website and a PDF on the Autism Speaks website (CAS, 2015; Autism Speaks, n.d.). Additional programs were discovered via an Internet search, using key terms such as “four-year colleges and universities with autism support programs”, “postsecondary education and autism”, “college autism support programs”, and “college autism mentoring program.” The programs share several core elements; however, they all differ in content and delivery methods (see Appendix B for detailed
table of program content and delivery methods). As of July 2015, support programs for students with ASD are not available at all postsecondary institutions, and no existing programs have published peer-reviewed outcome data. The lack of outcome data and variability in delivery methods makes it difficult to agree on an evidence-based standard for postsecondary support programming for students with ASD.

The third explanatory factor for decreased success in college for students with ASD is the significant changes in the legal rights and responsibilities of students as they exit high school and enter postsecondary education. In primary and secondary education, the public school system is required to provide “free and appropriate public education” to children regardless of ability, via the creation of individualized education plans (Individuals with Disabilities Education Act [IDEA], 2004). In postsecondary education, a student must first meet the institution’s admission criteria; however, postsecondary institutions have differing admission criteria. Once the student has matriculated, colleges cannot discriminate on the basis of disability, and must provide reasonable accommodations (Section 504 of the Rehabilitation Act of 1973; Americans with Disabilities Act [ADA], 1990; ADA Amendments Act, 2008; Civil Rights Restoration Act, 1987). However, postsecondary institutions are not required to provide an individualized accommodation if doing so fundamentally alters the school’s academic programs or degree requirements (IDEA, 2004; ADA, 1990; United States Department of Education, 2013). Upon entering postsecondary education, it is the student’s—and no longer the parent’s or the educator’s—responsibility to seek supports and advocate for access (Oregon Institute of Technology, 2015; University of Chicago, 2015). Students
may self-advocate for reasonable accommodations if they have disclosed their disability and have provided diagnostic documentation (ADA, 1990; Section 504 of the Rehabilitation Act of 1973; United States Department of Education, 2013). Students with “invisible disabilities”— such as ASD— may choose against disclosing their disability due to perceived stigma (Dowrick et al., 2005). With the requirement to self-disclose and personally advocate for their needs, postsecondary students with ASD may experience difficulty requesting accommodations without additional executive function, social, and self-advocacy skill training and support.

The fourth factor that may contribute to the problem is that postsecondary students with ASD may experience difficulties assimilating to college life due to the diagnostic characteristics of the disorder. Individuals diagnosed with ASD tend to experience impaired social/emotional skills (Glennon, 2001; CDC, 2015; Hill, 2004; Gobo & Shmulsky, 2014; Camarena & Sarigiani, 2009; Giarelli, Ruttenberg, & Segal, 2013; Jobe & White, 2006; Wagner et al., 2005), which can affect a student’s ability to successfully interact with peers and staff in a typical college environment. Impairments in executive functioning are common in individuals with ASD (Glennon, 2001; Hill, 2004; Gobo & Shmulsky, 2014; Camarena & Sarigiani, 2009; Giarelli et al., 2013), yet are crucial skills for success and independence in postsecondary education (Palmer, 2013; Rabin, Fogel, & Nutter-Upham, 2010; Miley & Spinella, 2010; Gropper & Tannock, 2009). Individuals with ASD may also experience motor difficulties and central nervous system/sensory processing impairments (Glennon, 2001; Giarelli et al., 2013), affecting their ability to complete functional tasks, such as classwork or exams, in a timely manner.
Lastly, there are multiple co-occurring diagnoses associated with ASD, such as anxiety, depression, Tourette’s syndrome, obsessive-compulsive disorder, and psychotic disorder (Gelbar, Smith, & Reichow, 2014; Robinson, Curwen, & Ryan, 2012; VanBergeijk et al., 2008; White et al., 2011; Taylor & Seltzer, 2012; DeRoma, Leach, & Leverett, 2009). The aforementioned diagnostic characteristics of ASD may substantially hinder academic, social, and psychological well-being at the college level if additional supports are not provided.

The fifth explanatory factor of this model is the social and academic culture of postsecondary institutions in the United States. Students with ASD cite coursework difficulty, lack of accommodations, challenges with roommates, transitioning to campus life, and completion of daily living skills as perceived barriers to successful participation in postsecondary education (Camarena & Sarigiani, 2009). College classes are often participatory in nature with the potential to fall outside of the student’s special interest area (Cimasko, Paiz, & Gherwash, 2013), and college students who are disengaged experience poorer outcomes (Kuh, Cruce, Shoup, & Kinzie, 2008; Hu & McCormick, 2011). The high number of changes occurring in the first semester and a sudden decrease in social support may be difficult for a student with ASD to manage, leading to increased stress and poorer outcomes (VanBergeijk et al., 2008; Glennon, 2001; Chow, 2007; DeBerard, Spielmans, & Julka, 2004). Individuals with ASD tend to have fewer leisure interests (Glennon, 2001), and therefore may not have many outlets for stress release, which may lead to poorer psychological and physical health (Bray & Kwan, 2006; Chow, 2007; Schmitt et al., 2009; Ahern & Norris, 2011). Additionally, college students with
better problem solving skills, self-management skills, and self-advocacy skills (often barriers for individuals with ASD) report more positive academic and psychological outcomes (D’Zurilla & Sheedy, 1991; Arthur, Shepherd, & Sumo, 2006; Chow, 2007; Garavalia & Gredler, 2002; Getzel & Thoma, 2008; Gil, 2007; O’Connor & Paunonen, 2007; Ridgell & Lounsbury, 2004; Robbins, Allen, Casillas, Peterson, & Le, 2006; Schmitt et al., 2009; Skowron, Wester, & Azen, 2004).

It appears the prevalence and diagnostic characteristics of ASD combined with the demands of collegiate culture, the absence of a “golden standard” in postsecondary transition for young adults with ASD, and differences between education and disability rights legislation at the secondary and postsecondary levels impact the success of young adults with ASD as they transition into college. “BU SUCCESS 101-102” was developed to address as many of these explanatory factors as was possible. The course aims to reduce these five barriers and build supports for postsecondary students with ASD as they navigate college life.

**Previous Attempts to Address the Problem**

A thorough Internet search and literature review was conducted to examine existing ASD-specific postsecondary transition programs for their content and efficacy. An additional literature review was completed to evaluate appropriate teaching approaches to support the needs of young adults with ASD, specifically in the areas of executive function, social skills, and self-advocacy, because better executive functioning, social skills, and self-advocacy skills are correlated with improved outcomes at the postsecondary level (D’Zurilla & Sheedy, 1991; Arthur et al., 2006; Chow, 2007;
Garavalia & Gredler, 2002; Getzel et al., 2008; Gil, 2007; O’Connor & Paunonen, 2007; Ridgell & Lounsbury, 2004; Robbins et al., 2006; Schmitt et al., 2009; Skowron, Wester, & Azen, 2004). Information attained via the evidence review and synthesis guided the design of “BU SUCCESS 101-102”. The course design primarily focuses on executive function and social skills; however, the development of functional self-advocacy skills is included in both modules.

Research conducted in the past 15 years suggests positive outcomes for postsecondary students who participate in transition support programming. College students from the general population who participated in a first year experience course or attended college orientation demonstrated positive academic, emotional, and/or social outcomes (Clark & Cundiff, 2009; Conley et al., 2013; Goldfine et al., 2011; Howard & Jones, 2000; Jamelske, 2009; Noble et al., 2007; Padgett & Keup, 2011; Padgett, Keup, & Pascarella, 2013; Pan et al., 2008; Pancer et al., 2000; Perrine & Spain, 2008–09; Porter & Swing, 2006; Potts & Schultz, 2008; Salinitri, 2005; Young & Hopp, 2014). Young adults with a disability who participated in self-advocacy interventions, such as skills workshops and postsecondary support programs, experienced increased self-awareness, increased knowledge of legal rights, showed improved communication skills, improved leadership skills, and increased academic success following program completion (Grenwelge & Zhang, 2012; Harrison, Areepattamannil, & Freeman, 2012; Milsom, Akos, & Thompson, 2004; Test, Fowler, Brewer, & Wood, 2005; Walker & Test, 2011; Strayhorn, 2011). Research regarding postsecondary intervention for students with ASD is limited; however, evidence indicates students with ASD who participated in
intervention (i.e. a certificate program, video modeling, or a problem-solving seminar course) demonstrated increased interpersonal relationships, self-advocacy, independent living skills, emotional adjustment, social skills, and executive functioning skills (Hendrickson et al., 2013; Mason et al., 2012; Pugliese & White, 2014). College students with well-developed self-advocacy skills, self-management abilities, social supports, and better executive functioning skills showed more positive academic and psychological outcomes (DeBerard, Spielmans, & Julka, 2004; D’Zurilla & Sheedy, 1991; Arthur et al., 2006; Chow, 2007; Garavalia & Gredler, 2002; Getzel et al., 2008; Gil, 2007; O’Connor & Paunonen, 2007; Ridgell & Lounsbury, 2004; Robbins et al., 2006; Schmitt et al., 2009; Skowron, Wester, & Azen, 2004).

Existing Postsecondary Support Programs for Students with ASD

An extensive review of the research literature and an Internet search revealed there are currently 29 four-year colleges and universities in the United States providing transition and/or specialized support programs for matriculated students with ASD (see Appendix A for list of programs). The Beyond Access program at the University of Connecticut is available to any matriculated student seeking additional support for personal and academic goals (University of Connecticut, 2015); however, Beyond Access is included in the list of 29 programs because a significant number of participants have a diagnosis of ASD and there are outcome data available for these participants (Connecticut General Assembly, 2014; C. Wenzel, personal communication, March 30, 2015). Similarly, the support services at Southern Connecticut State University are available to all students with disabilities; however, the program is also included in the
original list of 29 programs because there are recorded outcome data for program participants with ASD (Connecticut General Assembly, 2014). Landmark College is a postsecondary institution with two and four-year enrollment options, specifically for students with learning differences, including ASD, and is therefore included in the list of 29 programs (Landmark College, 2015).

The proposed program would provide supports to Boston University students, as Boston University does not currently have a support program exclusively for students with ASD. The Office of Disability Services provides additional assistance (“Strategic Education Services”) for executive function skills, self-advocacy, and interpersonal skills to students with psychiatric, attentional, and developmental conditions via one on one weekly strategy sessions (Boston University, 2015a). Access to this program is free of charge, as it is considered a reasonable accommodation (Boston University, 2015a). To date, there are no data available on the Office of Disability’s website regarding participation outcomes for the Strategic Education Services program (Boston University, 2015a).

Tuition and fees vary greatly across current postsecondary support programs for students with ASD. The support services offered at Southern Connecticut State University and Landmark College are included within traditional tuition (Connecticut General Assembly, 2014; Landmark College, 2015). Current participants of the STEPS program at Virginia Polytechnic Institute and State University may receive up to $115 to participate in the program for a research study (Step, 2015). The remaining program tuition and fees range from $1,000 (Rochester Institute of Technology, 2011) to $8,000
(Nova Southeastern University, 2015) per semester, in addition to the institution’s base tuition. Eastern Michigan University, Rochester Institute of Technology, St. Joseph’s University, and University of Connecticut offer varying program fees based on required level of support and/or academic year (Eastern Michigan University, 2012; Rochester Institute of Technology, 2011; St. Joseph’s University, 2015; University of Connecticut, 2015). Several programs do not provide financial information (Bellevue College, 2015a; Drexel University, 2015; Grand Valley State University, 2014; Oakland University, 2014; University of West Florida, 2015; Western New England University, 2015; Wright State University, 2015); therefore it is unclear if program fees are included within university tuition, if the program services fall within ADA access requirements, or if program fees are not publicly listed.

The current support programs for postsecondary students with ASD vary in structure and duration. The majority of ASD support programs are available all four years the student is attending the institution. Many programs fade or alter support services to reflect changing population needs, for example increasing student independence or targeting career/continuing education goals. Some programs, such as the Beyond Access Program, Campus Links Program, and the STEPS program, offer “track” options with varying levels of support (University of Connecticut, 2015; Grand Valley State University, 2014; Step, 2015).

The following reports of program content are based on information displayed on program websites, in news articles, and/or explained during personal communication with program directors; therefore, data included in this synthesis may not fully represent all
facets of a program if the material has not been published or discussed. It is also beneficial to note that I utilized clinical judgment to assess and code thematic elements of programs if the thematic element was not explicitly stated. For example, the Autism Spectrum Navigators program does not list provision of academic supports on their webpage; however, assistance to “organize and write papers” is included under executive functioning supports (Bellevue College, 2015a). Therefore, the action “organize and write papers” was coded as both academic support and executive functioning support. Additionally, programs that report peer mentor training, peer mentors as resident assistants, or professor/college community education are all included under “community education”. This categorization assumes that training peer mentors and/or resident assistants increases the understanding of ASD within the general student population.

Several themes were identified through the process of reviewing content and curricula of the 29 postsecondary support programs for students with ASD. A full table of program offerings is provided in Appendix B. All 29 ASD support programs utilize elements of a person-centered approach, via the provision of one-on-one or individualized supports. For example, several programs require participant interviews prior to program acceptance (e.g., Defiance College, Fairleigh Dickinson University, Grand Valley State University, Marshall University, Pace University, University of Indianapolis, Western Kentucky University), where the student and program staff collaborate on an individualized plan or set of goals. All 29 programs integrate individual mentorship, coaching, training, and/or advising for the provision of academic, executive functioning, and self-advocacy supports.
All 29 postsecondary support programs for students with ASD provide academic support; however, delivery methods vary between programs. Landmark College has an entire support center dedicated to academics. Bridges to Adelphi participants at Adelphi University meet with an academic coach and “learning strategist” twice weekly, with the goal of decreasing anxiety and procrastination. Several additional programs provide students with the opportunity to meet regularly with program staff for academic assistance, including accommodation planning, time management, and goal setting. Other postsecondary support programs utilize peer mentors for academic support; for example, participants of the Drexel Autism Support Program meet with their peer mentors one to four hours per week for personal, social, professional, and academic assistance.

Additionally, many programs implement tutoring or study hall hours to facilitate academic success. Tutoring and study halls vary from mandatory to available as needed. For example, participants of the College Success Program at Eastern University are required to attend structured study sessions five days per week, whereas participants of the College Supports Program at Eastern Michigan University have access to tutoring hours at the study hall.

Delivery of executive functioning support also differs across programs. The Spectrum Support Program at Rochester Institute of Technology offers one-on-one executive functioning coaching for an additional $800 per year, in addition to other program costs and tuition. At Wright State University, a “transition coach” assists students with self-advocacy, access to campus services, and executive functioning skills. Participants of the Kelly Autism Program at Western Kentucky University attend
mandatory study hours, where they meet with peer staff for tutoring and executive functioning support. In many programs, peer mentorship is a common delivery method for executive function assistance. The University of Connecticut offers an online executive functioning workshop, called Husky GPS, which students may take during the summer. Examples of executive function assistance are not explicit in all program descriptions; therefore, it is assumed many programs assist with academic-related executive function skills like time management, organization of course material, scheduling, prioritizing assignments, and planning/organizing written work. In addition to academic-related executive function support, several programs provide independent living support and/or training (i.e. budgeting, grocery shopping, cooking, living with roommates, healthy living and self-care skills). Independent living assistance ranges from peer mentorship/coaching delivery models to integration of the subject into workshops and seminar courses.

All 29 ASD postsecondary support programs incorporate self-advocacy assistance or training into their curricula. Multiple programs provide community education, for example educating professors, mentors, and resident assistants on ASD. Several programs offer to facilitate communication between participants and their professors, regarding accommodations or academic matters. Participants in the Raiders on the Autism Spectrum program at Wright State University attend a twice-weekly support group, focused on improving executive functioning, social, emotional, and self-advocacy skills. Additional delivery models for self-advocacy assistance include the utilization of peer mentors, skills-based workshops, and/or seminar courses.
All programs, with the exception of Southern Connecticut State University and University of Indianapolis, report provision of social skills support and/or training. The majority of programs host social events for program participants and their peer mentors, for example, game night, movie night, or community outings. Organized social events aim to provide a venue for social interaction, with the ability to coach participants on social skills in a natural environment. Support programs also utilize seminar courses or skills-based workshops to target social skill training. For example, the Beyond Access program at the University of Connecticut offers optional workshops on the topics of dating, friendship, and sexual education (C. Wenzel, personal communication, March 3, 2015).

The majority of postsecondary support programs for students with ASD provide career and/or transition support services within their curricula. Bellevue College and the University of Tennessee Chattanooga incorporate career preparation within their seminar courses, as well as opportunities for experiential learning (i.e. work experience, job shadowing, internships). Mercyhurst University also offers students with ASD a “career path” option, with opportunities for job shadowing and work experience. Seniors at the College Program at Marshall University meet with a senior transition specialist for assistance with interview skills, resume building, and access to the career center. Additional delivery methods for career services include mentoring, workshops, mock interviews, application assistance, and supportive employment.

Several program curricula address sensory or emotional regulation via support groups, training sessions, workshops, seminars, mentorship, or advising. One of four
major goal areas for participants of the Autism Spectrum Navigators program at Bellevue College is improved self-regulation. Autism Spectrum Navigators participate in a seminar course during their first three years at Bellevue College, and the second year seminar course targets self-regulation skills such as stress management and occupational wellness. Multiple programs provide individual and/or group psychological counseling as part of their curriculum, or will refer participants to appropriate psychological supports as needed.

Less common program elements include parent communication, specialized orientation, living and learning communities, and changes to academic program delivery. Postsecondary support programs at Bellevue College, Landmark College, Rochester Institute of Technology, Rutgers: The State University of New Jersey, and University of Alabama offer regularly scheduled meetings or communication with participants’ parents. ASD student support programs at Bellevue College, Eastern University, Fairleigh Dickinson University, Grand Valley State University, Landmark College, and Rochester Institute of Technology have specialized orientations prior to fall semester. Defiance College, Landmark College, and Mercyhurst University report utilization of “living and learning” communities within their programs. Other programs, such as Grand Valley State University, offer participants to live together with a mentor; however, these programs do not label the approach as “living and learning” communities. Lastly, support programs for students with ASD at Defiance College and Eastern Michigan University require a decreased course load, at least during the first semester. The BUILD program at the University of Indianapolis does not require a decreased course load; however,
participants have access to smaller English and math courses (University of Indianapolis, 2015).

Postsecondary support programs for students with ASD also differ in theoretical origin and approaches. All of the aforementioned postsecondary support programs for young adults with ASD appear to utilize principles of situated cognition theory (Brown, Collins, & Duguid, 1989) as program participants experience immersive, cultural learning during their supported navigation of the college environment. For example, participation in social events, mock interviews, and workshops. Some program websites explicitly describe elements of theory utilized in the program’s creation. The theoretical framework of the Kelly Autism Program Circle of Support at Western Kentucky University is identified as Social Information Processing Theory (Western Kentucky University, 2015). The social information processing model assumes the occurrence of multiple cognitive feedback loops between the observation of a social cue and the execution of a behavioral response (Crick & Dodge, 1994). The Kelly Autism Program website also states utilizing Executive Function Skill Development as a foundation for program design. Landmark College cites universal design, cognitive training, and evidence-based education practices as foundations to their program (Landmark College, 2015). Western New England University’s Peer Mentoring Program was also developed utilizing self-concept and personality theories (Western New England University, 2015). A positive reinforcement behavior model is mentioned within the Bridges to Adelphi program at Adelphi University, the College Program at Marshall University, and the Autism Initiative at Mercyhurst University (Adelphi University, 2015; Marshall
University, 2013b; Mercyhurst University, 2015). Bellevue College (2015a) reports use of a diversity/inclusion model. Lastly, the program administration at the MoSAIC program of the University of Tennessee Chattanooga researched best practice by visiting similar programs and consulting with field expert, Dr. Jane Thierfeld Brown (University of Tennessee Chattanooga, 2015). The four elements of best practice adopted by the MoSAIC program are (1) a graded, credit-bearing seminar course, (2) academic/life coaching, (3) peer and faculty mentoring, and (4) required supervised study hours.

Of the 29 postsecondary support programs for young adults with ASD attending four-year institutions in the United States, a few programs have released objective outcome data. Preliminary outcome data were obtained via personal communication with program directors and through newspaper articles or website content. Albeit raw data, these preliminary outcomes indicate a positive association between participation in a postsecondary support program for college students with ASD and academic success, retention rates, graduation rates, social skills, and career preparation experiences (Alpert, n.d.; Griffith, 2015; Connecticut General Assembly, 2014; Rowe, 2013; M. Nagler, personal communication, March 9, 2015; P. Lemerand, personal communication, March 10, 2015; C. Santucci, personal communication, March 24, 2015; R. Hansen, personal communication, March 12, 2015; S. Gardner, personal communication, March 11, 2015; S. Ryan, personal communication, March 23, 2015). Average GPAs per ASD support program ranged from 2.95 – 3.01 (M. Nagler, personal communication, March 9, 2015; P. Lemerand, personal communication, March 10, 2015; C. Santucci, personal communication, March 24, 2015; R. Hansen, personal communication, March 12, 2015).
The program administrator at Bellevue College reported a “significant difference” in the GPAs of program participants compared to non-participants (S. Gardner, personal communication, March 11, 2015). Available outcome data indicated high graduation rates (90–94%) for students with ASD who participated in postsecondary support programs (Connecticut General Assembly, 2014; R. Hansen, personal communication, March 12, 2015). Additionally, postsecondary students with ASD enrolled in support programs demonstrated high retention rates, ranging from 82.5% to over 96% (M. Nagler, personal communication, March 9, 2015; Connecticut General Assembly, 2014; P. Lemerand, personal communication, March 10, 2015; S. Ryan, personal communication, March 23, 2015). There was a significant difference in retention for participants of the Autism Spectrum Navigators at Bellevue College, when compared to non-participants (S. Gardner, personal communication, March 11, 2015). Participants of the peer mentoring program at Western New England College demonstrated improvement in social skills (Alpert, n.d.). Lastly, student participation in a career preparation seminar, as part of the Spectrum Support Program at Rochester Institute of Technology, was associated with positive outcomes. One hundred percent of students with ASD participating in the seminar attended at least one job interview and at least one on-campus career event, and 45% of participants received at least one job offer (Rowe, 2013).

Few negative outcomes have been reported for postsecondary students with ASD participating in support programs. One downfall to participation in specialized programs is the potential for delayed degree completion. At Eastern Michigan University, College
Support Program participants take two classes per semester and take six years to graduate on average (P. Lemerand, personal communication, March 10, 2015). Additionally, it appears that co-occurring mental health conditions may contribute to students leaving their programs; two students were reported to have dropped out of Eastern Michigan University due to serious co-occurring mental health disorders and at least one of seven University of Alabama participants left due to depression (P. Lemerand, personal communication, March 10, 2015; S. Ryan, personal communication, March 23, 2015). Despite the potential for slowed degree completion and interference of associated mental health conditions, ASD-specific postsecondary support programs have reported significant increases in enrollment since their beginning (Griffith, 2015; S. Gardner, personal communication, March 11, 2015).

Anecdotal evidence suggests promising subjective outcomes. Multiple programs have released positive testimonials by participants, parents, and staff (Autism in College, 2013; Bunn, 2012; C. Wenzel, personal communication, March 13, 2015; Garcia, 2012; Gardner, S., personal communication, March 11, 2015; Landmark College, 2015; Marshall University, 2015b; Rowe, 2013; Wright State University, 2015). In one testimonial, Andrew Reinhart, a graduate of the College Program at Marshall University states, “…Through strategic academic planning, greatly assisted by The College Program, I managed to graduate within three academic years with my B.S. in Physics, and a minor in mathematics. I decided to continue my education in graduate school in the M.S. Physical and Applied Science program at Marshall, which I recently graduated from after completing my thesis and excelling in more recent courses…” (Marshall University,
Sara Gardner, Autism Spectrum Navigators program manager at Bellevue College reports an observable change in campus climate, increased knowledge and acceptance of students with ASD on campus, and increased confidence and social skills of program participants (personal communication, March 11, 2015). Janine Rowe, career counselor at Rochester Institute of Technology, reports students with ASD exhibited increased confidence, greater familiarity with the job search process, and a larger professional network after participation in the Spectrum Support Program career seminar (2013).

In addition to the 29 postsecondary institutions providing support services to students with autism, there are several external support programs. The College Internship Program (CIP), the College Living Experience (CLE), the Achieving in Higher Education with Autism and Developmental Disabilities (AHEADD) program, the College Steps program, and the Spectrum College Transition Program are external, for-profit, postsecondary support programs (College Internship Program, 2015; College Living Experience, 2012; AHEADD, 2015; Steps Program Inc., 2015; Spectrum College Transition Program, 2014). The CIP and CLE programs serve postsecondary students with ASD and provide the option to enroll in partnered colleges/universities (College Internship Program, 2015; College Living Experience, 2012). The College Steps program and the Spectrum College Transition Program provide additional support to students with ASD who attend partner colleges, via peer mentorship (Steps Program Inc., 2015; Spectrum College Transition Program, 2014). The AHEADD program provides mentorship and college support to college students attending any postsecondary
institution (AHEADD, 2015). The CLE, AHEADD, and College Steps programs have not reported outcome data; however, the College Internship Program reports positive outcomes in employment, college enrollment, independent living, and social participation (College Internship Program, 2015). Lastly, Easter Seals Crossroads of Indianapolis has a non-profit peer mentorship program, PeerXChange, for college students with ASD who attend Butler University, University of Indianapolis, IvyTech Community College, Ball State University, or Indiana University-Purdue University Indianapolis (Easter Seals Crossroads, 2015).

Several short-term skill building programs and workshops exist for college-bound young adults with ASD or current college students with ASD. For example, the “Autism Campus Inclusion” program in Washington, D. C. (Autism Self Advocacy Network, 2015); the “Summer Bridge to College” at Bellevue College (Bellevue College, 2015b); the “High School Summer Program”, “Summer Session” for visiting college students, “Transition to College Program”, and “Bridge Semester” at Landmark College (Landmark College, 2015); the “5-day Summer Intensive Workshop for Success in College” in Berkeley, California via Landmark College (Landmark College, 2015); the “10-day Summer Transition Workshop” in New York City via Landmark College (Landmark College, 2015); the “College Internship Program” in New York, Massachusetts, Indiana, Florida, and California (College Internship Program, 2015), the “Pre-College Summer Exploration Program” in Denver, Colorado (College Living Experience, 2012), the “Summer Program” at Marshall University (Marshall University, 2013a), the “Foundations Summer Program” at Mercyhurst University (Mercyhurst
University, 2015), and the “Gearing up for Success Program” at Rochester Institute of Technology (Rochester Institute of Technology, 2015). The AHEADD program offers a college preparation course and a summer bridge program; however the program does not disclose locations on its website (AHEADD, 2015). The University of Connecticut has a “Husky GPS Program” open to first-year and transfer students with disabilities and returning students who require additional assistance with study, organization, time-management, and self-awareness skills (University of Connecticut, 2013). None of the aforementioned summer/workshop programs have published outcome data to date.

Overall, a review of current postsecondary support programs for students with ASD attending four-year institutions in the United States revealed the following common elements across all programs: a person-centered approach, academic mentoring, executive functioning support, and self-advocacy support. The majority of programs provides social skills support, career support, self-regulation support, independent living support, psychological support, and utilize peer mentoring, skills workshops, seminars, community education, and tutoring or study halls. Programs have varying theoretical bases; however all students are fully immersed in the college environment. Programs also range in duration and tuition. Preliminary outcome data indicate participation in a postsecondary autism support program is associated with academic, social, emotional, cognitive, and professional success for young adults with ASD (Autism in College, 2013; Bunn, 2012; Connecticut General Assembly, 2014; Garcia, 2012; Griffith, 2015; Landmark College, 2015; Marshall University, 2013b; Rowe, 2013; Wright State University, 2015; M. Nagler, personal communication, March 9, 2015; P. Lemerand,
Effective Approaches for Teaching Young Adults with ASD

As is evident from the existing research literature, college students with better executive functioning skills, self-management skills, and self-advocacy skills report more positive academic and psychological outcomes (D’Zurilla & Sheedy, 1991; Arthur et al., 2006; Chow, 2007; Garavalia & Gredler, 2002; Getzel et al., 2008; Gil, 2007; O’Connor & Paunonen, 2007; Ridgell & Lounsbury, 2004; Robbins et al., 2006; Schmitt et al., 2009; Skowron, Wester, & Azen, 2004). Therefore, this section will focus on effective teaching approaches for young adults with ASD, with emphasis on executive function, social skills, and self-advocacy.

Research supports the use of executive function interventions with adolescents and young adults with ASD. Pugliese and White (2014) report that college students with ASD demonstrated improved problem solving abilities, decreased levels of distress, improved relationships, and improved social performance after participation in an executive functioning intervention; however, the findings did not represent statistically significant effects. Participation in the “Unstuck and On Target” executive functioning intervention (Cannon, Kenworthy, Alexander, Werner, & Anthony, 2011) was shown to significantly increase executive functioning, self-regulation, and social skills for elementary school students with ASD across various settings and contexts (Kenworthy et al., 2014). Self-monitoring, one of the major executive functions (Gioia, Isquith, Guy, &
Kenworthy, 2013), appears to progress with intervention. Self-monitoring interventions have been categorized as “highly effective” in improving activities of daily living and academics, and “effective” for improving social skills, self-regulation, school readiness, behavior change, and vocational skills for adolescents and adults with ASD (Carr, Moore, & Anderson, 2014; National Autism Center, 2009; Wong et al., 2014).

Research also supports the use of social skills interventions with adolescents and young adults with ASD; individuals with ASD who participated in the “PEERS for Teens” and the “PEERS for Young Adults” social skills programs demonstrated increased cooperative behavior, social assertiveness, self-regulation and awareness, social responsiveness, social communication, social initiation, motivation, and social knowledge; as well as decreased loneliness, decreased social anxiety, and decreased ASD behaviors (Gantman, Kapp, Orenski, & Laugeson, 2011; Laugeson, Ellingsen, Sanderson, Tucci, & Bates, 2014; Laugeson, Frankel, Gantman, Dillon, & Mogil, 2011; Laugeson & Park, 2014; Schohl, Hecke, Carson, A, Dolan, Karst, & Stevens, S, 2014; White et al., 2015). The “PEERS” programs are adult-facilitated group treatment sessions that include Cognitive Behavioral Therapy (CBT) instruction methods, such as psychoeducation, role-playing, cognitive strategies, behavior rehearsal, feedback, and homework assignments (Laugeson & Park, 2014). The “PEERS” programs teach “ecologically valid” social skills, in other words, social rules are developed from what individuals actually do (Laugeson & Park, 2014). Adult-facilitated social skills interventions have been shown to increase social engagement, peer interaction, social skills, and leisure participation in adolescents and young adults with ASD (Gardner et al., 2014; Wong et al., 2014).
mediated interventions are also successful in improving social responsiveness, conversation continuation, social skills, and academic skills, with adolescents and young adults with ASD (Schmidt & Stichter, 2012; Wong et al., 2014). The “PEERS” curriculum utilizes naturalistic learning opportunities, which have been successful in improving social skills in children with ASD; however there is insufficient evidence regarding naturalistic intervention for young adults with ASD (Reichow & Volkmar, 2010). Additionally, participation in a preferred group activity with peers may increase social behaviors for adolescents with ASD for the duration of the activity; however researchers did not observe a significant continuation of social behaviors once the groups ended (Koegel, Kim, Koegel, & Schwartzman, 2013).

There is evidence supporting the benefits of technology use for individuals with ASD. Studies by the National Autism Center (2009) and the National Professional Development Center on Autism Spectrum Disorder (Wong et al., 2014) indicate technology-aided intervention improved social skills, communication skills, behavior, joint attention, school readiness, academic skills, motor skills, self-care skills, and vocational skills for individuals with ASD between the ages of 15–22 years old. Adolescents and young adults with ASD appear to benefit from video modeling interventions focused on complex social skills, leisure participation, independent living skills, and vocational skills (Mason et al., 2012; National Autism Center, 2009; Plavnick et al., 2013; Reichow & Volkmar, 2010; Wong et al., 2014). High school students with ASD who were provided with a video model on a mobile device were able to independently teach themselves a novel life skill (Smith et al., 2015). Additionally, adults
with ASD who participated in computer-mediated communication (using the Internet to communicate with other individuals) demonstrated increased initiation in social interactions (Gillespie-Lynch, Kapp, Shane-Simpson, Smith, & Hutman, 2014). Utilization of computer-mediated communication may provide increased processing time and therefore increased control in social situations for adults with ASD (Gillespie-Lynch et al., 2014). Video conferencing may also be utilized for students with ASD, as it is less stressful than in-person interactions, allows for increased scheduling flexibility, offers increased processing time, and may offer increased “buy-in” for students interested in technology (Wolf, Thierfeld Brown, King, & Bork, 2012). Wolf and colleagues (2012) also suggest the following benefits of video conferencing as it relates to service providers: time efficient, cost effective, increased consistency when communicating with a student, allows assessment of student wellbeing while respecting boundaries, optional opportunities to include alternate support staff, follows a strength-based approach, and allows for rapid sharing/editing of documents.

Behavior intervention is considered effective for adolescents and young adults with ASD. Examples of effective behavioral interventions include cognitive behavioral intervention, extinction, functional communication training, peer-mediated intervention, positive reinforcement, antecedent-based intervention, prompting, response interruption, modeling, self-management, and technology-assisted intervention. Individuals between the ages of 15–22 who participated in behavioral intervention demonstrated improvements in behavior, communication skills, social skills, independent living skills, academic skills, joint attention, vocational skills, personal responsibility, and higher
cognitive functioning. (National Autism Center, 2009; Reichow & Volkmar, 2010; Wong et al., 2014). Additionally, the utilization of scripts, social stories, time delay, and visual cues when teaching adolescents and young adults with ASD results in improved social skills, communication, and behavior change (Wong et al., 2014). Provision of communication accommodations, such as a flexible meeting design or allowing distance attendance via Skype, may result in increased self-advocacy during education plan meetings with young adults with ASD (Hagner, May, Kurtz, & Cloutier, 2014).

A literature review of current postsecondary education options for young adults with autism spectrum disorder and intellectual disability suggests the following recommendations for postsecondary programming: utilization of person-centered planning; coordination of local, regional, and/or state agencies; universal design for access of education; utilization of trained mentors, residence assistants, and educational coaches for self-advocacy, social skills, and academic improvement; and options for competitive employment and career support (Hart, Grigal, & Weir, 2010). A weakness of this literature review is the absence of information regarding data collection and analysis methods; therefore, the strength of the evidence cannot be determined.

Current literature provides several guidelines for the creation and delivery of an evidence based postsecondary support program for young adults with ASD. This doctoral project will incorporate the following core elements commonly included in postsecondary support programs for students with ASD: person-centered approach, academic mentoring, peer mentoring, executive function support, social skills, self-advocacy, and self-regulation, with a heightened focus on executive function and social skills. The online
course will utilize technology and behavior intervention strategies. Additionally, sections of the “BU SUCCESS 101-102” curriculum will be adapted for age appropriateness from the “Unstuck and On Target” (Cannon et al., 2011) and the UCLA “PEERS for Young Adults” (Gantman et al., 2011) programs. The “PEERS for Young Adults” program manual is not yet published; therefore, program content will be adapted from Gantman and colleagues’ description of the “PEERS for Young Adults” program as well as the “PEERS Curriculum for School-Based Professionals” (Laugeson, 2014). Supplementary topics pertaining to the specifics of college life will be added to the curriculum, based on personal experience and literature.
Chapter 3: Description of the Proposed Project

The proposed program, “BU SUCCESS 101-102” (Success during University: Concentrate on Culminating Executive function and Social Skills 101-102), is a credit-bearing, online course that could potentially be offered through Boston University’s Office of Distance Education. The intended participants of “BU SUCCESS 101-102” will be first-year Boston University students with ASD; however, to increase participation and decrease perceived stigmatization, the course will be open to any Boston University student who would like to improve their executive functioning and social skills. The target enrollment for the course is at least 5 students, to allow for adequate discussion and interaction opportunities. A long-term goal would be to have the program available to postsecondary students with ASD at other colleges and universities.

Ideally, the educator of the proposed course will be myself, or an individual with a background in occupational therapy, education, or psychology. A background in occupational therapy is preferred, due to the client-centered, evidence-based, and occupation-based training and expertise within the field of occupational therapy. The selected educator should have experience working with young adults and/or adolescents with ASD, with specific experience teaching executive function and social skills. The educator should also be open to learning new technology, or have previous experience using Blackboard Learn or similar programming.

The proposed program was developed according to online teaching practices and structure at Boston University. Most online courses at Boston University are seven weeks in length (Boston University, 2015b); therefore “BU SUCCESS 101-102” will be divided
into two seven-week modules (“BU SUCCESS 101” and “BU SUCCESS 102”). Each module will be worth 0.5 university credits, allowing participating students to earn one credit for completing both modules over the course of a 14-week semester. The credit-based course design has been recommended for preexisting support programs by Dr. Jane Thierfeld Brown, an expert in the field of postsecondary education for students with ASD (University of Tennessee Chattanooga, 2015). The first module will address executive functioning skills, and the second module will focus on social communication skills.

Blackboard Learn, the online course platform at Boston University, will allow for multimodal delivery of course content. Blackboard Learn provides text, audio, and visual content delivery, and includes the following interactive capabilities: live video/audio/text chat, discussion boards, internal mail messaging, digital assignment submission, PowerPoint presentation and video embedding, a customizable calendar, and customizable task lists. Research supports the use of technology by individuals with ASD; studies have shown technology-aided intervention increased social skills, communication skills, behavior, joint attention, school readiness, academic skills, motor skills, self-care skills, independent living skills, and vocational skills in adolescents and young adults with ASD (Gillespie-Lynch et al., 2014; Mason et al., 2012; National Autism Center, 2009; Plavnick et al., 2013; Reichow & Volkmar, 2010; Smith et al., 2015; Wong et al., 2014). Additionally, adults with ASD may experience increased control and decreased stress in social situations during computer-mediated communication (Gillespie-Lynch et al., 2014; Wolf et al., 2012).
“BU SUCCESS 101-102” will be accessible to all learning styles and paces, through its content delivery and the use of interactive technology. Lessons will be presented with audio, video, visual, and text features, and students can pause or rewind lessons at any time to allow for longer processing time. Each week, all “BU SUCCESS” lessons will be completed via the online platform at the student’s own pace. Students will receive frequent email reminders regarding course assignments to accommodate for the level of organization and self-monitoring required during a self-paced online course. Homework assignments will be geared towards the generalization of functional skills learned during the week’s lesson; assignments will be designed to keep the course practical and useful for busy college students. The majority of course content will be accessible via the online platform; however, there will be several live and in-person aspects to the course. For example, students will be able to connect with their professor during scheduled office hours or private meetings via the live video/audio/text chat features. Students will also participate in weekly interactive discussion boards with one another regarding lesson topics.

Students will have the option to participate in peer mentorship with an undergraduate student and will be encouraged to attend scheduled social outings, meals, study groups, etc. with their classmates and peer mentors. The role of peer mentors during BU SUCCESS 101-102 is to facilitate the generalization of executive function and social skills, as well as serve as an internal support system for students. Peer mentors will be selected following an application process. Attempts to match the degree of study between program participant and peer mentor will be made.
Research supports peer-mediated intervention for the improvement of social responsiveness, conversation continuation, social skills, and academic skills in adolescents and young adults with ASD (Reichow & Volkmar, 2010; Schmidt & Stichter, 2012; Wong et al., 2014). Intervention occurring in a natural setting, such as social outings, is a method utilized by the successful UCLA “PEERS” programs (Laugeson & Park, 2014). Additionally, participation in a preferred group activity with peers may increase social behaviors for individuals with ASD for the duration of the activity (Koegel et al., 2013).

The first module, “BU SUCCESS 101,” will address the following executive functioning skills: metacognitive problem-solving (i.e. initiation, working memory, planning, organizing, self-monitoring) and behavioral/emotional regulation (i.e. inhibition, attention shifting, emotional control), as these are the major areas of executive function (Kenworthy, n.d.). The lesson topics that will be presented during weeks 1–2 include an introduction to the course, an explanation of executive functions, description of important education legislation, planning/organizing strategies, learning styles, potential accommodations, and the importance of a balanced routine. Lesson topics in weeks 1–2 are not derived from the “Unstuck and On Target” curriculum (Cannon et al., 2011); however, the aforementioned topics will be included in the course because of their relevance for college students. The proposed sequence of lesson topics for module 1 was selected to reflect a hierarchy of skills. For example, foundational skills taught at the beginning of the course, such as organization and planning, are necessary for progression and success throughout the remainder of the course.
The lesson topics presented during weeks 3–6 will be adapted for age-appropriateness from the “Unstuck and On Target” curriculum (Cannon et al., 2011; see Appendix D for Week 3 lesson plan). The “Unstuck and On Target” manual offers suggestions for modifying the curriculum for adolescent-aged students (Cannon et al., 2011); additional modifications will be implemented to cater to the college-age population participating in “BU SUCCESS 101”. For example, the lessons topics for Week 3 (see Appendix D) are directly derived from lesson topics in the “Unstuck and On Target” curriculum (Cannon et al., 2011). The language used for definitions has been altered for age appropriateness, to reflect the reading comprehension level of college students. The examples (e.g. bridge architecture, a runner’s gait pattern, academic scenarios) and visual aids (e.g. YouTube videos, cartoons) provided are novel and are not part of the “Unstuck and On Target” curriculum. The examples and visuals novel to the curriculum were identified and included to increase the curriculum functionality and level of interest for college students with ASD. The “task” and “strategy” boxes are also novel and are not utilized within the “Unstuck and On Target” curriculum; however, the task and strategy boxes may include lesson topics or visual organization charts from the “Unstuck and On Target” curriculum (Cannon et al., 2011). In Week 3, task and strategy boxes 4.1 and 4.2 include definitions (with language adapted for age appropriateness) and visual organization strategies derived from “Unstuck and On Target” (Cannon et al., 2011).

The “Unstuck and On Target” intervention was selected as a guideline for this course design due to the availability of outcome data, adaptability of the curriculum, and
positive results. Students in grades 3–5 who participated in the “Unstuck and On Target” showed significant improvements in executive functioning, self-regulation, and social skills, when compared to peers who received a social skills intervention (Kenworthy et al., 2014). For further information regarding the “BU SUCCESS 101” curriculum, please see Appendix D for lesson examples and course outline.

The second module, “BU SUCCESS 102”, will extract lesson topics and adapt the program design from the UCLA “PEERS for Young Adults” curriculum (Gantman et al., 2011; Laugeson & Park, 2014; White et al., 2015) and the “PEERS Curriculum for School-Based Professionals” (Laugeson, 2014). The “PEERS” program is one of the only evidence-based social skills programs for adolescents with ASD as well as one of the only programs with published intervention protocols designed for professional use (Gantman et al., 2011; Laugeson & Park, 2014). Participants in the “PEERS” programs have experienced positive outcomes in the areas of behavior, social assertiveness, self-regulation and awareness, social responsiveness, social communication, social initiation, motivation, and social knowledge; as well as decreased loneliness, decreased social anxiety, and decreased ASD behaviors (Gantman et al., 2011; Laugeson, Ellingsen, Sanderson, Tucci, & Bates, 2014; Laugeson, Frankel, Gantman, Dillon, & Mogil, 2011; Laugeson & Park, 2014; Schohl, Hecke, Carson, A, Dolan, Karst, & Stevens, S, 2014; White et al., 2015).

“BU SUCCESS 102” course topics that will be adapted from the “PEERS” program include: in-person and electronic communication skills, developing friendship networks, appropriate use of humor, conversation entry/exit strategies, organizing get-
togethers with friends, dating etiquette, handling embarrassing or negative feedback, handling peer pressure/avoiding exploitation, and conflict resolution. The sequence of proposed course topics follows the sequence utilized in “PEERS” programs. Video modeling (watching videos of successful and unsuccessful social interactions) and discussion boards will replace role-playing exercises utilized in the “PEERS” program. Additionally, students participating in “BU SUCCESS 102” will be encouraged to download “FriendMaker,” an app designed as a companion to the “PEERS” program (Wiley Publishing, 2013). The app includes accessible and easy-to-read directions and tips for the social skills described in the “PEERS” program, with the addition of video models of positive and negative social interactions (Wiley Publishing, 2013). Research supports the efficacy of video modeling and computer-mediated communication for young adults with ASD (Gillespie-Lynch et al., 2014; Mason et al., 2012; National Autism Center, 2009; Plavnick, et al., 2013; Reichow & Volkmar, 2010; Wong et al., 2014; Smith et al., 2015; Wolf et al., 2012). The “PEERS” curriculum utilizes Socratic questioning to facilitate participation during lessons (Gantman et al., 2011; Laugeson & Park, 2014); similarly, the “BU SUCCESS” course will incorporate comprehension questions after video model observation. Further skill generalization is incorporated via participation in “authentic activity” (Brown, Collins, & Duguid, 1989), similar to the naturalistic intervention of the “PEERS” programs (Laugeson & Park, 2014); for example, students will be required to plan an in-person meet-up of their choice for the end of the semester, utilizing executive function and social skills from the first two
modules of the course. See Appendix D for more information regarding “BU SUCCESS 102” curriculum and sample lessons.

In summary, “BU SUCCESS 101-102” will focus on necessary skills for success in college for students with ASD. The nature of the online course will facilitate participation and skill development for students with a variety of learning styles and processing needs. “BU SUCCESS” incorporates evidence-based practice from two successful interventions for individuals with ASD — “Unstuck and On Target” (Cannon et al., 2011) and the UCLA “PEERS” program (Gantman et al., 2011; Laugeson, 2014; Laugeson & Park, 2014; White et al., 2015), as well as research from education and psychology literature. The intended direct outcomes for “BU SUCCESS” include improved executive functioning and social skills, to facilitate equal access and enjoyment of the college experience for students with ASD. It is assumed students will experience increased self-advocacy skills, via increased knowledge of education legislation, appropriate ways to communicate with professors, and campus resources; however, the primary focus of the proposed doctoral project will be executive functioning and social skills. Potential barriers for program implementation are location of funding sources, marketing strategies, acceptance of the program proposal by Boston University administrators, interest in the program by students with ASD, co-occurring psychiatric diagnoses for young adults with ASD, and the feasibility of online education for students with lower levels of executive functioning skills.
Chapter 4: Evaluation Plan

The primary focus of this evaluation plan will be the feasibility of participation in an online skills-based course for college students with ASD. I will also conduct a preliminary analysis of individual participant outcomes. Evaluation of this program is critical because it will assess the feasibility and suitability of participation in an online skills course for college students with ASD. To date, there have been no peer-reviewed studies exploring outcomes of support programs for young adults with ASD attending four-year institutions. This initial program evaluation will create a foundation for the development of evidence-based practice relative to postsecondary transition for young adults with ASD.

Conducting a feasibility study is an appropriate first step when introducing a novel intervention, and it will help identify interventions that have potential for use with a target population (Orsmond & Cohn, 2015). A feasibility study facilitates reflection and evidence-based improvement on a study’s design prior to conducting further trials. Orsmond and Cohn (2015) recommend the following five assessment areas when conducting a feasibility study: (1) evaluation of recruitment capability and resulting sample characteristics, (2) evaluation and refinement of data collection procedures and outcome measures, (3) evaluation of the acceptability and suitability of the intervention and study procedures, (4) evaluation of the resources and ability to manage and implement the study and intervention, and (5) preliminary evaluation of participant responses to intervention.

The following research questions will be used to guide the evaluation of the
proposed program: (1) Is participation in an online skills intervention feasible and acceptable for use in the college setting and with young adults with ASD? (2) Does participation in an online skills intervention improve executive function skills, social skills, self-determination, and/or life satisfaction for college students with ASD? A logic model (see Appendix E) was developed to describe the program in greater detail, providing insight to the projected inputs and resources, theoretical basis, activities/outputs, external factors, and outcomes.

*Participants and Setting*

The proposed online course is designed for first-year Boston University students with ASD. However, the class will be available to any student seeking to improve executive function and social skills. Students enrolled in the course will not have to disclose or provide documentation of a diagnosis of ASD, with the intention of reducing perceived stigma and increasing student participation. The setting for the course will be Blackboard Learn, an interactive web domain associated with Boston University’s Office of Distance Education. The course will incorporate in-person communication, via optional peer mentorship and a final assignment requiring a live group meeting. The in-person interactions will most likely occur on the Boston University campus. Boston University is a large private urban research institution located on Commonwealth Avenue in Boston, Massachusetts.

Participants will be recruited via various advertisements for “BU SUCCESS 101-102”. The course will be advertised via a recruitment flyer (please see Appendix F) and fact sheet (please see Appendix G), which will be distributed at college recruitment
events, Boston University’s Office of Disability Services, Boston University’s Admissions Visitor Center, Boston University’s University Services Center, Boston University’s Educational Resource Center, faculty advisors at individual schools/colleges, and during Boston University orientation. Additionally, emails will be sent to student support centers (i.e. Office of Disability Services, Admissions, University Services Center, Educational Resource Center, faculty advisors) with detailed information regarding the course, encouraging the support personnel to refer students as appropriate. Course information will also be emailed to secondary schools and community programs specializing in educating students with ASD. The course description will be listed in Boston University’s course catalog. Students have the right to enroll in the course and opt out of the feasibility study. All participants will sign an informed consent form prior to participation in the course (see Appendix H).

**Dependent variables**

Dependent variables will be divided into non-standardized evaluations (feasibility measures, course comprehension measures) and standardized evaluations (executive functioning, social skills, self-determination, and life satisfaction measures). Program feasibility will be measured via a custom student questionnaire (see Appendix I), adapted from guidelines for conducting a feasibility study (Orsmond & Cohn, 2015). The primary researchers will also complete a survey to assess program feasibility, based on “Guiding Questions for a Feasibility Study” (Orsmond & Cohn, 2015; see Appendix J). An additional knowledge assessment (see Appendix K for sample questions on the Pre/Post Student Knowledge Assessment) will assess comprehension and knowledge gained on
fundamental course topics. The standardized evaluations reflect topics presented in the course curriculum (executive functioning, social skills), with the assumption that intervention within these functional skill areas will affect participants’ self-determination and life satisfaction. All measures, with the exception of the feasibility/feedback questionnaires, will be administered to each participant pre and post intervention. The feasibility/feedback questionnaires will be administered to participants and researchers post intervention only.

Standardized assessments were selected based on reliability and validity data, appropriateness for use with the selected population, and/or previous use in similar studies. Executive functioning will be measured via the Behavior Rating Inventory of Executive Function- Adult (BRIEF-A; Roth, Isquith, & Gioia, 2005). Social skills will be measured via the Social Responsiveness Scale—Second Edition, Adult Form (SRS-2; Constantino & Gruber, 2012), the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998), and the short version of the Social and Emotional Loneliness Scale for Adults (SELSA-S; DiTommaso, Brannen, & Best, 2004). Self-determination will be measured via the American Institutes for Research Self-Determination Scale—Student Scale (AIR-S; Wolman, Campeau, Dubois, Mithaug, & Stolarski, 1994). Lastly, the Brief Multidimensional Students' Life Satisfaction Scale – College Version (BMSLSS-C; Zullig, Huebner, Patton, & Murray, 2009) will be used to measure life satisfaction.

The Behavior Rating Inventory of Executive Function- Adult (BRIEF-A; Roth, Isquith, & Gioia, 2005) measures areas of executive function in adults aged 18 to 90 years. The Self-Report measure will be used in this study. The Self-Report includes 75
items, and provides measurements for two summary index scales: the Behavioral Regulation Index (BRI) and the Metacognition Index (MI). The Behavioral Regulation Index measures inhibition, attention shifting, emotional control, and self-monitoring, and the Metacognition Index measures initiation, working memory, planning/organizing, task monitoring, and organization of materials. An overall functioning score is also provided (Global Executive Composite). The BRIEF-A has three scales measuring reporter validity: negativity scale, infrequency scale, and inconsistency scale. Scores are scaled in comparison to the normative sample data. The Self-Report showed moderate to high internal consistency ($\alpha = 0.73$ to 0.90 for the 9 clinical scales; $\alpha = 0.93$ to 0.96 for the index scales and the Global Executive Composite score) within a normative sample (Roth et al., 2005). There were moderate to high correlations between the BRIEF-A Self-Report and the BRIEF-A Informant-Report ($r = 0.44$ to 0.68 on clinical scales; $r = 0.61$ to 0.63 on index scores and Global Executive Composite Score) (Roth et al., 2005). The BRIEF (Gioia et al., 2000) was utilized to measure executive function skills before and after participation in the “Unstuck and On Target” executive function intervention for children with ASD (Kenworthy et al., 2014). The BRIEF-A will be used to measure executive functioning skills pre and post participation in “BU SUCCESS 101-102”.

The SRS-2 Adult Form is a 65-item self-report (Likert scale) that measures social behavior in the areas of social awareness, social cognition, social communication, social motivation, and restricted interests/repetitive behaviors, for individuals age 19-89 years (Constantino & Gruber, 2012). $T$-scores of 76 or higher are considered severe, indicating clinically significant concerns in social function; $T$-scores between 66 and 75
considered moderate, indicating some clinical significance in social impairment; $T$-scores between 60 and 65 indicate mild social impairment; and $T$-scores below 59 and below suggest absence of functional impairment of social skills (Constantino & Gruber, 2012). The SRS-2 has strong internal consistency, as it ranged from .94 to .96 for the Preschool Form, School-Age Form, and Adult Form (Constantino & Gruber, 2012). Interrater reliability for the SRS-2 Adult Form ranged between 0.61 and 0.92 when self-report was compared to reports from fathers, mothers, spouses, and relatives (Constantino & Gruber, 2012). Constantino and Gruber (2012) recommend utilizing the SRS-2 Adult Form total score instead of subscale scores, as the total score is a more reliable measure for social skills relevant to ASD. The SRS-2 School-Age and Adult Forms were utilized as outcome measures for the “Unstuck and On Target” and “PEERS” programs (Gantman et al., 2011; Kenworthy et al., 2014; Laugeson, 2014; Laugeson, Ellingsen, Sanderson, Tucci, & Bates, 2014; White, Scarpa, Conner, Maddox, & Bonete, 2015). The SRS-2 Adult form will be utilized to measure social behavior pre and post participation in the online skills intervention.

The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) is a 19-item self-report measuring social interaction fears via a Likert scale. Internal consistency of the SIAS ranges from 0.88 to 0.93 depending on sample population; college undergraduates ($n = 482$) demonstrated an internal consistency rating of 0.88 and adults diagnosed with a social phobia ($n = 243$) demonstrated an internal consistency of 0.93 (Mattick & Clarke, 1998). The internal consistency rating for the total sample ($n = 1,069$) was 0.94 (Mattick & Clarke, 1998). Test/retest reliability for the SIAS was high at .92.
The SIAS was shown to discriminate between diagnostic groups and the general public, as well as correlate with other relevant social fear measurements (Mattick & Clarke, 1998). The SIAS was utilized as an outcome measure for the “PEERS for Young Adults” program (White et al., 2015). The SIAS will be used to measure changes in social interaction fears pre and post participation in “BU SUCCESS 101-102”.

The SELSA-S (Ditommaso, Brannen, & Best, 2004) is a 15-item self-report Likert scale measure derived from the original SELSA, measuring social and emotional loneliness. There are three subscales: Social, Romantic, and Family (Ditommaso et al., 2004). In a normative sample of university students, female partners of Canadian Forces members, and a psychiatric population, the internal consistency for the SELSA-S ranged from 0.87 to 0.90 (Ditommaso et al., 2004). The concurrent and discriminant validity for the subscale scores were strong; for example, being involved in a romantic relationship was significantly related to lower scores on the Romantic Loneliness scale but was not significantly related to scores on the Family or Social Loneliness scale (Ditommaso et al., 2004). The correlation between SELSA-S and the SELSA scores were statistically significant, deeming the SELSA-S an appropriate measure of social, romantic, and family loneliness (Ditommaso et al., 2004). Additionally, higher scores on satisfaction of life inventories were associated with lower family, romantic, and social loneliness scores on the SELSA-S (Ditommaso et al., 2004). The SELSA-S will be utilized to measure social and emotional loneliness pre and post intervention for this study.

The American Institutes for Research Self-Determination Scale— Student Scale
(AIR-S; Wolman et al., 1994) includes a 24-item self-report Likert scale and three open-response questions, measuring respondents’ self-determination capabilities and opportunities. Capability is measured by how well respondents connect their beliefs to their actions; opportunity is measured by examining how the school and home environments enable or reduce respondents’ self-determination abilities (Mithaug, Campeau, & Wolman, 2003). The AIR- S scores can be reported as raw scores or as a percentage of total possible score; Capacity and Opportunity subscales scores can be calculated separately or combined for a total self-determination score (Carter, Uane, Pierson, & Glaeser, 2006; Shogren et al., 2008). The AIR-S has been normed with a diverse population of 450 students with and without disabilities in New York and California (Mithaug et al., 2003). It has strong internal consistency (split-half test = 0.95) and adequate test-retest reliability (0.74 after 3 months) (Mithaug et al., 2003). Reliability testing for each section and scale version (Parent, Educator, and Student) within a sample of high school students with emotional disturbance or learning disability indicated strong reliability ($\alpha = 0.89–0.99$) (Carter et al., 2006). Another study of 407 high school students with disabilities, including 34 students with ASD, also found strong reliability ($\alpha = 0.92$) (Shogren et al., 2008). The AIR-S will be utilized in this study to evaluate change in self-determination pre and post participation in “BU SUCCESS 101-102”.

The Brief Multidimensional Students’ Life Satisfaction Scale – College Version (BMSLSS-C; Zullig et al., 2009) is a 9-item self-report Likert scale of satisfaction in regards to family, friendships, school, self, living environment, romantic relationships, physical appearance, employment, and overall life satisfaction. The Likert scale has 7
points (derived from the Delighted-Terrible scale), ranging from “Terrible” to “Delighted”. The item regarding employment satisfaction has a “non-applicable” option.

In a normative sample of 723 college students, the coefficient alpha of the BMSLSS-C was 0.80, indicating acceptable reliability (Zullig et al., 2009). Additionally, there was a high correlation coefficient between the total score and the overall life satisfaction item (r = 0.81, P < 0.0001) (Zullig et al., 2009). The BMSLSS-C will be administered pre and post intervention to determine student life satisfaction.

**Independent variable**

The intervention (independent variable) applied during this feasibility study will be an online course for college students with ASD, “BU SUCCESS 101-102” (Success during University: Concentrate on Culminating Executive function and Social Skills). The course will be divided into two, 7-week modules. The first module (“BU SUCCESS 101”) will address executive functioning skills, and the second module (“BU SUCCESS 102”) will focus on social communication skills. The total 14-week course will bear one credit, and will be proposed to Boston University’s Office of Distance Education.

The course will be launched via Blackboard Learn, the interactive, online course platform used at Boston University. Blackboard Learn offers text, audio, and visual content delivery, and includes the following interactive capabilities: live video/audio/text chat, discussion boards, internal mail messaging, digital assignment submission, PowerPoint presentation and video embedding, a customizable calendar, and customizable task lists. Students will have weekly self-paced lessons, discussions, and assignments to complete, and will receive frequent email reminders regarding course
readings and assignments to accommodate for the level of organization and self-monitoring required during a self-paced online course. Additionally, students will able to connect with their professor during scheduled office hours or private meetings via the live video/audio/text chat features. Students will have the option to pair with a peer mentor from various undergraduate programs at Boston University. For course outlines and lesson examples, please view Appendix D.

**Evaluation Design**

First, feasibility and acceptability of the program will be assessed using five objectives: (1) evaluation of recruitment capability and resulting sample characteristics, (2) evaluation and refinement of data collection procedures and outcome measures, (3) evaluation of the acceptability and suitability of the intervention and study procedures, (4) evaluation of the resources and ability to manage and implement the study and intervention, and (5) preliminary evaluation of participant responses to intervention (Orsmond & Cohn, 2015). The purpose of a feasibility study is to evaluate the process of a program design (Orsmond & Cohn, 2015). This feasibility study will examine the process of recruitment, participation, and preliminary outcomes for young adults attending an online course, with the intention of adapting the course design based on participant/researcher feedback and evaluation results.

Feasibility study objectives 1–4 will be measured via a “Student Course Feedback Questionnaire” (adapted from Orsmond & Cohn, 2015; see Appendix I) and “Researcher Feasibility Questionnaire” (adapted from Orsmond & Cohn, 2015; see Appendix J). The feasibility/feedback questionnaires will be administered to students and researchers at the
completion of the online course for posttest measurement only. Preliminary outcomes (feasibility study objective 5) will be measured following a pre-experimental, single group pretest-posttest design (see Figure 2). The Pre/Post Student Knowledge Assessment (see Appendix K for sample), BRIEF-A, SRS-2, SIAS, SELSA-S, AIR-S, and the BMSLSS-C will be administered pre and post intervention to measure comprehension of course material, and changes in executive functioning, social behavior, social anxiety, self-determination, and life satisfaction. Pre and post intervention measurement administration is represented by the observation periods (“O”) in Figure 2 below. The intervention is represented by the intervention period (“X”).

**Figure 2: Study Design**

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O   X   O
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The research team will administer pretest and posttest measurements to participants via email and standard mail, depending on the type of outcome measure. The BRIEF-A will be administered and returned electronically, pre and post intervention, via PARiConnect (PAR, 2015). To date, the BRIEF is the only assessment used in this study available for electronic administration via PARiConnect (PAR, 2015). The Pre/Post Student Knowledge Assessment, SIAS, SELSA-S. AIR-S, and BMSLSS-C will be administered and returned electronically, pre and posttest, via Google Forms (Google, 2015), as these assessments are available via online or text publications (Hazelden Foundation, 2015; DiTommaso et al., 2004; University of Oklahoma, 2013; McDowell, 2006; Zullig et al., 2009), or were created for the course (see Appendix J). The Student
Course Feedback Questionnaire and the Researcher Feasibility Questionnaire (see Appendix I and J) will be electronically administered and returned, via Google Forms, during posttest only. The SRS-2 does not have electronic administration capabilities at this time, nor is it available for public use. The SRS-2 will be administered and returned pre and post intervention via standard mail.

Data Analysis

Pre and posttest outcome measurements will be analyzed for qualitative and quantitative data. Due to the nature of this small feasibility study, inferential statistics (i.e. analysis of covariance) will not be completed. However, inferential statistics may become possible during future evaluations of this program. Qualitative data analysis will include a summary and synthesis of the open-ended responses from the AIR-S, and the Student Course Feedback Questionnaire. Quantitative data analysis will include mean scores and descriptive statistics (standard deviations and/or comparison to population/normative data if available) for the BRIEF-A, SRS-2, SIAS, SELSA-S, AIR-S, BMSLSS-C, and the Pre/Post Student Knowledge Assessment.

Limitations to the Evaluation

The current evaluation plan is limited by student participation, probable small sample size, and accurate self-report. There is a potential for researcher bias, as the author of the proposed project may also become a key researcher. The entire evaluation plan is dependent on student enrollment in “BU SUCCESS 101-102” and the completion/return of pre and posttest outcome measurements. It is presumed students will answer self-reports honestly and openly as the study depends of subjective data. Lastly,
researcher bias is present due to the nature of the study design; the author of this
dissertation is the creator of the online intervention course and the head researcher for
this study.
Chapter 5: Funding Plan

This funding plan describes the costs involved with the development, implementation, data collection, and dissemination of an online course proposed for Boston University students with ASD (“BU SUCCESS 101-102”). The funding plan also explores relevant local resources, additional required resources, and potential funding sources to support and finance all stages of the program. The goals of this funding plan are to provide realistic insight into the costs of developing a novel online distance education course and to deliver credible funding options, thereby closing the gap between program ideation and implementation. Please see Appendix L for the program budgets.

Estimated program development and implementation costs are formulated from a combination of sources at Boston University and within the research literature. The most recent cost estimates for online course development and implementation are from Dr. Karen Jacobs (personal communication, May 28, 2015) and Eric Friedman (personal communication, May 26, 2015). The average cost to develop and implement a single-credit online course at Boston University ranges from $5,000-$15,000; this estimate depends on course quality, level of video/media production, instructor pay, and support costs during course delivery (E. Friedman, personal communication, May 26, 2015). Professors of the Online Post-Professional Doctor of Occupational Therapy program at Boston University are paid $7,500 to design a three-credit course and $7,500 to teach the course, based on adequate course enrollment (K. Jacobs, personal communication, May 28, 2015). Accurate estimates for professor pay for single-credit online courses at Boston University are not available at this time.
Data collected from 46 online courses at the University of North Carolina (North Carolina General Assembly, 2010) provide additional examples of financial requirements for online course production. It is understood that the cost of online course development and implementation varies across postsecondary education settings. However, the online program design at the University of North Carolina closely matches program designs at Boston University, as both universities utilize course management software such as Blackboard Learn (Boston University, 2015c; North Carolina General Assembly, 2010). An importance difference between the data set from the University of North Carolina and the intended program design for this doctoral project is 83% of online courses in the research sample already existed as on-campus courses (North Carolina General Assembly, 2010); whereas this doctoral project is the design and implementation of a novel course concept. It is important to note the program evaluation for the University of North Carolina does not describe number of credits per course in its analysis (North Carolina General Assembly, 2010). It is also important to consider that the University of North Carolina data were collected from 2007–2008, with a likely increase in costs since that time. Despite potential differences in course design and data limitations, the analysis created by the North Carolina General Assembly (2010) provides a realistic preliminary estimate of postsecondary online course development and implementation costs.

The average cost to develop a postsecondary online course at the University of North Carolina during 2007–2008 was $5,387 (North Carolina General Assembly, 2010; see Figure 3). Of the total cost of course development, an average of $3,447 went towards
instructor salary, $1,658 towards instructional support, and $252 towards facility and other costs (North Carolina General Assembly, 2010; see Figure 3).

**Figure 3: Average Costs for UNC Course Development**

![Chart showing average costs for UNC course development](chart)

The average cost to implement an online course at the University of North Carolina during 2007–2008 was $17,564 (North Carolina General Assembly, 2010; see Figure 4). Of the total implementation expense, $8,030 funded the course instructor, $7,545 funded indirect campus costs, $1,438 was required for additional costs, and $551 for facility costs (North Carolina General Assembly, 2010; see Figure 4).
In summary, the total cost for development and implementation of an online course at the University of North Carolina from 2007–2008 was $22,951, or approximately $2,163 per student enrolled (North Carolina General Assembly, 2010). The target enrollment for the first year of “BU SUCCESS 101-102” is five students. Therefore, it would cost approximately $10,815 to develop and implement an online course for five college students using the 2010 financial model from the University of North Carolina. Another source recommends budgeting $10,000 per course credit when in the development stage (Boettcher, 2004). According to Boettcher (2004), it would cost $10,000 to develop “BU SUCCESS 101-102” as it is a single-credit course. However, Boettcher (2004) did not describe a budget for online course implementation.
Based on information obtained from the Boston University Office of Distance Education (E. Friedman, personal communication, May 26, 2015), the Occupational Therapy Department at Boston University (K. Jacobs, personal communication, May 28, 2015), the North Carolina General Assembly (2010), and Boettcher (2004), an appropriate estimate for course development is between $5,000 and $15,000; based on the same financial models, the estimated cost for course implementation is between $5,000 and $17,564. The estimated total first year course development and implementation cost is between $10,000 and $32,564.

The total expense for the second year of the course would be less than the first year expense, due to decreased hours of course development. The estimated cost for a “major course revision” is $10,000 for a three-credit postsecondary online class (Doyle, 2010). Therefore, it is expected to cost under $10,000 to revise “BU SUCCESS 101-102” (a single-credit course) in its second year. If it is assumed the course development cost decreases to less than $10,000 and the course implementation cost remains consistent in the second year, an estimated second year expense for “BU SUCCESS 101-102” is between $15,000 and $27,564. Please see Appendix L for an itemized program budget.

Data Collection/Analysis Budget

For the creation of the data collection budget, it is assumed course size will be five students for years one and two of the program. Costs for data collection and analysis include pre and posttest evaluations and administration fees (i.e. stamps or online fees). The Pre/Post Student Knowledge Assessment, BRIEF-A, SRS-2, SIAS, SELSA-S, AIR-S, and BMSLSS-C will be administered both pre and posttest. All of the aforementioned
measures, with the exception of the BRIEF-A and SRS-2, are free to obtain and will be administered via a free online services (Google Forms). The BRIEF-A can be administered remotely for $3.50 per participant, and it costs $6.00 per participant to generate an interpretive score report (PAR, 2015). It is recommended to own the BRIEF-A Professional Manual ($66; PAR, 2015) prior to utilization of the outcome measure. To date, the SRS-2 is not available for electronic administration. Therefore, cost of the outcome measure and postage must be included in the funding plan. A package of 25 SRS-2 Adult Self-Report forms and one SRS-2 Manual costs $50 and $88.50, respectively (PAR, 2015). The price for mailing five pretest and five posttest SRS-2 Adult Self-Report forms via the United States Postal Service Media Mail® is estimated to cost $53.80, including return postage (United States Postal Service, 2015). Postage pricing does not include the price of the envelopes ($12.50 for one 25-pack; Staples, 2015). The Student Course Feedback Questionnaire and the Researcher Feasibility Questionnaire will be administered during posttest only, without cost via Google Forms. Please see Appendix L for an itemized budget for data collection and analysis expenses.

Dissemination Plan Budget

The dissemination plan budget includes funds for advertising the online course to potential participants, as well as for communicating the preliminary outcomes to the occupational therapy community. Preliminary estimates for the cost of printed materials include 100 recruitment flyers (see Table 2, Appendix F, and Appendix L), 250 fact sheets (see Table 2, Appendix G, and Appendix L), and a conference presentation poster (see Table 2 and Appendix L). Ideally, a course assistant/research assistant would be
employed for two hours per week during the dissemination/program recruitment and data analysis phases. Assuming dissemination spans four months and pre/post data analysis spans one month during the first year of the program, a student employee would be required for five months. If the student employee earns $10 per hour, then $400 should be budgeted towards a course assistant/research assistant position (see Table 2. During the second year of the program, a student employee may be required for one month of program recruitment and one month of data analysis, for a total of 16 hours of work ($160). Finally, the registration fee in 2015 for a conference speaker at the American Occupational Therapy Association (AOTA) national conference was $456 (American Occupational Therapy Association [AOTA], 2015). An additional $800 should be considered in the budget for travel, lodging, and food expenses. See Chapter 6 for additional information regarding the dissemination plan.

Available Local Resources

Local resources help establish a program within its community and may decrease the financial burden of a newly proposed program. The following local resources are considered social capital, which may assist with the development, implementation, research, and dissemination of this doctoral project:

- Karen Jacobs, Ed.D., CPE, OTR/L, FAOTA, Clinical Professor at Boston University, College of Health and Rehabilitation Sciences: Sargent College, Department of Occupational Therapy. Dr. Jacobs is an educator and mentor with expertise in online course development and delivery, marketing, and advocacy of the occupational therapy profession. Dr. Jacobs is also a member of the Brookline
Rotary International Club in Brookline, MA.

- Gael Orsmond, Ph.D., Associate Professor of Occupational Therapy, Director of Ph.D. in Rehabilitation Sciences Program at Boston University, Sargent College of Health and Rehabilitation Sciences, Department of Occupational Therapy. Dr. Orsmond is an educator and mentor with expertise in autism spectrum disorder, postsecondary transition, and research.

- The Department of Occupational Therapy at Boston University: connections created in this academic department, including the Boston University Student Occupational Therapy Association (BUSOTA) will facilitate program dissemination and implementation.

- Deborah Claar and Heather Nicholson, Academic Counselors at Boston University, Sargent College of Health and Rehabilitation Sciences: connections created with Ms. Claar and Ms. Nicholson will facilitate program enrollment.

- Boston University Office of Disability Services: previous work experience at the BU Office of Disability Service may facilitate program dissemination, development, and implementation.

- The Bridge Center therapeutic recreation camp for children with disabilities (Bridgewater, MA): previous work experience at the Bridge Center may facilitate program dissemination and enrollment.

- The Charles River Center (provides support services to individuals with developmental disabilities, including ASD, in the Boston Metro Area): previous
work experience at the Charles River Center may facilitate program dissemination and enrollment.

- The Children’s Therapy Center (occupational therapy, speech therapy, and physical therapy pediatric clinic in the Northern Virginia area): current work experience at the Children’s Therapy Center may facilitate program dissemination and enrollment.
- Rhode Island secondary schools: connections with educators and guidance staff, especially at Smithfield High School, Cumberland High School, and Classical High School, may facilitate program dissemination and enrollment.
- Program directors at various postsecondary programs for students with ASD: recent personal contact with program directors may facilitate program development.
- Alumni of the Boston University Occupational Therapy Program: connections with classmates may facilitate program dissemination and enrollment, especially if classmates are working with young adults with ASD.

Potential Funding Sources

Table 1 describes relevant funding sources to aid in the development, implementation, research, and dissemination of this doctoral project. The following funding sources may decrease the financial burden of the proposed doctoral project:
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<th>Potential award amount</th>
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<tr>
<td>Federal: United States Department of Education (2015)</td>
<td>84.116F-01 - Fund for the Improvement of Postsecondary Education First in the world: “The FITW program is designed to support the development, replication, and dissemination of innovative solutions and evidence for what works in addressing persistent and widespread challenges in postsecondary education for students who are at risk for not persisting in and completing postsecondary programs, including, but not limited to, adult learners, working students, part-time students, students from low-income backgrounds, students of color, students with disabilities, and first-generation students. The focus of the FITW program is to build evidence for what works in postsecondary education by testing the effectiveness of these strategies in improving student persistence and completion outcomes.” (United States Department of Education, 2015)</td>
<td>$20,000,000 for 6–8 recipients</td>
</tr>
<tr>
<td>Federal: United States Department of Education (2015)</td>
<td>84.116-01X - First in the World - Minority Serving Institutions Validation (new): “The FITW program is designed to support the development, replication, and dissemination of innovative solutions and evidence for what works in addressing persistent and widespread challenges in postsecondary education for students who are at risk for not persisting in and completing postsecondary programs, including, but not limited to, adult learners, working students, part-time students, students from low-income backgrounds, students of color, students with disabilities, and first-generation students. The focus of the FITW program is to build evidence for what works in postsecondary education by testing the effectiveness of these strategies in improving student persistence and completion outcomes.” (United States Department of Education, 2015)</td>
<td>$40,000,000.00 for 0–5 recipients</td>
</tr>
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testing the effectiveness of these strategies in improving student persistence and completion outcomes.” (United States Department of Education, 2015)

<table>
<thead>
<tr>
<th>Federal: United States Department of Education (2015)</th>
<th>84.305A - Education Research: Education Research: Cognition and Student Learning; Early Learning Programs and Policies; Education Technology; Effective Teachers and Effective Teaching; English Learners; Improving Education Systems: Policies, Organization, Management and Leadership; Mathematics and Science Education; Postsecondary and Adult Education; Reading and Writing; Social and Behavioral Context for Academic Learning: “The Institute’s purpose in awarding these grants is to provide national leadership in expanding fundamental knowledge and understanding (1) of developmental and school readiness outcomes for infants and toddlers with or at risk for disability, and (2) of education outcomes for all students from early childhood education through postsecondary and adult education.” (United States Department of Education, 2015)</th>
<th>$100,000 – 1,000,000 per year for up to 5 years</th>
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<tbody>
<tr>
<td>Federal: United States Department of Education (2015)</td>
<td>84.305C - Education Research and Development Center Program: National Research and Development Center on Knowledge Utilization; National Research and Development Center on Standards in Schools; National Research and Development Center on Virtual Learning: “The Institute’s purpose in awarding these grants is to provide national leadership in expanding fundamental knowledge and understanding (1) of developmental and school readiness outcomes for infants and toddlers with or at risk for disability, and (2) of education outcomes for all students from early childhood education through postsecondary and adult education.” (United States Department of Education, 2015)</td>
<td>$1,000,000 – 2,000,000 per year for up to 5 years</td>
</tr>
<tr>
<td>Grant Code</td>
<td>Grant Title</td>
<td>Description</td>
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<td>------------</td>
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</tr>
<tr>
<td>84.324A</td>
<td>Special Education Research: Autism Spectrum Disorders; Cognition and Student Learning in Special Education; Early Intervention and Early Learning in Special Education; Families of Children with Disabilities; Mathematics and Science Education; Professional Development for Teachers and Related Services Providers; Reading, Writing, and Language Development; Social and Behavioral Outcomes to Support Learning; Special Education Policy, Finance, and Systems; Technology for Special Education; Transition Outcomes for Secondary Students with Disabilities</td>
<td>“The Institute’s purpose in awarding these grants is to provide national leadership in expanding fundamental knowledge and understanding (1) of developmental and school readiness outcomes for infants and toddlers with or at risk for disability, and (2) of education outcomes for all students from early childhood education through postsecondary and adult education.” (United States Department of Education, 2015)</td>
</tr>
<tr>
<td>84.327B-01</td>
<td>Research and Development Center to Advance the Use of New and Emerging Technologies to Ensure Accessibility: The purposes of the Educational Technology, Media, and Materials for Individuals with Disabilities Program are to improve results for students with disabilities by: (1) Promoting the development, demonstration, and use of technology; (2) supporting educational activities designed to be of educational value in the classroom for students with disabilities; (3) providing support for captioning and video description that is appropriate for use in the classroom; and (4) providing accessible educational materials to</td>
<td>$700,000 for 1 award</td>
</tr>
<tr>
<td>Foundation: Autism Speaks (2015)</td>
<td>The Brian &amp; Patricia Kelly Postsecondary Scholarship Fund: “selects eligible colleges, vocational/technical schools and transition programs in the United States to identify qualified students or clients with Autism Spectrum Disorder and offer scholarship funds of up to $5,000 per student and $25,000 per program.” (Autism Speaks, 2015)</td>
<td>$5,000 per student or $25,000 per program</td>
</tr>
<tr>
<td>Foundation: Organization for Autism Research (2015)</td>
<td>Applied Research Competition: “intended to promote research in the analysis, evaluation, or comparison of assessment or treatment models, focusing on aspects of early education, behavioral, or communication intervention and adult issues such as continuing education, employment, housing models and “later intervention.” In keeping with OAR’s mission, the goal of this sponsored research is to promote studies that yield practical and clearly objective results that contribute to enhanced quality of life for people with autism and provide evidence-based information for use by parents, families, and service providers. (Organization for Autism Research, 2015)</td>
<td>1 year grants up to $30,000</td>
</tr>
<tr>
<td>Foundation: Doug Flutie, Jr. Foundation for Autism (Doug Flutie Jr. Foundation for Autism, 2014)</td>
<td>“The priorities of the foundation are to meet family’s needs along the way by ensuring (1) Access to Services (2) an Active Lifestyle and (3) Adult Community Based Services.” (Doug Flutie Jr. Foundation for Autism, 2014)</td>
<td>$10,000–$20,000</td>
</tr>
<tr>
<td>Foundation: The American Occupational Therapy Foundation (American Occupational Therapy Foundation [AOTF], 2015)</td>
<td>“AOTF awards Intervention Research Grants as part of its mission to advance the science of occupational therapy to support people's full participation in meaningful life activities. The purpose of this grant program is to lay the necessary groundwork for larger intervention studies and support the profession's Centennial Vision of occupational therapy as science- • One year non-renewable proposals for up to $50K (including indirect costs) will be considered. • Indirect</td>
<td></td>
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</table>
driven and evidence-based. The Intervention Research Grant program receives major funding from The National Board for Certification in Occupational Therapy (NBCOT®), the American Occupational Therapy Association (AOTA), and the St. Catherine Challenge.” (AOTF, 2015)

| Foundation: Rotary International (2015) | District grants: “Fund small-scale, short-term activities that address needs in your community and communities abroad. Each district chooses which activities it will fund with these grants.”

Global grants: “Support large international activities with sustainable, measurable outcomes in Rotary’s areas of focus. Grant sponsors form international partnerships that respond to real community needs.” (Rotary International, 2015) |
|---------------------------------------------------------------|---------------------------------------------------------------|
| expenses will be funded up to the level of 10%.
• Funds will be released in 2015 on a payment schedule identified by AOTF. |

<table>
<thead>
<tr>
<th>Sponsorship: Bank of America (Bank of America, 2015)</th>
<th>“Bank of America welcomes your sponsorship proposal for opportunities that make our communities a better place to live and work. We are particularly interested in providing support to address needs vital to the health of our communities through a focus on: preserving neighborhoods; educating the workforce for 21st century jobs; addressing critical needs such as hunger and emergency shelter; arts and culture; the environment; and diversity and inclusion programs.” (Bank of America, 2015)</th>
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<tbody>
<tr>
<td>Varies</td>
<td></td>
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</table>

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<tr>
<th>Sponsorship: Century Bank (Century Bank, 2015)</th>
<th>“As a community minded bank, Century Bank’s contribution efforts are focused on the areas of youth, education, arts and community development. We support programs which make an impact on the</th>
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<tr>
<td>Varies</td>
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health and safety of our youth; programs that foster academic achievement and scholarships for our students; community based arts organizations that lend to our diversity and culture; and organizations that promote wellness, stability, and growth, particularly those benefiting low-to-moderate income individuals. In addition, we support organizations which promote economic development and organization which promote a positive climate for businesses within our communities.” (Century Bank, 2015)

<p>| Sponsorship: SunTrust Bank (SunTrust Bank, 2014) | “The purpose of any sponsorship is to generate business for SunTrust. Every sponsorship opportunity is evaluated against a standard set of business criteria to ensure it becomes a viable sales channel. We evaluate each opportunity based on various factors such as direct revenue, new business potential, community impact, advertising value and brand positioning. As a result, our decisions regarding sponsorships are based on sound marketing practices and we are confident that our sponsorship activity is appropriate and is generating business as intended.” | Varies |
| Crowd funding: GoFundMe (2015) | Open donation portal for fundraising. Voted most popular crowdsourcing site. • GoFundMe will deduct a 5% fee from each donation that you receive. Processing fee of about 3% will also be deducted from each donation. (GoFundMe, 2015) | Varies |
| Crowd funding: Boston University Student Occupational | The BUSOTA group may assist in fundraising opportunities. | Varies |</p>
<table>
<thead>
<tr>
<th>Therapy Association</th>
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<tbody>
<tr>
<td>(BUSOTA)</td>
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</table>


Chapter 6: Dissemination Plan

This dissemination plan describes the intended goals and key messages for the target audiences of the doctoral project. It will discuss the methods of dissemination and explore ways to evaluate the success of the dissemination. This dissemination plan will facilitate the implementation of the doctoral project through the intent of increased community knowledge regarding the program, hopefully leading to increased program participation, funding, and support. It is important to review the purpose of the doctoral project, as the project relates to the foundation of the dissemination plan:

The doctoral project aims to facilitate a successful college experience for postsecondary students with ASD via student participation in a single-credit, evidence-based online course, “BU SUCCESS 101-102” (Skills for University: Concentrate on Culminating Executive function and Social Skills). The course is designed to target five theorized primary factors describing the lower rates of postsecondary attendance and success for students with ASD: (1) the increasing prevalence of ASD, which will likely lead to increased pursuit of postsecondary programs, (2) the absence of a “golden standard” in postsecondary transition for young adults with ASD, (3) the existing differences between educational and disability rights legislation at the secondary and postsecondary education levels, (4) the diagnostic characteristics of ASD appear to impact social/educational/ vocational success in adulthood, and (5) the characteristics of collegiate culture do not appear to support the needs of students on the autism spectrum. Lastly, the feasibility of implementing an online intervention for postsecondary students
with ASD will be evaluated, with the intention of setting a preliminary standard for
evidence-based practice in this topic area.

Dissemination Goals

Long-term goals (2–5 years post-dissemination):

(1) The project will serve as a model for future evidence-based postsecondary support
programs for young adults with ASD.

(2) The project will contribute to autism research, occupational therapy’s role in
postsecondary education, and the benefits of conducting feasibility studies.

(3) The project will gain enough support, funding, and participation to further the
research on the program as well as adapt the program to meet the community’s
needs.

Short-term goals (6 months–1 year post-dissemination):

(1) Project dissemination will provide constructive advice in relation to the course
design, maximizing the appropriateness and likeability of the course for the
intended participants.

(2) Project dissemination will yield enough funding and support to develop and
implement the first trial of “BU SUCCESS 101-102”.

(3) Project dissemination includes at least 5 participants for the initial course
trial/feasibility study.

Target Audience

The primary audience for the dissemination plan is the faculty of the Boston
University Department of Occupational Therapy at Sargent College. It is imperative to
have support from the faculty of the Department of Occupational Therapy, as this
department will support the implementation of the doctoral project. Once the concept for
“BU SUCCESS 101-102” is approved, the remainder of the dissemination plan may
begin. The Department of Occupational Therapy will also facilitate the recruitment of
occupational therapy students who are interested in becoming student mentors.

The secondary audience for the dissemination plan is the Office of Disability
Services at Boston University. The Office of Disability Services will provide valuable
information regarding the suitability of program content. The Office of Disability
Services will also assist with the dissemination of program to Boston University students
with ASD. An additional secondary audience is students with ASD who are currently
attending, or planning to attend Boston University.

Key Dissemination Messages

The key dissemination messages for the primary audience, the Boston University
Department of Occupational Therapy at Sargent College are as follows:

(1) Young adults with autism spectrum disorder (ASD) are experiencing poor
outcomes in postsecondary education, and the number of young adults pursuing
postsecondary education is increasing (Gobo & Shmulsky, 2014; Newman et al.,
2011; Raue & Lewis, 2011; Wagner, Newman, Cameto, Garza, & Levine, 2005;
White, Ollendick, & Bray, 2011; VanBergeijk, Klin, & Volkmar, 2008).
Postsecondary institutions in the United States are beginning to offer specialty
support programs for matriculated students with ASD; to date, there are 29 U.S.
institutions offering support programs for this population. However, Boston
University does not yet offer a support program unique to its students with ASD. The proposed doctoral project is distinctive because it is evidence-based, discrete for users, provides outcome measures, and offers the opportunity for further research. The implementation of this doctoral project will place Boston University amongst the growing number of postsecondary institutions offering this service and provide Boston University with an advantage in postsecondary education for students with ASD.

(2) Preliminary evidence from existing postsecondary support programs for students with ASD indicates positive trends in academic success, retention rates, graduation rates, and career preparation (Griffith, 2015; Connecticut General Assembly, 2014; Rowe, 2013; M. Nagler, personal communication, March 9, 2015; P. Lemerand, personal communication, March 10, 2015; C. Santucci, personal communication, March 24, 2015; R. Hansen, personal communication, March 12, 2015; S. Gardner, personal communication, March 11, 2015; S. Ryan, personal communication, March 23, 2015). The proposed doctoral project was developed by analyzing the components and outcomes of these pre-existing support programs, as well as incorporating evidence-based teaching approaches for students and young adults with ASD. This doctoral project focuses on three major content areas: executive functioning, social skills, and self-advocacy. The aforementioned content areas were extracted from the research literature regarding postsecondary education and autism spectrum disorder, and are associated with more positive academic and psychological outcomes for college
students as a whole (D’Zurilla & Sheedy, 1991; Arthur et al., 2006; Chow, 2007; Garavalia & Gredler, 2002; Getzel & Thoma, 2008; Gil, 2007; O’Connor & Paunonen, 2007; Ridgell & Lounsbury, 2004; Robbins, et al., 2006; Schmitt et al., 2009; Skowron et al., 2004).

The key dissemination messages for the secondary audience, the Office of Disability Services at Boston University, are as follows:

(1) College students with stronger executive functioning, self-management, and self-advocacy skills experience better academic and psychological outcomes (D’Zurilla & Sheedy, 1991; Arthur et al., 2006; Chow, 2007; Garavalia & Gredler, 2002; Getzel & Thoma, 2008; Gil, 2007; O’Connor & Paunonen, 2007; Ridgell & Lounsbury, 2004; Robbins, et al., 2006; Schmitt et al., 2009; Skowron et al., 2004). These skill areas necessary for successful functioning in the college environment are often barriers for success for students with autism spectrum disorder (ASD). The proposed doctoral program targets these three skill areas through evidence-based approaches, with the intention of increased life satisfaction and success for Boston University students with ASD.

(2) Perceived bias is often viewed as a barrier to specialty support programs. The proposed doctoral project aims to reduce bias via the opportunity for students to enroll in “BU SUCCESS 101-102” without the requirement to prove or disclose a diagnosis. Students will take the course via an online platform, so there is no mandatory face-to-face disclosure. Optional in-person opportunities exist, such as peer mentorship and social outings; however, students may “opt out” of the in-
person interactions without affecting their course grade.

The key dissemination message for prospective or current Boston University students with autism spectrum disorder is as follows:

(1) Young adults with autism spectrum disorder (ASD) can experience difficulties with executive function (problem solving, time management, self-regulation), social, and self-advocacy skills. These skills are important for increased independence, academic success, relationship development, and psychological wellbeing when entering college. The online course, “BU SUCCESS 101-102”, is designed to help strengthen executive function, social, and self-advocacy skills, utilizing an innovative and private approach. Though this course is created for students with ASD, participants will not be required to disclose or show proof of their diagnosis. Students may take the course from the comfort of their dorm room, coffee shop, library, or any preferred location with an Internet connection. The course provides optional in-person opportunities, such as peer mentorship and social events; however participation is not mandatory and will not affect your grade. Most importantly, this course is designed to be useful, interesting, and functional to help students strengthen their skills for success in college. The course developers will solicit feedback from students with ASD prior to, during, and following the launch of the online course. Program developers will alter the course according to student feedback to improve the experience of future participants.
Program Dissemination Sources/Messengers

Influential program spokespersons for the primary audience (Boston University Department of Occupational Therapy at Sargent College) include Dr. Karen Jacobs and Dr. Gael Orsmond. Dr. Karen Jacobs is a clinical professor in the Department of Occupational Therapy, the Program Director of the on-line post-professional Doctorate in Occupational Therapy (OTD) program, and an avid advocate for the profession of occupational therapy. Dr. Gael Orsmond is an associate professor of occupational therapy and is the Program Director of the Ph.D. in Rehabilitation Sciences Program at Boston University, Sargent College of Health and Rehabilitation Sciences, Department of Occupational Therapy. Dr. Orsmond has expertise in autism spectrum disorder, postsecondary transition, and research.

The influential spokesperson for the secondary audience (Office of Disability Services at Boston University) is Dr. Lorraine Wolf. Dr. Wolf is the Director of the Office of Disability Services at Boston University. She is also a clinical professor of psychiatry at the Boston University School of Medicine and an adjunct clinical professor of rehabilitation sciences at the Sargent College of Health and Rehabilitation Sciences at Boston University. Dr. Wolf has expertise in neurodevelopmental disorders, and service delivery for college students with autism spectrum disorder, attention disorders, learning disorders, and psychiatric disabilities. Influential spokespersons for prospective and current Boston University students with ASD include secondary schools specializing in ASD, Boston University Admissions Department, and academic advisors across the various colleges and departments at Boston University.
Dissemination Activities

Dissemination activities include the written information, electronic media, and person-to-person contacts utilized to spread information regarding the doctoral project.

(1) Written information: The online course will be advertised by a recruitment flyer (Appendix F) and fact sheet (Appendix G). The recruitment flyer and fact sheet will be distributed to all influential spokespersons via email and will be made available for person-to-person dissemination activities. Ideally, the recruitment flyer will be displayed throughout the Boston University campus, at the Office of Disability Services, Admissions Visitor Center, University Services Center, Educational Resource Center, community bulletin boards at individual schools/colleges, and during Boston University orientation. In the future, following preliminary findings and feasibility outcomes, the project may be accepted into the national American Occupational Therapy Association (AOTA) conference. If the project is accepted into the AOTA conference, a presentation poster will be created.

(2) Electronic media: E-mails describing the program, with attached documents of the recruitment flyer and fact sheet, will be sent to on-campus student support centers (i.e. Office of Disability Services, Admissions, University Services Center, Educational Resource Center, faculty advisors). The emails will provide detailed information regarding the online course and will encourage the support personnel to refer students as appropriate. Course information, including a recruitment flyer and fact sheet, will also be emailed to secondary schools and community
programs specializing in supporting students with ASD (see Appendix M for list of potential schools and programs). Lastly, the course description will be listed in Boston University’s course catalog. A course assistant will complete the majority of electronic dissemination.

(3) Person-to-person contact: The primary in-person dissemination activity will be the defense of this doctoral project at Boston University. Primary and secondary audience members will be invited to the doctoral defense. Another person-to-person contact opportunity will occur if the project is accepted as a presentation at the 2016 American Occupational Therapy Association conference. Additional in-person dissemination activities include information shared by Boston University staff with prospective and current students with autism spectrum disorder. Examples of staff activities are college fairs, student advising sessions, and student orientation. Fact sheets and informational handouts will be made available at all person-to-person contact opportunities.

The first dissemination activity will be the defense of the proposed doctoral project at the Boston University campus. The remainder of the dissemination activities will occur following the doctoral defense, and will be prioritized as timing and funding allow.

*Dissemination Plan Budget*

The budget for the dissemination plan includes advertisements for the online course to potential participants, as well as resources for communicating the preliminary outcomes to the occupational therapy community. Preliminary estimates of a dissemination plan budget include the cost of printed materials, such as 100 recruitment
fliers (See Table 2, Appendix F, and Appendix L), 250 fact sheets (See Table 2, Appendix G, and Appendix L), and a conference presentation poster (See Table 2 and Appendix L). The dissemination plan budget includes a future AOTA conference registration fee, travel, lodging, and food expenses (See Table 2 and Appendix L). The cost of hiring a course/research assistant is also considered within the dissemination plan budget (See Table 2 and Appendix L).

Ideally, a course assistant/research assistant would be employed for two hours per week to assist with dissemination of electronic material, and to assist with data analysis and dissemination. During the first year of the program, it will be assumed the course assistant will be needed for five months (four months of program dissemination, one month of program data analysis). If the student employee earns $10 per hour, then $400 should be budgeted towards a course assistant/research assistant position (See Table 2 and Appendix L). During the second year of the program, a student employee may be required for one month of program recruitment/dissemination and one month of data analysis, for a total of 16 hours of work (See Table 2 and Appendix L).

Table 2: Dissemination Plan Budget

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost (Year 1)</th>
<th>Cost (Year 2)</th>
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</thead>
<tbody>
<tr>
<td>Recruitment flyers (x100)</td>
<td>$37.00 (Staples, 2015)</td>
<td>$37.00 (Staples, 2015)</td>
</tr>
<tr>
<td>Fact sheets (x 250)</td>
<td>$159.99 (Staples, 2015)</td>
<td>$159.99 (Staples, 2015)</td>
</tr>
<tr>
<td>AOTA conference presentation poster</td>
<td>$180.00 (FedEx, personal communication, May 25, 2015)</td>
<td>$180.00 (FedEx, personal communication, May 25, 2015)</td>
</tr>
<tr>
<td>AOTA conference registration fee</td>
<td>$456 (AOTA, 2015)</td>
<td>$456 (AOTA, 2015)</td>
</tr>
<tr>
<td>AOTA conference travel, lodging, and food expenses</td>
<td>$800</td>
<td>$800</td>
</tr>
<tr>
<td>Course assistant</td>
<td>$400</td>
<td>$160</td>
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<td>------------------</td>
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<td>------</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$2,032.99</strong></td>
<td><strong>$1,792.99</strong></td>
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**Evaluation of Dissemination Plan**

Each dissemination plan activity will be monitored and measured to determine the success of the program dissemination. Evaluation approaches are as follows:

1. **Written information:** The number of emails received from interested students/faculty will measure the reach and acceptance of the written materials. The number of students enrolled in the course who located the course via a recruitment flyer or handout will also measure the success of written dissemination. At the 2016 American Occupational Therapy Association conference, the volume of poster visitors, contact information exchanged, questions asked, comments received, and handouts administered will indicate the level of interest in the written dissemination.

2. **Electronic media:** The quality and quantity of email replies will indicate the level of success of electronic dissemination. The number of students enrolled in the course who located the course via the online description will also indicate the level of success of electronic dissemination.

3. **Person-to-person contact:** The number of attendees from primary and secondary audiences at the doctoral project defense will measure one area of success. Additionally, the quality and quantity of questions, comments, criticism, advice, and praise at the doctoral defense will evaluate the success of the person-to-person dissemination method. The number of students who enroll in the online
course who discovered the course via an in-person staff interaction will also indicate person-to-person dissemination success. Lastly, at the American Occupational Therapy Association national conference, the volume of presentation visitors, contact information exchanged, and the quality/quantity of audience interactions will measure the success of person-to-person dissemination.
Chapter 7: Conclusion

This doctoral project includes two parts: the development of an online course for Boston University students with autism spectrum disorder (ASD), and the proposed evaluation of the online course. The development of an evidence-based, single-credit, online course for postsecondary students with ASD presents a unique and promising approach to a growing problem. Young adults with ASD are experiencing poor outcomes in postsecondary education, including low graduation and retention rates (Newman et al., 2011). This doctoral project explores five theoretical reasons for poor postsecondary outcomes for young adults with ASD: (1) the increasing prevalence of ASD, (2) the absence of a “golden standard” in postsecondary transition for young adults with ASD, (3) the existing differences between educational and disability rights legislation at the secondary and postsecondary education levels, (4) the diagnostic characteristics of ASD, and (5) the characteristics of collegiate culture. The proposed program addresses the unique needs of college students with ASD by utilizing evidence-based content, teaching methods, and approaches. Using outcome measures, the proposed doctoral project will measure feasibility and acceptability of participation in an online course for college students with ASD. The doctoral project will also measure preliminary outcomes regarding participants’ executive functioning, social skills, self-determination, and life satisfaction.

There are several unique aspects to the development of “BU SUCCESS 101-102”. The online course includes two modules; module one focuses on executive function skills, and module two targets social skills. Self-advocacy skills are taught throughout
both modules. These three course content areas were selected after a careful literature review, as these skills are often impaired in individuals with ASD (Camarena & Sarigiani, 2009; CDC, 2015; Giarelli et al., 2013; Glennon, 2001; Gobo & Shmulsky, 2014; Hill, 2004; Jobe & White, 2006; Wagner et al., 2005), yet are associated with better academic and psychological outcomes for the general population of college students (D’Zurilla & Sheedy, 1991; Arthur et al., 2006; Chow, 2007; Garavalia & Gredler, 2002; Getzel & Thoma, 2008; Gil, 2007; O’Connor & Paunonen, 2007; Ridgell & Lounsberry, 2004; Robbins, et al., 2006; Schmitt et al., 2009; Skowron et al., 2004). The course content is adapted from well-published and successful interventions for individuals with ASD: the “Unstuck and On Target” curriculum (Cannon et al., 2011), the UCLA “PEERS for Young Adults” program (Gantman et al., 2011; White et al., 2015), and the “PEERS Curriculum for School-Based Professionals” (Laugeson, 2014). The program delivery methods are based on evidence from autism research and postsecondary education research. Another foundational aspect of course development for this doctoral project is its client-centered nature. The course curriculum will adapt and mold to its clients, via results of the feasibility study and student feedback. An additional unique component to this doctoral project is the course implementation style. The implementation of an online course approach allows for increased anonymity and improved accessibility for all learning styles.

The second, and most distinctive, part of the proposed doctoral project is the program evaluation. Students enrolled in the online course will participate in a feasibility study, to assess the feasibility and suitability of the program, as well as preliminary
executive function, social skill, self-determination, and satisfaction outcomes. To date, there have been no peer-reviewed studies exploring outcomes of support programs for young adults with ASD attending four-year institutions. This initial program evaluation will create a foundation for continued evidence-based practice relative to postsecondary transition for young adults with ASD.

Through the implementation of an online skills-based course for Boston University students with ASD, this project will serve as a model for future postsecondary support programs for young adults with ASD. The project will contribute to the field of occupational therapy in the areas of autism research, occupational therapy’s role in postsecondary education, and the benefits of conducting feasibility studies. Most importantly, this project will fulfill a growing need for young adults with ASD using an evidence and occupation-based, client-centered, approach central to the occupational therapy profession.
Appendix A: List of 4-Year Postsecondary Education Institutions with Transition/Support Programs for Matriculated Students with Autism Spectrum Disorder in the United States:

• Adelphi University (Garden City, NY)
• Bellevue College (Bellevue, WA)
• Defiance College (Defiance, OH)
• Drexel University (Philadelphia, PA)
• Eastern Michigan University (Ypsilanti, MI)
• Eastern University (St. Davids, PA)
• Fairleigh Dickinson University (Teaneck, NJ)
• George Mason University (Fairfax, VA)
• Grand Valley State University (Allendale, MI)
• Landmark College (Putney, VT)
• Marshall University (Huntington, WV)
• Mercyhurst University (Erie, PA)
• Nova Southeastern University (Fort Lauderdale, FL)
• Oakland University (Rochester, MI)
• Pace University (New York, NY)
• Rochester Institute of Technology (Rochester, NY)
• Rutgers University (New Brunswick, NJ)
• Southern Connecticut State University (New Haven, CT)
• St. Joseph’s University (Philadelphia, PA)
• University of Alabama (Tuscaloosa, AL)
• University of Arkansas (Fayetteville, AK)
• University of Connecticut (Mansfield, CT)
• University of Indianapolis (Indianapolis, IN)
• University of Tennessee Chattanooga (Chattanooga, TN)
• University of West Florida (Pensacola, FL)
• Virginia Polytechnic Institute and State University (Blacksburg, VA)
• Western Kentucky University (Bowling Green, KY)
• Western New England University (Springfield, MA)
• Wright State University (Dayton, OH)
Appendix B: Curriculum Offerings for Postsecondary Transition and Support Programs for Matriculated Students with Autism Spectrum Disorder

<table>
<thead>
<tr>
<th>Individualized, person-centered</th>
<th>Academic mentoring</th>
<th>EF skill support</th>
<th>Self-advocacy</th>
<th>Social skill support</th>
<th>Peer mentoring</th>
<th>Career support</th>
<th>Tutoring/ study hall</th>
<th>Social events</th>
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✔* = monitored or mandatory study halls

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Appendix C: Explanatory Model

- Lack of college transition programs for young adults with autism spectrum disorder
- Characteristics of autism spectrum disorder
- Current legislation
- Prevalence of autism spectrum disorder diagnoses
- Collegiate culture

Students with autism spectrum disorders may require additional support to succeed in college. Young adults with autism spectrum disorder are less likely to succeed in the college environment.

Colleges are not legally required to offer "free and appropriate public education." Students may not disclose a diagnosis. AWA requires colleges to accommodate students who qualify. There is a growing number of individuals with autism spectrum disorder aging into adulthood. There is a potential increase of students with autism spectrum disorder attending college.
### Appendix D

**BU SUCCESS 101 Curriculum:**

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<tr>
<th>Week</th>
<th>Topic(s)</th>
<th>Description</th>
<th>Source(s)</th>
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| 1    | Introduction to the course, executive functioning, and self-advocacy | In Week 1, we will introduce the course format, define and describe major executive functions, and discuss pertinent education legislation as it relates to self-advocacy and student responsibility in college. | • Areas of executive function defined from the BRIEF – A Manual (Roth, Isquith, & Gioia, 2005)  
| 2    | Planning/organization strategies and tools, accommodations, personal learning style, occupational balance | In Week 2, we will review useful planning and organization tools for academic, social, and personal use. We will discuss common accommodations requested through the Office of Disability Services, and the steps to requesting accommodation. We will also explore personal learning styles and studying approaches based on your learning style. Lastly, we will review the importance of occupational balance and strategies to maintaining healthy routines. | • Various websites and resources for planning and organization for college students (e.g. Dartmouth College, 2015; University of Redlands, 2015)  
• The VARK Inventory (VARK Learn Limited, 2015)  
• Boston University Office of Disability Services (Boston University, 2015a)  
• American |
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<th>Week</th>
<th>Topic</th>
<th>Description</th>
<th>Additional Information</th>
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<tr>
<td>3</td>
<td>Flexibility</td>
<td>In Week 3, we will discuss physical and cognitive flexibility versus rigidity, and functional strategies for improving your flexibility in various situations.</td>
<td>Content adapted from “Unstuck and On Target” (Cannon et al., 2011), with additional examples and content added by the program author.</td>
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<td>4</td>
<td>Coping strategies</td>
<td>We will explore on campus resources and tips for advocating for accommodations, helpful apps and technology, sensory regulation strategies, and discuss how to identify a personal mentor.</td>
<td>On campus resources and self-advocacy via Boston University Office of Disability Services (Boston University, 2015a)&lt;br&gt;Apps and technology and sensory regulation advice provided by this author. Further information on sensory regulation via OT literature.&lt;br&gt;Identifying a personal mentor, adapted from “Unstuck and On Target” (Cannon et al., 2011)</td>
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<td>5</td>
<td>Goal setting</td>
<td>In Week 5, we will learn about strategies for goal writing, prioritization, organization, and goal targeting.</td>
<td>Content adapted from “Unstuck and On Target” (Cannon et al., 2011)</td>
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<td>6</td>
<td>Dealing with mistakes, setbacks, and criticism; How to change a reputation</td>
<td>In Week 6, we will discuss common challenges faced in college, such as mistakes, setbacks, and criticism. We will review strategies to cope with these scenarios, as well as ways to change a negative reputation.</td>
<td>Content adapted from “Unstuck and On Target” (Cannon et al., 2011)</td>
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<td>7</td>
<td>Review</td>
<td>Week 7 will be an overview of the previous weeks; there will be opportunities for questions, comments, and clarification.</td>
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**BU SUCCESS 102 Curriculum:**

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<th>Week</th>
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| 8    | In person and electronic communication       | In Week 8, we will review the differences of expectations between electronic and in-person communication.                                      | • Content adapted from the UCLA “PEERS for Young Adults” program (Gantman et al., 2011; White et al., 2015), and the “PEERS Curriculum for School-Based Professionals” (Laugeson, 2014)  
• Visuals will be provided from various external sources |
| 9    | Peer and professor entry/exit strategies     | In Week 9, we will discuss how to approach a conversation with a peer or professor, and how to appropriately exit that conversation.       | • Content adapted from the UCLA “PEERS for Young Adults” program (Gantman et al., 2011; White et al., 2015), and the “PEERS Curriculum for School-Based Professionals” (Laugeson, 2014)  
• Additional content adapted from various sources (Donovan, 2014; Succeedsocially.com, 2015; U.S. Department of Veteran Affairs, n.d.; Zhang, 2014; Glickman, 2010; University of Victoria Libraries, 2012)  
• Visuals will be provided from various external sources |
| 10   | Developing friendship networks; appropriate use of humor | In Week 10, we will discuss strategies to developing social groups as well as the appropriate use of humor for various situations. | • Content adapted from the UCLA “PEERS for Young Adults” program (Gantman et al., 2011; White et al., 2015), and the “PEERS Curriculum for School-Based Professionals” (Laugeson, 2014)  
• Visuals will be provided from various external sources |
| 11   | Organizing get-togethers with friends         | In Week 11, we will review how to plan, organize, and execute a social gathering with friends.                                                 | • Content adapted from the UCLA “PEERS for Young Adults” program (Gantman et al., 2011; White et al., 2015), and the “PEERS Curriculum for School-Based Professionals” (Laugeson, 2014)  
• Visuals will be provided from various external sources |
<p>| 12   | Handling embarrassing or negative            | In Week 12, we will discuss how to cope with                                                                                                    | • Content adapted from the UCLA “PEERS for Young Adults” program (Gantman et al., 2011; White et al., 2015), and the “PEERS... |</p>
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<td>Feedback; handling peer</td>
<td>embarrassing or negative feedback in a productive way. We will also explore peer pressure, coping strategies, and how to avoid exploitation by peers or other individuals.</td>
<td>Curriculum for School-Based Professionals” (Laugeson, 2014) • Visuals will be provided from various external sources</td>
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<td>13</td>
<td>Conflict resolution</td>
<td>Week 13 will provide an overview of conflict resolution strategies and approaches.</td>
<td>• Content adapted from the UCLA “PEERS for Young Adults” program (Gantman et al., 2011; White et al., 2015), and the “PEERS Curriculum for School-Based Professionals” (Laugeson, 2014) • Visuals will be provided from various external sources</td>
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<td>14</td>
<td>Dating etiquette; course</td>
<td>In Week 14, we will explore dating etiquette and expectations. We will also conduct a course review to clarify topics covered during the entire course.</td>
<td>• Content adapted from the UCLA “PEERS for Young Adults” program (Gantman et al., 2011; White et al., 2015), and the “PEERS Curriculum for School-Based Professionals” (Laugeson, 2014) • Visuals will be provided from various external sources</td>
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BU SUCCESS 101-- Week 3 Lesson Plan: Flexibility

OUTLINE:

1. Types of Flexibility: Physical VS Cognitive*
2. What’s Silly Putty Got to Do With It?*
3. Rigidity*
4. Keeping an Open Mind (Plan A, Plan B; compromise)*
5. “Impossible” Situations and Useful Strategies to Overcome Them*
6. Review

*Topics adapted from “Unstuck and On Target” curriculum (Cannon et al., 2011)

I. Types of Flexibility
a) Physical flexibility*: advantageous due to the strength and efficiency of being flexible.

For example, a bridge is built for strength and efficiency, though it sways slightly to compensate for wind forces.

https://www.youtube.com/watch?v=WB2hqyY19es
A human body that is rigid is slower, moves with decreased efficiency, and requires more effort when compared to a human body that is flexible.

(https://www.youtube.com/watch?v=WRese2qaI8I)

b) Cognitive flexibility*:

Flexible thinking: we can change our ideas, do something different than what we originally planned, think something different, consider new information, keep an open mind.

Intrinsic versus extrinsic motivation:

- **Intrinsic:** Motivation that comes from within. Flexible thinking can become intrinsically motivating because it creates positive experiences. We are more likely to repeat behaviors that provide us with positive experience and good feelings.

- **Extrinsic:** Motivation that comes from outside sources. For example, assignment grades, getting your work done so you can play a video game, praise from a professor. These extrinsic motivators will help us keep doing a behavior, but they are more of a “short term” motivation.

*Definitions adapted for age-appropriateness from the “Unstuck and On Target” curriculum (Cannon et al., 2011); examples and visuals are novel and are not derived from “Unstuck and On Target”
II. What’s Silly Putty Got to Do with It?

There was a rubber shortage in the 1940’s during World War II. James Wright, an inventor of the time, tried to create a rubber substitute to help alleviate the rubber shortage. In an attempt to create an appropriate rubber substitute, James Wright created the compound we know today as Silly Putty. James Write recognized his new compound could not be used in the same way as commercial rubber (tires, boots, etc.). He abandoned the Silly Putty compound because it did not do what he needed it to do. Several years later, Peter Hodgson, discovered the Silly Putty compound and used some flexible thinking to recreate its uses. Because of Peter Hodgson’s flexible thinking, Silly Putty has been enjoyed for over 60 years! Astronauts on Apollo 8 even used Silly Putty to secure their tools during flight time.

Task 2.1:

Reflect on a time you demonstrated flexible thinking. What were the outcomes? Was it an overall positive or negative experience? Were you intrinsically or extrinsically motivated?

Anecdote adapted for age-appropriateness from “Unstuck and On Target” (Cannon et al., 2011); Task 2.1 is novel and not derived from the “Unstuck and On Target” curriculum
III. Rigidity

Rigid thinking*: When we do not change our ideas, do not think differently, do not do something different than originally planned, do not consider new information. We only have one choice: remain stuck.

[Image: Well Crap]

www.weheartit.com

(Sheldon Cooper upon seeing Penny’s haircut: https://www.youtube.com/watch?v=cttQj9kP8Ok)
Task 3.1:

Are there times where you experience rigid thinking? Do you notice any patterns about when this occurs (i.e. about routines, food, school, etc.)? Were the outcomes of those situations mostly positive or negative?

*Description adapted from “Unstuck and On Target” (Cannon et al., 2011); visuals and Task box are novel and are not derived from the “Unstuck and On Target” curriculum
IV: Keeping an Open Mind*
Open mindedness is the equivalent to coming up with multiple solutions. Flow charts are excellent ways to chart out options for keeping an open mind. Below are two flow charts describing the thought processes of James Wright and Peter Hodgson.

James Wright

Rigid thinking: stuck

Peter Hodgson

Flexible thinking

Silly Putty  bouncy toy  aerospace tool

* Rigid thinking leads to one option: being stuck.
* Flexible thinking leads us to many options and opportunities.

*Lesson content and visuals adapted from “Unstuck and On Target” (Cannon et al., 2011)
Strategy 4.1: Plan B

Think of multiple ways things can get done in any situation. When we make a Plan B (and even Plan C, D, etc.) we can stay *flexible*. Without a Plan B, we might feel mad, get bored, or get *stuck*. Making a Plan A and Plan B at the same time speeds up the process.

<table>
<thead>
<tr>
<th>Options</th>
<th>Consequences</th>
</tr>
</thead>
</table>
| You keep trying the same approach (Plan A) | • You do not finish your assignment on time, leaving no free time for relaxing.  
• You get frustrated and angry about the assignment. |
| You stop trying Plan A because it is not working and come up with another approach (Plan B) | • You complete the assignment with enough time to relax afterwards.  
• You feel accomplished and not stressed. |

*Chart adapted from “Unstuck and On Target” (Cannon et al., 2011); examples are novel and are not derived from the “Unstuck and On Target” curriculum*

Task 4.1

Complete the chart below using a situation where you used (or could have used) Plan A/Plan B.

<table>
<thead>
<tr>
<th>Options</th>
<th>Consequences</th>
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<tbody>
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</tbody>
</table>

*Chart adapted from “Unstuck and On Target” (Cannon et al., 2011)*
There are always 3 possible outcomes for all situations*:
1) You get *everything* you want
2) You get *nothing* you want
3) You get *part* of what you want

My original plan worked.
I was able to get everything I wanted.

Section A of Bio 202 was full,
so I could not register for the 11am class. I became *stuck* and so upset
that I did not register for the course at all.
I was flexible and made a Plan B.
I got part of what I wanted.

#3 Part of what you wanted

Lesson and visuals adapted from “Unstuck and On Target” (Cannon et al., 2011); examples provided are novel and are not derived from the “Unstuck and On Target” curriculum
Strategy 4.2: Compromise

Compromising allows you to get part of what you want. It is different from “giving in,” where you get nothing you want. Compromising is another way to be flexible. If you do not compromise, you can get stuck.

Case example: You really want to write the discussion and conclusion paragraphs for your group assignment; however, two other group members also want to write the discussion and conclusion paragraphs.

<table>
<thead>
<tr>
<th>Options</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan A: You are adamant that you will be the one to write the discussion and conclusion.</td>
<td>• Your group members feel annoyed that you did not consider their feelings.</td>
</tr>
<tr>
<td></td>
<td>• Your group members do not feel a fair decision was made.</td>
</tr>
<tr>
<td></td>
<td>• You and your group waste 30 minutes arguing about work distribution (stuck).</td>
</tr>
<tr>
<td>Plan B: After realizing several group members want to write the discussion and conclusion, you calmly explain why writing those sections is important to you. If your group members still want to write the same sections as you, you all agree to randomly assign sections of the paper by picking numbers out of a bowl (compromise).</td>
<td>• You and your group members feel content about the fair decision that was made.</td>
</tr>
<tr>
<td></td>
<td>• No one’s feelings were hurt; everyone chose their assigned sections at random.</td>
</tr>
<tr>
<td></td>
<td>• You only took 5 minutes discussing work distribution and now have more time to begin the assignment.</td>
</tr>
</tbody>
</table>

Chart adapted from “Unstuck and On Target” (Cannon et al., 2011); examples provided are novel and are not derived from the “Unstuck and On Target” curriculum
Task 4.2

Complete the outcomes chart for the situation above (multiple members want to complete the same assignment sections). Remember, the social outcomes for getting “everything/nothing you want” may be different in this situation than they were in the previous situation (registering for Bio 202).

#1: Everything I wanted (Plan A)

#2 Nothing I wanted (Giving in)

#3 Part of what I wanted (Plan B)

Visual organization charts adapted from “Unstuck and On Target” (Cannon et al., 2011)
V. “Impossible” Situations and Useful Strategies to Overcome Them*
Sometimes it’s easy to get stuck on “impossible” situations with rigid thinking. For example, you may become stuck on the fact that you have to buy a textbook for your Physics class and the bookstore is closed. It is not possible to get the textbook from the closed bookstore.

Penny knocking on door, no one is home. https://www.youtube.com/watch?v=f85ViOmwbI0
We have two choices when we encounter an “impossible” situation:
1) Get **stuck** with rigid thinking
2) Be **flexible**

<table>
<thead>
<tr>
<th>Stuck/Rigid</th>
<th>Flexible</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Image](WELL CRAP.png)</td>
<td><img src="OPEN.png" alt="Image" /></td>
</tr>
</tbody>
</table>

**Outcomes if I choose to get stuck:**
- No textbook
- Didn’t do my readings for class
- Bad mood, stressed, angry

Did I get what I wanted? No.

When I’m stuck, I
- Miss out on other opportunities
- Don’t solve my problem or get what I want
- Feel stressed, upset, and angry

**Being stuck might result in**
- Wasted time
- Negative emotions and consequences
- Decreased understanding of course material

**Outcomes if I choose to be flexible:**
- Go to the bookstore when it opens tomorrow
- Ask a classmate to borrow their book for the reading tonight
- Feel prepared for class tomorrow
- Avoid feeling stressed
- Have positive interactions with a classmate

Did I get part of what I wanted? Yes.

When I’m flexible, I
- Get something I want or need
- Don’t miss any part of the day or waste time
- Feel better, more prepared
- Interact with people I would like to get to know
- Understand the course material

*Lesson content and organization chart adapted from “Unstuck and On Target” (Cannon et al., 2011); examples and images provided are novel and are not derived from the “Unstuck and On Target” curriculum*
Strategy 5.1: Flexible Thinking

If you encounter an “impossible” situation, you can use all of the flexible thinking strategies previously reviewed.

- Create a Plan B (or C, D…)
- Compromise with yourself or others
- Make the choice to be flexible

Task 5.1: Discussion Board

Complete this assignment under the “Week 3: Flexibility” discussion board by 11:59pm on 9/27 (SET A CALENDAR ALERT BY CLICKING HERE). Comment on at least one other classmate’s posting by 11:59pm on 9/29 (SET A CALENDAR ALERT BY CLICKING HERE).

Post one example of a recent time where rigid thinking has gotten in the way of successfully completing a task. It can be anything from going to the gym, getting dinner with your roommates, finishing an assignment, etc. Then, comment on at least one other classmate’s scenario providing them with one or more specific solutions (hint: strategies).
VI. Review

During week 3 we learned about flexibility, rigidity, and strategies to help us avoid getting stuck. Strategies for flexible thinking include:

- Creating an alternate plan (B, C, D…)
- Compromise with yourself or others
- Choose to be flexible

<table>
<thead>
<tr>
<th>Options</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan A</td>
<td>•</td>
</tr>
<tr>
<td>Plan B</td>
<td>•</td>
</tr>
</tbody>
</table>

- An additional strategy that was not mentioned, but is *always* a choice, is to problem solve with your peer or academic mentor.
BU SUCCESS 102—Week 9: Peer and professor entry/exit strategies

OUTLINE:
- 1. Entering a group conversation
- 2. Entering a conversation with one person
- 3. Exiting a conversation
- 4. Talking with your professors
- 5. Review

“+” indicates topics adapted from the UCLA “PEERS for Young Adults” program (Gantman et al., 2011; White et al., 2015), and the “PEERS Curriculum for School-Based Professionals” (Laugeson, 2014)
I. Entering a group conversation

Dr. Liz Laugson from the UCLA “PEERS” program describes entering a conversation and Alex tries her advice: [https://www.youtube.com/watch?v=az8vpzxZkj4](https://www.youtube.com/watch?v=az8vpzxZkj4)

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**Strategy 1.1: Entering a group conversation**

1. **Listen** for what the group is talking about
   a. Make sure your body language does not look like you’re eavesdropping (check your phone, a book, etc.)
2. **Wait** for a pause in the conversation (might not be long)
3. **Move** closer to group
4. Make an on-topic **comment**, or ask an on-topic **question**
5. **Assess** if you’re accepted!
   a. Yes: Look for opening of the circle, people turn their bodies to look at you
   b. No: People might turn away or make faces, move their bodies to close the circle

**Keep in mind:** 50% of the time, it doesn’t work! It’s okay, it happens to everyone.
**To exit:** Start to look away, then slowly turn away, then slowly walk away (don’t “storm off”)

*Adapted from the “PEERS” program*
**Task 1.1: Check your understanding**

Order the steps (1-5) for joining a group conversation:

- **Assess** if you’re accepted!
- **Wait** for a pause in the conversation (might not be long)
- **Listen** for what the group is talking about
- Make an on-topic **comment**, or ask an on-topic **question**
- **Move** closer to group

What is the best way to exit if you are not accepted?

How common is “acceptance” into a group conversation?

---

**Strategy 1.2: How do I continue the conversation?**

For all of the below ideas, make sure you are staying **on topic**:

- Comment on the conversation (“Hey! You guys saw the new Avengers movie?! I really liked it, too.”)
- Ask about a common situation (“How do you guys know [party host, mutual friend, etc.]?”)
- Comment on the situation (“What do you guys think of this class?”)
- Ask a question about the group (“Have any of you been to a good concert lately?” or “how long have you guys known each other?”)
- Ask to join (“Mind if I sit with you?”)

**Keep assessing for the group members’ interest in the topic and your questions/comments**

*(Donovan, 2014)*

---

**Task 1.2: FriendMaker App**

If you have access to an iPhone or iPad, download the FriendMaker App ($0.99).

Select “Conversations” and review the following:

- Good Conversations: The Basics DO’s
- Good Conversations: The Basics DON’Ts
- Entering Group Conversations; watch the DO and DON’T videos
- Exiting When You Don’t Feel Accepted; watch the DO video
- Exiting When You’re Initially Accepted and Then Excluded; watch the DO video

---

111
II. Entering a conversation with one person
Starting a conversation with one person is similar to starting a conversation with a group. You will want to assess the person’s acceptance to conversing and how they are feeling during the conversation. Something to keep in mind is the expected duration of the conversation, as well as common social “rules”.

⚠️ Strategy 2.1: How long will the conversation last?
- If you talk to someone while they are running errands, they will probably want to go back to their task after 1-2 minutes of talking.
- If you’re talking to someone after class, or while getting a drink, they will probably want to leave/get back to work, do not talk longer than 5 minutes.
- If you’re calling someone to set up plans, keep it brief, they probably need to get back to what they were doing after a few minutes.
- If you’re talking to someone at a party or social gathering, it is expected to talk with multiple people. Spend 5-10 minutes with one person before moving on.
- If you’re sitting next to someone on the bus or the train, assume they will not want to chat the entire time. Talk for a few minutes and then allow them the opportunity to go back to their book/phone/music/etc.

(Succeedsocially.com, 2015)

⚠️ Strategy 2.2: Social “rules” to remember
- Say “hi”
- Smile
- Read the other person’s non-verbal cues. Look for a smile, a pause, or turning their body towards you as an invitation for communication. View a frown, open mouth, unsure look, or turning their body away from you as a declination.
- Make consistent or frequent eye contact
- Introduce yourself if you do not know the person
- Stay on topic and listen for “acceptance” cues throughout the conversation

(Donovan, 2014; Succeedsocially.com, 2015; U.S. Department of Veteran Affairs, n.d.; Zhang, 2014)

Task 2.2: FriendMaker App
If you have access to an iPhone or iPad, download the FriendMaker App ($0.99).
Select “Conversations” and review the following:
- Starting Individual Conversations; watch the DO and DON’T videos
- Exiting When You Don’t Feel Accepted; watch the DO video
- Exiting When You’re Initially Accepted and Then Excluded; watch the DO video
III. Ending/exiting conversations

Licking someone's face is a quick and 100% foolproof way of ending a conversation.

CASUAL
- CATCH YOU LATER!
- TAKE IT EASY!
- LATER!
- SEE YAI (see you later?)
- TAKE CARE!

FORMAL
- HAVE A GOOD ONE!
- NICE TALKING TO YOU!
- HAVE A NICE AFTERNOON!
- TAKE CARE!
- HOPE YOUR MEETING GOES WELL!
People may end conversations for many reasons. Here are some good indicators that someone is interested in ending their conversation:

**Strategy 3.1: Nonverbal cues for exiting a conversation**

- Standing up if they have been sitting down
- Starting to move towards the door/exit
- Starting to give quicker/shorter responses ("Yep, yep, yep. Okay. Great. Anyways."")
- Frequently looking at the exit/direction they came from

(Succeedsocially.com, 2015)

Sometimes knowing how to exit a conversation can be difficult. If you were “rejected” from a social circle or conversation (as discussed in lesson 2), a quick “Oh, sorry! I didn’t realize I was interrupting. See ya!” will suffice, no further discussion needed. If you are having a conversation with someone or a group, and need to get going, here are some tips for exiting:

**Strategy 3.2: Tips for exiting a conversation**

- Wait for a pause in the conversation if possible
- Use a non-verbal cue (see strategy 3.1)
- OPTIONAL: summarize the conversation and/or thank the person ("It was great talking about ___")
- Make a closing comment ("Well, I’ve got to go!” or “I’ll let you get back to ____”)
- OPTIONAL: make future plans if you are interested in hanging out or talking again ("We’ll keep in touch!”)

(Glickman, 2010; Succeedsocially.com, 2015; Zhang, 2014)

**Task 3.1: FriendMaker App**

If you have access to an iPhone or iPad, download the FriendMaker App ($0.99).

Select “Conversations” and review the following:

- Exiting When You Don’t Feel Accepted; watch the DO video
- Exiting When You’re Initially Accepted and Then Excluded; watch the DO video
- Exiting When You’re Fully Accepted; watch the DO video
IV: Talking with your professors
Many of the strategies discussed in section 3 apply when you are speaking with your professors. The library at University of Victoria comprised a helpful video of tips for approaching and conversing with professors and academic mentors.

https://www.youtube.com/watch?v=JsMFJ1Y_JyI

Talking with your professor can help you:
• Understand your readings/assignments
• Improve your study habits
• Get feedback on assignments

Strategy 4.1: Talking with your professors
• Locate and keep record of office hours for each professor
• Visit during office hours or e-mail to schedule a private appointment
• DO ask for feedback/suggestions/assistance
• Do NOT request a grade change, beg, nag, etc.
• DO show respect by addressing your professor by their preferred name
  (University of Victoria Libraries, 2012)
V. Review
In Week 9, we discussed strategies for entering a conversation with a group, with an individual, and with a professor. We also discussed ways to exit these conversations, and how a lengthy explanation is not usually necessary. Week 9 reviewed tips for our own body language and non-verbal cues we want to look for in other people while we are having conversations.

Task 4.1: What would you do if…
You are taking Introduction to Human Psychology. You know all the material from completing the readings; however, you get your first exam back and your grade is a C. This doesn’t make sense to you, since you felt like you understood the material. What would you do? List the steps you would take to contact your professor and an outline of what you might say:

________________________
________________________
________________________
________________________

Task 5.1: Discussion board
Complete this assignment under the “Week 9: Peer and professor entry/exit strategies” discussion board by 11:59pm on 11/8 (SET A CALENDAR ALERT BY CLICKING HERE). Comment on at least one other classmate’s posting by 11:59pm on 11/10 (SET A CALENDAR ALERT BY CLICKING HERE).

Enter at least one conversation this week, with a professor or unfamiliar peer. Reflect upon your experience (i.e. strategies used, feeling on overall performance, what you would change for next time) in the discussion for Week 9, and provide commentary on at least one other classmates’ experience.
References:


Appendix E: Logic Model

Inputs
- Program Clients
  - High school students with ASD
  - Parents of young adults with ASD
  - Secondary school counselors and teachers
  - Current postsecondary students with ASD

- Program Resources
  - University funding
  - Outside grants
  - University recruitment department
  - Office of Disability Services
  - Office of Distance Education
  - OT student mentors
  - Course professor

Problem Theory
- Nature of the Problem
  - Young adults with ASD are less likely to succeed in the college environment due to:
    1. Increasing prevalence of ASD
    2. Absence of a "golden standard" in PSE transition for young adults with ASD
    3. Differences between educational and disability rights legislation at the secondary and PSE
    4. Diagnostic characteristics of ASD
    5. Characteristics of collegiate culture

- Program Theory
  - Situated Cognition Theory: Students learn best in natural context
  - PEO Model: Success occurs when there is a maximal fit between person, environment, and occupation

Activities
- Interventions and Activities
  - Matriculated college students with ASD participating in an online course
  - Optional peer mentorship experience
  - Optional social and academic campus events

Outputs
- Program Outputs
  - Number of students with ASD enrolled in the online course
  - Number of assignments completed
  - Number of discussions posted/commented on
  - Amount of time spent on course website
  - Number of meetings with professor
  - Number of OTS/participant peer mentorships formed
  - Number of meetings with peer mentor
  - Number of social and academic events attended

- Short-Term Outcomes
  - Students with ASD learn executive function, social, and self-advocacy skills for success in the college environment
  - Students develop a partnership with their OTS mentors and professor
  - Students learn how to seek assistance
  - Students develop supportive relationships with each other

- Intermediate Outcomes
  - Students apply the skills learned throughout the semester and beyond.
  - Students experience decreased loneliness and increased life satisfaction.

- Long-Term Outcomes
  - Students with ASD are successful in the college environment, evident by increased executive functioning, social skills, self-advocacy abilities, and quality of life.

External/Environmental Factors:
- Funding availability
- University acceptance of online course
- Student interest in the course
- Competition with other PSE transition programs
- Adequate advertisement methods
- Student’s motivation to enroll in research study
“BU SUCCESS 101-102”

Are you a college student impacted by autism spectrum disorder (ASD)?

- Would you like more assistance with planning, organizing, or time management?
- Would you benefit from help with advocating for accommodations, socializing with friends, or communicating with your professors?

“BU SUCCESS 101-102” (Success during University: Concentrate on Culminating Executive function and Social Skills) is a new 1-credit online course designed for college students with ASD or for students who would like more support with executive functioning, social, or self-advocacy skills.

The online course design allows for privacy, self-paced learning, and is adaptable to fit multiple learning styles.

For more information, please contact: amatteo@bu.edu or search “BU SUCCESS 101-102” in the Boston University course bulletin (http://www.bu.edu/academics/search/)
### Autism spectrum disorder (ASD) facts and figures:
- ASD is a developmental disability associated with social, communication, executive function, and behavioral challenges\(^1\)
- Estimated prevalence: 1 in 68 children, or 1 in 42 boys\(^2\)
- Prevalence has increased 29% since 2008; 123% since 2002\(^2\)
- Approximately half of children with ASD have average to above average intelligence\(^2\)
- Approximately 17% of young adults with ASD enroll in a four-year college; only 39% of postsecondary students with ASD graduate\(^3\)

### Evidence for postsecondary support programs:
- College students from the general population who participated in a first year experience/orientation program demonstrated positive academic, emotional, and/or social outcomes\(^4\)
- Young adults with a disability who participated in workshops/college programs experienced improved self-awareness, self-advocacy skills, and academic success\(^5\)
- Young adults with ASD who participated in postsecondary supports report increased interpersonal relationships, self-advocacy, independent living skills, and emotional adjustment\(^6\)
- Preliminary outcomes from existing ASD college transition programs in the U.S. indicate participation may be associated with academic, social, emotional, and professional success\(^7, 8, 9\)

### Importance of executive function and social skills in college:
- College students with better executive functioning and social skills report more positive academic and psychological outcomes\(^10, 11\)
- College students with ASD have an increased responsibility to self-advocate\(^12\)
- A sudden decrease in social support upon entering college may be difficult for a student with ASD to manage, with the potential for increased stress and poorer outcomes\(^13\)
BU SUCCESS 101-102:
- Proposed single-credit online course designed for college students with ASD
- Two interactive modules: SUCCESS 101 (focusing on executive functioning), and SUCCESS 102 (focusing on social skills)
- Optional peer mentorship with undergraduate student
- BU SUCCESS will be modeled after evidence-based content and design from 29 pre-existing postsecondary support programs, and successful executive function\textsuperscript{14} and social skills\textsuperscript{15,16} curricula, for students with ASD
- Preliminary outcomes and program feasibility will be measured to evaluate program potential

Why an online course?
Virtual communication may facilitate\textsuperscript{17,18}:
- Increased initiation of social interactions
- Increased processing time
- Decreased stress
- Scheduling flexibility
- Increased interest in the course content

Potential impact on occupational therapy:
- Serves as a model for future evidence-based postsecondary support programs for young adults with ASD
- Contributes to autism research, occupational therapy’s role in postsecondary education, and the benefits of conducting feasibility studies
- Evaluates and adapts the program to meet the community’s needs

Key References
Appendix H: Informed Consent Form

| Protocol Title: Examining the Feasibility and Preliminary Outcomes of an Evidence-Based Online Skills Intervention for Postsecondary Students |
| Principal Investigator: Amanda Matteo, MS, OTR/L, OTD Candidate |
| Description of Subject Population: Boston University students seeking improvement in executive functioning and social skills |
| Version Date: June 2015 |

Introduction

Please read this form carefully. The purpose of this form is to provide you with important information about taking part in a research study. If any of the statements or words in this form are unclear, please let us know. We would be happy to answer any questions.

If you have any questions about the research or any portion of this form, please ask us. Taking part in this research study is up to you. If you decide to take part in this research study we will ask you to sign this form. We will give you a copy of the signed form.

The person in charge of this study is Amanda Matteo, under the advisement of Dr. Gael Orsmond. Amanda Matteo can be reached at (401) 714-6875 or ajmatteo@gmail.com. Dr. Gael Orsmond can be reached at (617) 353-2703 or gorsmond@bu.edu. We will refer to these individuals as the “researchers” throughout this form.

Why is this study being done?

The purpose of this study is to assess if participation in an online course focusing on executive functioning and social skills is appropriate for college students. We will also measure student outcomes, for example: do students demonstrate improved executive function and social skills after completing the online course?

We are asking you to take part in this study because you are enrolled in the online course, “BU SUCCESS 101-102” (Skills for University: Concentrate on Culminating Executive function and Social Skills).
How long will I take part in this research study?

We expect that you will be in this research study for the duration of the online course. During this time, we will ask you to complete surveys and outcomes measures.

What will happen if I take part in this research study?

• You will complete anonymous pre and post surveys and outcome measures
• You will participate in a 1-credit online elective course
• Results from surveys and outcomes measures may be shared in future publication or presentations

If you agree to take part in this study, we will ask you to sign the consent form before we do any study procedures.

Storing Study Information for Future Use

We would like to store your study information for future research related to postsecondary support programs for young adults with autism. We will label all your study information with a code instead of your name. The key to the code connects your name to your study information. The researchers will keep the code in a password-protected computer.

Do you agree to let us store your study information for future research related to postsecondary support programs for young adults with autism?

_____YES  _____NO  _______INITIALS

How Will You Keep My Study Records Confidential?

We will keep the records of this study confidential by using a code instead of your name on all surveys and outcome measures. We will make every effort to keep your records confidential. However, there are times when federal or state law requires the disclosure of your records.

If, during your participation of this study, we have reason to believe that you are at risk for being suicidal or otherwise harming yourself, we are required to take the necessary actions. This may include notifying your doctor, your therapist, or other individuals. If this were to occur, we would not able to assure confidentiality.

The following people or groups may review your study records for purposes such as quality control or safety:

• The Researchers and any member of her research team
• The Institutional Review Board at Boston University. The Institutional Review Board is a group of people who review human research studies for safety and protection of people who take part in the studies.
• The sponsor or funding agency for this study
• Federal and state agencies that oversee or review research

The study data will be stored electronically on a password-protected network. Printed materials will be stored in a locked file with the researchers.

The results of this research study may be published or used for teaching. We will not put identifiable information on data that are used for these purposes.

**Study Participation and Early Withdrawal**

Taking part in this study is your choice. You are free not to take part or to withdraw at any time for any reason. No matter what you decide, there will be no penalty or loss of benefit to which you are entitled. If you decide to withdraw from this study, the information that you have already provided will be kept confidential.

You may choose not to be in the study or to stop being in the study before it is over at any time. This will not affect your class standing or your grades at Boston University. You will not be offered or receive any special consideration if you take part in this research study.

Also, the researchers may take you out of this study without your permission. This may happen because:
• The researchers think it is in your best interest
• You can’t make the required study visits
• Other administrative reasons

**Future Contact**

We may like to contact you in the future either to follow-up to this study or to see if you are interested in other studies taking place at Boston University.

Do you agree to let us contact you in the future?

______YES _______NO _______INITIALS

**What are the risks of taking part in this research study?**

You may feel emotional or upset when answering some of the questions. Tell the researchers at any time if you want to take a break or stop the assessment.
You may be uncomfortable with some of the questions and topics we will ask about. You do not have to answer any questions that make you feel uncomfortable.

The main risk of allowing us to use and store your information for research is a potential loss of privacy. We will protect your privacy by labeling your information with a code and keeping the key to the code in a password-protected computer.

**Are there any benefits from being in this research study?**

You may or may not benefit from taking part in this study. Possible benefits include may include opportunity to participate in a unique online skills intervention. Potential benefits may also include improved executive functioning, social skills, self-determination skills, and satisfaction with college life.

Others may benefit in the future from the information that is learned in this study.

**What alternatives are available?**

You may choose not to take part in this research study. You do not have to take part in this research study to enroll in “BU SUCCESS 101-102”.

**Will I get paid for taking part in this research study?**

We will not pay you for taking part in this study.

**What will it cost me to take part in this research study?**

There are no additional costs to you for taking part in this research study; you will be responsible for the tuition of the 1-credit online course.

**What happens if I am injured as a result of participating in this research study?**

If you are injured as a result of taking part in this research study, we will assist you in getting medical treatment. However, your insurance company will be responsible for the cost. Boston University does not provide any other form of compensation for injury.
If I have any questions or concerns about this research study, who can I talk to?

You can call us with any concerns or questions. Our telephone numbers are listed below:

- Amanda Matteo, MS, OTR/L, OTD Candidate
  (401) 714-6875
- Gael Orsmond, Ph. D
  (617) 353-2703

If you have questions about your rights as a research subject or want to speak with someone independent of the research team, you may contact the Boston University IRB directly at 617-358-6115.
Statement of Consent

I have read the information in this consent form including risks and possible benefits. I have been given the chance to ask questions. My questions have been answered to my satisfaction, and I agree to participate in the study.

SIGNATURE

____________________________________
Name of Participant

____________________________________
Signature of Participant

____________________________________
Date

I have explained the research to the subject and answered all his/her questions. I will give a copy of the signed consent form to the subject.

____________________________________
Name of Person Obtaining Consent

____________________________________
Signature of Person Obtaining Consent

____________________________________
Date
Appendix I: Student Course Feedback Questionnaire

DIRECTIONS: Please complete this anonymous survey to the best of your ability. Results from the survey will help improve the course for future students. Thank you!

1. How did you find out about this course?
   a) Flyer
   b) Professor or advisor
   c) Friend
   d) Family member
   e) Other: __________

2. Do you have a diagnosis on the autism spectrum? (High-Functioning Autism, Asperger’s, PDD-NOS, ASD, autism) Remember this survey is anonymous and this response is for research purposes only.
   a) Yes
   b) No
   c) I do not wish to answer

3. How well did you understand the questions on the data collection measures given before and after the course? (Select all that apply)
   a) Very well—I did not feel confused
   b) Okay—I felt somewhat confused
   c) Not very well—I felt mostly confused
   d) Not at all—I felt completely confused

4. Did the measures feel too long to complete?
   a) No, all measures were appropriate in length
   b) Somewhat—I would like the measures to be shorter in length
   c) Yes—All of the measures felt too long to complete

5. Do you feel the requirements (time needed for readings, assignments, etc.) for this course were appropriate for a 1-credit course?
   a) Yes
   b) No

6. Did you have enough time to complete the course to the best of your ability?
   a) Yes
   b) No

7. Did you enjoy this course?
   a) Yes
   b) No
8. Would you recommend this course to a friend?
   a) Yes
   b) No

9. What did you like best about this course? (Select all that apply)
   a) Interacting with other students
   b) Learning executive function skills
   c) Learning social skills
   d) Learning how to self-advocate in college
   e) Other: ______________

10. What would you change about this course? (Select all that apply)
    a) Credit hours
    b) Readings
    c) Assignments
    d) Discussions
    e) Other: ____________

11. Did you experience any difficulty with the technology of the course?
    a) Yes (please explain)
    b) No

12. Have you applied the skills learned in this course to any real-life situations?
    a) Yes (please explain)
    b) No

13. Please leave additional comments about the course here:
## Appendix J: Researcher Feasibility Questionnaire

From Orsmond & Cohn (2015)

<table>
<thead>
<tr>
<th>Objective</th>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
</table>
| 1: Evaluation of Recruitment Capability and Resulting Sample Characteristics | Can we recruit appropriate participants? | a) The population of BU students with ASD: _____  
b) TBD  
c) TBD  
d) TBD  
e) TBD  
f) Will compare pretest measures with college population norms to determine need for intervention. |

<table>
<thead>
<tr>
<th>2: Evaluation and Refinement of Data Collection Procedures and Outcome Measures</th>
<th>How appropriate are the data collection procedures and outcome measures for the intended population and purpose of the study?</th>
<th>TBD by Student Course Feedback Questionnaire responses</th>
</tr>
</thead>
</table>
|             | a) Did students understand questions on outcome measures?  
b) Did the students respond with usable data?  
c) Could the students complete the outcome measures in an appropriate amount of time?  
d) Did students feel the outcome measures were appropriate? |
<table>
<thead>
<tr>
<th>3: Evaluation of Acceptability and Suitability of Intervention and Study Procedures</th>
<th><em>Are study procedures and intervention suitable for and acceptable to students?</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) How many students completed the course?</td>
<td>TBD by Student Course Feedback Questionnaire responses</td>
</tr>
<tr>
<td>b) Did students complete assignments and participate in discussions?</td>
<td></td>
</tr>
<tr>
<td>c) Did the students have enough time to complete the course?</td>
<td></td>
</tr>
<tr>
<td>d) Did students enjoy the course?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4: Evaluation of Resources and Ability to Manage and Implement the Study and Intervention</th>
<th><em>Does the research team have the resources and ability to manage the study and intervention?</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Does the main educator have the administrative capacity, expertise, skills, space, and time to conduct the study and intervention?</td>
<td>a) The proposed course educator has a background in occupational therapy, with experience working with adolescents and young adults with ASD. The course educator has experience teaching executive functioning and social skills to individuals with ASD. The proposed educator can access the course remotely, and is able to set aside adequate time for course demands.</td>
</tr>
<tr>
<td>b) Is the proposed program ethical?</td>
<td>b) The proposed program has been deemed ethical by the author’s advisor.</td>
</tr>
<tr>
<td>c) Can the program be executed with the designated budget?</td>
<td>c) The budget was carefully calculated and the program should be capable of launching within means of the proposed budget.</td>
</tr>
<tr>
<td>d) Is the technology sufficient to conduct the intervention and outcome measurements?</td>
<td>d) The proposed program will utilize reliable technology, such as Blackboard Learn and Google. Blackboard Learn has a troubleshooting and support team if difficulties occur.</td>
</tr>
<tr>
<td>e) Is the research team able to handle data collection and analysis?</td>
<td>e) It is estimated that the course enrollment will be under 5 students; therefore, the main</td>
</tr>
</tbody>
</table>
educator and researcher should be able to collect and analyze preliminary data with the support of a course assistant.

| 5: Preliminary Evaluation of Participant Responses to Intervention | Does the intervention show promise of being successful with the intended population? | a) TBD  
b) TBD  
c) TBD  
d) TBD  
e) The outcome measures and intervention are based in theory and evidence, and are expected to be appropriate for the population. |
|---------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
Appendix K: Pre/Post Student Knowledge Assessment

“BU SUCCESS 101-102” Pre/Post Student Knowledge Assessment

1. How do you receive accommodations in college?
   a) Your IEP is still valid in college and is distributed to your professors.
   ✓ b) You must first self-disclose your diagnosis to the Office of Disability Services and communicate your needs independently with your professors.
   c) Your parents call the Office of Disability Services prior to you moving on campus and create a 504 plan.

2. What are the 3 possible outcomes for all situations in life?
   a) You make a Plan A, Plan B, or Plan C
   ✓ b) You get everything you want, nothing you want, or part of what you want
   c) You request assistance from a peer mentor, faculty advisor, or parent

3. How is compromising different from “giving in”?
   ✓ a) Compromising allows you to get part of what you want; when you “give in” to another person, you get none of what you want.
   b) Compromising allows you to get all of what you want; when you “give in” to another person, you get none of what you want.
   c) Compromising is an extrinsic form of motivation; “giving in” is intrinsic.

4. What are the most appropriate steps to entering a conversation?
   a) Walk up to the group, introduce yourself with a smile, and comment on the weather.
   b) Linger on the edge of a group while looking at your phone, and wait to be invited into the circle.
   ✓ c) Listen for what the group is talking about, wait for a pause in the conversation, move close to the group, make an on-topic comment/question, assess if you’ve been accepted.

5. What is the most appropriate way to seek help from a professor?
   a) Visit when the door is open, and ask for your grade on the last exam.
   b) Call your professor by his/her first name, and ask to add bonus points to your paper.
   ✓ c) Schedule an appointment via email or show up during open office hours, and ask your professor for study strategies for the upcoming exam
## Appendix L: Program Budget

<table>
<thead>
<tr>
<th>Budget Item</th>
<th>Year One</th>
<th>Year Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Development</td>
<td>$5,000 - $15,000</td>
<td>&lt; $10,000</td>
</tr>
<tr>
<td>Course Implementation*</td>
<td>$5,000 - $17,564</td>
<td>$5,000 - $17,564</td>
</tr>
<tr>
<td>Data Analysis:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRIEF-A Professional Manual</td>
<td>$66</td>
<td>$0</td>
</tr>
<tr>
<td>BRIEF-A Self-Report*</td>
<td>$35</td>
<td>$35</td>
</tr>
<tr>
<td>BRIEF-A Score Report*</td>
<td>$60</td>
<td>$60</td>
</tr>
<tr>
<td>SRS-2 Professional Manual</td>
<td>$88.50</td>
<td>$0</td>
</tr>
<tr>
<td>SRS-2 Adult Self-Report Pkg*</td>
<td>$50</td>
<td>$0</td>
</tr>
<tr>
<td>Postage*</td>
<td>$53.80</td>
<td>$53.80</td>
</tr>
<tr>
<td>Envelopes*</td>
<td>$12.50</td>
<td>$12.50</td>
</tr>
<tr>
<td>Dissemination:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printed materials</td>
<td>$376.99</td>
<td>$376.99</td>
</tr>
<tr>
<td>Course assistant</td>
<td>$400</td>
<td>$160</td>
</tr>
<tr>
<td>AOTA conference fee</td>
<td>$456</td>
<td>$456</td>
</tr>
<tr>
<td>AOTA travel/lodging</td>
<td>$800</td>
<td>$800</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>$12,398.79 - $34,962.79</td>
<td>$16,954.29 - $29,518.29</td>
</tr>
</tbody>
</table>

* Assumes a class size of five students
Appendix M:
Potential Secondary Schools and Community Programs for Program Dissemination

Secondary schools specializing in educating students with ASD:

- Beacon High School
  917 Belmont St, Watertown, MA 02472
- Boston Higashi School
  800 N Main St, Randolph, MA 02368
- The Corwin-Russell School at Broccoli Hall
  142 North Rd, Sudbury, MA 01776
- Cotting School
  453 Concord Ave, Lexington, MA 02421
- The Gifford School
  177 Boston Post Rd, Weston, MA 02493
- The Guild for Human Services Learning Center
  411 Waverley Oaks Rd, Ste 104, Waltham, MA 02452
- The Ivy Street School
  200 Ivy St, Brookline, MA 02446
- Kennedy-Donovan Center School
  19 Hawthorn St, New Bedford, MA 02740
- League School of Greater Boston
  300 Boston Providence Tpke, Walpole, MA 02032
- Lighthouse School
  25 Wellman Ave, North Chelmsford, MA 01863
- The Transitions Program at the May Institute
  95 West Street, Walpole, MA 02081
- NEARI School
  70 N Summer St, Holyoke, MA 01040
- Whitney Academy
  PO Box 619, East Freetown, MA 02717
- Willow Hill School
  98 Haynes Rd, Sudbury, MA 01776
- Chamberlain International School
  1 Pleasant St, PO Box 778, Middleboro, MA 02346
- Auburn School
  13525 Dulles Technology Drive Suite 101 Herndon, VA 20171
- Ivymount school: The Model Asperger Program
  11614 Seven Locks Road, Rockville, MD 20854

*Additional schools can be located via Private Boarding School Search (2015)
Community programs for young adults with ASD:

- The Bridge Center
  470 Pine St, Bridgewater, MA 02324
- The Charles River Center
  59 East Militia Heights Road, Needham, MA; 4 Strathmore Road, Natick, MA
- Massachusetts Advocates for Children
  25 Kingston Street, 2nd Floor Boston, MA 02111
- Advocates for Autism of Massachusetts
  217 South Street, Waltham, MA 02453
- Asperger’s Association of New England (AANE)
  51 Water Street, Suite 206, Watertown, MA 02472
Appendix N: Executive Summary

Introduction

Recent data suggests only 17.4% of young adults with autism spectrum disorder (ASD) enroll in a four-year college (Newman et al., 2011). Less than 40% of students with ASD graduate from postsecondary education within 8 years of leaving high school (Newman et al., 2011). There is a performance gap for young adults with ASD who pursue college education, despite the fact almost half of children with ASD have average or above average intelligence (Centers for Disease Control and Prevention [CDC], 2014). Therefore, there is a growing niche for college support programs specifically designed for students with ASD.

This doctoral project was designed to address the growing need for college support programs specifically designed for students with ASD. It includes two parts: (1) the development of an online class to support college students with ASD, with course content and delivery methods shaped from current evidence, and (2) a proposal to evaluate the online course for feasibility and to explore initial outcomes.

Project Overview

The first part of the proposed project is the development of an online class specifically for college students with ASD. Any student at Boston University will be able to take the class as an elective; in an attempt to reduce stigma and increase enrollment, students will not be required to disclose their diagnosis. However, the course will be advertised and is designed specifically for students with ASD. The proposed online class will be one-credit and last 14 weeks.
The course will be divided into two modules or sections. The first module will cover executive functioning skills, for example: organization, time management, problem solving, and goal planning. The second module will cover social skills specific to success in college, for example: entering/exiting conversations, approaching professors, and navigating relationships. Executive functioning and social skills were selected as the primary course topics because individuals with ASD often have difficulty in these two areas (Glennon, 2001; CDC, 2015; Hill, 2004; Gobo & Shmulsky, 2014; Camarena & Sarigiani, 2009; Giarelli, Ruttenberg, & Segal, 2013; Jobe & White, 2006; Wagner, Newman, Cameto, Garza, & Levine, 2005). Research has shown that executive functioning skills are crucial for success and independence in college (Palmer, 2013; Rabin, Fogel, & Nutter-Upham, 2010; Miley & Spinella, 2010; Gropper & Tannock, 2009). College students with better problem solving skills, self-management skills, and self-advocacy skills report more positive academic and psychological outcomes than students with difficulties in these areas (Arthur, Shepherd, & Sumo, 2006; Chow, 2007; D’Zurilla & Sheedy, 1991; Garavalia & Gredler, 2002; Getzel & Thoma, 2008; Gil, 2007; O’Connor & Paunonen, 2007; Ridgell & Lounsbury, 2004; Robbins, Allen, Casillas, Peterson, & Le, 2006; Schmitt et al., 2009; Skowron, Wester, & Azen, 2004).

The proposed online class design and topics were selected based on a review of common elements from 29 pre-existing college support programs for students with ASD and evidence from research studies. The majority of syllabus topics for the online class were derived from successful curriculums for students with ASD; course topics related to executive functions were derived from the “Unstuck and On Target” curriculum (Cannon,
Kenworthy, Alexander, Werner, & Anthony, 2011), and course topics related to social
skills were derived from the “PEERS for Young Adults” curriculum and the “PEERS
Curriculum for School-Based Professionals” (Gantman, Kapp, Orenski, & Laugeson,
2011; Laugeson, 2014).

The second part of this project is an evaluation proposal. The proposed evaluation
will follow a feasibility study design (Orsmond & Cohn, 2015) and explore the feasibility
and acceptability of participation in an online course for college students with ASD. The
evaluation will also measure any changes in participants’ executive functioning, social
skills, self-determination, and life satisfaction.

**Key Findings**

Research conducted in the past 15 years suggests positive outcomes for college students
who participated in transition or support programs. College students from the general
population who participated in a first year experience course or attended college
orientation demonstrated positive academic, emotional, and/or social outcomes (Clark &
Cundiff, 2009; Conley, Travers, & Bryant, 2013; Goldfine, Mixson-Brookshire,
Hoermer, & Morrissey, 2011; Howard & Jones, 2000; Jamelske, 2009; Noble, Flynn,
Lee, & Hilton, 2007; Padgett & Keup, 2011; Padgett, Keup, & Pascarella, 2013; Pan,
Guo, & Bai, 2008; Pancer, Hunsberger, Pratt, & Alisat, 2000; Perrine & Spain, 2008-09;
Porter & Swing, 2006; Potts & Schultz, 2008; Salinitri, 2005; Young & Hopp, 2014).
Young adults with a disability who participated in self-advocacy interventions, such as
skills workshops and college programs, experienced increased self-awareness, increased
knowledge of legal rights, showed improved communication skills, improved leadership
skills, and increased academic success following program completion (Grenwelge & Zhang, 2012; Harrison, Areepattamannil, & Freeman, 2012; Milsom, Akos, & Thompson, 2004; Test, Fowler, Brewer, & Wood, 2005; Walker & Test, 2011; Strayhorn, 2011). Research regarding intervention for college students with ASD is limited; however, evidence indicates students with ASD who participated in intervention (i.e. a certificate program, video modeling, or a problem-solving seminar course) demonstrated increased interpersonal relationships, self-advocacy, independent living skills, emotional adjustment, social skills, and executive functioning skills (Hendrickson et al., 2013; Mason et al., 2012; Pugliese & White, 2014).

Preliminary outcomes from the 29 pre-existing college transition programs in the United States for young adults with ASD indicate participation in a support program is associated with academic, social, emotional, cognitive, and professional success for young adults with ASD (Alpert, n.d.; Autism in College, 2013; Bunn, 2012; Connecticut General Assembly, 2014; Garcia, 2012; Griffith, 2015; Landmark College, 2015; Marshall University, 2013b; Rowe, 2013; Wright State University, 2015; M. Nagler, personal communication, March 9, 2015; P. Lemerand, personal communication, March 10, 2015; C. Santucci, personal communication, March 24, 2015; R. Hansen, personal communication, March 12, 2015; S. Gardner, personal communication, March 11, 2015; C. Wenzel, personal communication, March 13, 2015).

To date, there are no key findings for this doctoral project, as the online course has not yet launched and the feasibility study has not yet been completed. However, based on current research findings, it is hypothesized that the online skills-based class for
students with ASD will be associated with improved executive function, social skills, self-determination, and life satisfaction. The outcomes of the feasibility study will guide changes to the course, with the aim to increase its acceptability and appropriateness.

**Recommendations:**

It is recommended that the topic of college support programs for young adults with ASD continue to be researched. It is also recommended that current college support programs begin or continue data collection and outcome reporting, in an effort to improve the quality of intervention and to expand this area of research.

**General Conclusions:**

College students from the general population benefit from participation in transition or support programs and there is promising preliminary evidence for college support programs that are specific to students with ASD. This doctoral project utilized evidence from research studies and current college support programs for students with ASD to propose an online class for college students with ASD and a course evaluation. This project will serve as a model for future support programs for college students with ASD, as it is deeply rooted in evidence-based practice. The project will contribute to the field of occupational therapy in the areas of autism research, occupational therapy’s role in postsecondary education, and the benefits of conducting feasibility studies. Most importantly, this project will fulfill a growing need for college students with ASD, with the goals of improving college students’ executive functioning, social skills, self-determination, and life satisfaction.
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Curriculum Vitae

PERSONAL

Name Amanda Julianna Matteo

Date and Place of Birth April 6, 1990
Providence, Rhode Island

Address 3945 Lyndhurst Dr., Apt 203
Fairfax, VA 22031
ajmatteo@gmail.com

FORMAL EDUCATION

M.S. Boston University, Boston, MA 1/14
Major: Occupational Therapy

B.S. Boston University, Boston, MA 5/12
Major: Therapeutic Studies

CREDENTIALS

Registered Occupational Therapist by the National Board for Certification in
Occupational Therapy (NBCOT)

LICENSED

Licensed Occupational Therapist, State of Virginia

POSITIONS HELD

2014 to date Occupational Therapist
Responsible for the assessment and treatment of out-patient
pediatric and adolescent occupational therapy clients in the areas
of sensory integration, fine motor skills, visual motor skills,
executive functioning, social skills, DIR/Floortime, and
neurodevelopmental treatment. The Children’s Therapy Center,
Springfield, VA.

2009-2013 Group Leader/Art & Cooking Instructor
Responsible for leading children with autism and emotional/
behavioral disorders in developing social skills and social
thinking at a therapeutic recreation center. Planned and taught
developmentally appropriate art and cooking activities for participants with a variety of disabilities; implemented adaptations and modifications as necessary. The Bridge Center, Bridgewater, MA.

2010-2013  Life Skills Instructor
Responsible for implementing age-appropriate social, motor, recreation, ADL, IADL, and self-regulatory activities for 11-year old child with autism in the natural environment. The Charles River Center, Needham, MA.

2011-2013  Course Assistant
Responsible for editing and formatting research material, preparing course slides, and performing clerical tasks. Boston University Occupational Therapy Department, Boston, MA.

2009-2012  Deans Host/Peer Counselor
Responsible for leading prospective and new student tours, facilitate parent question and answer sessions, and advise/mentor new students. Sargent College, Boston University, Boston, MA.

2011-2012  Personal Care Assistant
Responsible for assisting college students with ADLs, IADLs, monitoring blood glucose levels, and administering insulin. United Cerebral Palsy of Massachusetts (UCPMA), Boston, MA.

2010-2011  First Year Student Outreach Project (FYSOP) Staff Leader
Responsible for leading a group of 10-15 freshmen students in a community service immersion program in the Greater Boston Area. Boston University Community Service Center, Boston, MA.

2009-2010  Alternative Spring Breaks Coordinator
Responsible for planning and leading 10 Boston University students on an alternative spring break volunteer trip to Vital Bridges, an HIV/AIDS assistance program in Chicago, IL. Boston University Community Service Center, Boston, MA.
APPOINTMENTS OR ELECTED POSITIONS

2011-2013  Student Representative on the Committee of Academic Policies and Procedures, Sargent College, Boston University, Boston, MA.

2011-2012  President, Boston University Student Occupational Therapy Association (BUSOTA)

2009-2011  Treasurer, BUSOTA

SOCIETY MEMBERSHIPS

Boston University Scarlet Key Honor Society
Boston University Twiness Society
Boston University Graduate Women’s Club
Elks National Foundation Scholar Member

HONORS AND AWARDS

Scarlet Key Award  2012 Boston University
Twiness Award  2012 Boston University Sargent College of Health and Rehabilitation Sciences
Graduate Women’s Club Scholarship  2012 Boston University Women’s Graduate Club