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THE EFFECTS OF THE COMBINATION OF INTERVIEW PRACTICE IN A MIXED-  
REALITY ENVIRONMENT AND COACHING ON THE INTERVIEW PERFORMANCE OF  
YOUNG ADULTS WITH INTELLECTUAL DISABILITIES

by

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in the College of Education  
at the University of Central Florida  
Orlando, Florida

Summer Term  
2012

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## **ABSTRACT**

The purpose of this study was to identify if a functional relationship exists between a treatment combination of interview practice in a mixed-reality learning modality (TLE TeachLivE™) and the use of individualized coaching sessions on the interview performance of young adults with intellectual disabilities (ID). Student participants took part in live pre-interviews with the University of Central Florida (UCF) Office of Career Services measuring their current levels of employment interview performance. Student participants then engaged in interviews with avatars in the TLE TeachLivE™ lab. After each treatment interview in the lab, student participants received individualized coaching sessions to assist them in improving their interview performance. Interview performance was rated in order to determine if the combination of interview practice and coaching increased student participant performance as measured on an interview rubric. Finally, student participants participated in live post-interviews with Office of Career Services to determine if the two-step instructional training intervention resulted in the improvement of interview performance in a natural, live setting. In addition, student participants, parents/primary caregivers, and an employee expert panel participated in a survey rating the goals, procedures, and outcomes of the study.

Results indicated that the combination of interview practice in the TLE TeachLivE™ setting and coaching was associated with immediate gains in the interview performance of student participants. Student participant performance also improved in live interview settings. Social validity data indicated that using this combination intervention was both valuable and appropriate in preparing individuals with ID for employment interviews.

This research study is dedicated to my former students and to Dr. Patrick Hartwick.

The students I have met and worked with around the world inspire me. Thank you.

Dr. Hartwick was a close friend and confidant largely responsible for showing me how to be uncompromising in my vision and fearless in my mission. I have missed him many times along this doctoral journey. Thank you, Patrick, for our workouts, our service, and your example of passion and strength.

## **ACKNOWLEDGMENTS**

I am very, very thankful for so many of the people I have been able to work with during my time at the University of Central Florida. This includes Dr. Wilfred Wienke, Dr. Eleazar Vasquez, Dr. Lisa Dieker, Dr. Suzanne Martin, and Dr. Lyman Dukes. Thank you. I am grateful for the guidance, patience, and direction I have received from each of you. This research would also not have been possible with the financial support of Workforce Central Florida.

Thank you to the students who took part in this study. Carlitos, Jane, Elana, Anne, and Belle: you are amazing people and I am very lucky to have worked with you. Thank you to Dr. William Blank for his unwavering support of this research and the countless hours he spent working with me on this project. Thank you to Larry Desguin, Daniella Chavez, Amirica Nicholson, Janet Nunnelly, Stacey Hardin, and Morgan Russell for their incredible work as members of the research team. Simply put, this research could not have been done without your time and expertise.

To Dr. Marsha Glines: thank you for believing in me and trusting me to work in the program you built at Lynn University. I am forever grateful. Ms. Linda Alexander, Benie Harris, Dr. Rebecca Hines, Dr. Kim Spence-Cochran, Dr. Tony Waldrop, Dr. Jonathan McIntire, Dr.Carolynn Hopp, Dr. Karen Biraimah, Dr. Martha Lue-Stewart, Tracy McKinney, Selma Powell, Jacqueline Rodriguez, Carrie Straub, Krista Vince Garland, Christopher Wilkes, Ryan Carlson, Dr. Taylor Clements, Donna Leinsing, and the Education IT Office have all played a part in making my life

enjoyable during the last three years. This chapter in my life has been incredibly fulfilling and many of my fond memories will include each of you. Thank you.

Thank you to my family. My father is one of the most talented teachers I have ever known. He was the first one to show me that every child has strengths and should be encouraged to participate fully in the game of life. My mother is one of the most patient people I know- a teacher without the official title and a true servant to others. I hope to be like her someday. My grandmother continues to demonstrate that a genuine interest in a person may be the most important gift we can offer to them. I am so grateful to have you as family.

Thank you to my wife Suzanne who has supported me in countless ways throughout this journey. I could not have done this without your support, care, and love. I have learned many things from you. Thank you.

Finally, thank you to God for being the rock I can lean on every day. Thank you for being with me during all seasons of life.



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## **CHAPTER ONE: INTRODUCTION**

### Need for the Study

A fundamental obligation of any society is to prepare its young people to lead useful and successful lives as adults (Symonds, Schwartz, & Ferguson, 2011). Test et al. (2004) note that “one of the more significant transitions in a person’s life is being graduated from high school and pursuing a productive adulthood” (p. 16). Preparing students and their families to deal with the challenges of transitioning into postsecondary settings is a complex process for any student but it can be especially difficult for students with disabilities.

The difficulty of this transition is evidenced by the poor employment outcomes for students with disabilities in the United States. Youth with disabilities are less likely than the general population to work (57% vs. 66%) once they complete secondary schooling (Newman, Wagner, Cameto, & Knokey, 2009). The Bureau of Labor Statistics (BLS) (2012) reports that the highest percentages of unemployed persons come from two groups: high school dropouts and people with disabilities. In March, 2012, the percentage of individuals with disabilities who were unemployed was 15.2%, while the percentage of unemployed individuals without disabilities was 8.1% (BLS, 2012). Even if possessing a high school diploma, an individual with a disability is far less likely to have a job than someone without a disability.

Although 72% of students with disabilities who have been out of high school up to four years report having some form of work, only 58% of those are employed full-time and the majority of those who work full-time report having 2-3 part-time jobs (Newman et al., 2009).

Lack of employment opportunities in both full and part-time positions greatly impact the financial well-being of individuals with disabilities. Individuals with disabilities are three times as likely to live in poverty as those without disabilities and the median income for households that contain at least one child or adult with a disability is roughly half that of a household that does not contain one or more persons with a disability (Bjelland, Burkhouse, von Schrader, & Houtenville, 2009). These facts are alarming and have implications beyond the financial well-being of those with disabilities and their families. The effects of unemployment are much greater than lack of income as research has shown that unemployment also has a significant negative effect on happiness and life-satisfaction (Kassenboehmer & Hasisken-DeNew, 2009). In essence, employment has a great impact on quality of life.

### Problem Statement

Despite dismal postsecondary outcomes, public school personnel rarely deviate from unsuccessful methods of preparing students with disabilities for the transition from high school to adult life (Gregg, 2007; Trainor, 2005). These ineffective methods include a lack of providing students with the skills they will need to secure employment. For example, students with intellectual disabilities (ID) often struggle with social skills (Crites & Dunn, 2004). The development of social skills, including self-determination and self-advocacy, is important for all students with disabilities, including those with ID (Wehmeyer & Schwartz, 1998). Self-advocacy curriculums include content such as being assertive but not aggressive, communicating successfully in individual and group settings, negotiating, compromising, using persuasion, being a good listener, and navigating community services (Wehmeyer & Schalock, 2001). These skills

are vital in the job interview which places an individual in a situation that may expose deficits in many of these social skills. While the ability to self-advocate and “sell yourself” is vital in any interview setting for all individuals (Harrington, 1997; Hawkins, 2004; Kissane, 1997), training and preparation for those with ID may be especially important since the job interview highlights conversational and behavioral fluencies which the neuro-typical learner may find easier to master than an individual with ID.

New and potentially impactful avenues for working on social skills in settings such as the employment interview are becoming available with the development and introduction of certain types of technology. Mixed-realities are one such environment. Mixed-reality environments have provided opportunities for students with disabilities to actively participate in learning while controlling the learning process (Brooks, Rose, Atree, & Elliot-Square, 2002; Cobb & Sharkey, 2007) and to acquire specific metacognitive skills (Brooks et al., 2002; Cobb & Sharkey, 2007; Rose et al., 2000) in various settings. Using mixed-reality in education has focused primarily on preparing pre-service and existing teachers (Andreasen & Haciomeroglu, 2009; Dieker, Hynes, Hughes, & Smith, 2008). The use of mixed-reality environments may provide an alternative and efficient way for students to practice job interviewing skills that will provide opportunities for improved postsecondary outcomes.

### Purpose of the Study

The purpose of this study was to identify whether a functional relationship exists between a treatment combination of interview practice in a mixed-reality learning modality (TLE TeachLive™) with individualized coaching sessions and the interview performance of young



adults with ID. The research questions directed inquiry on how a sample group of young adult students with ID responded to the combination of interview practice in a mixed-reality environment and coaching sessions. The primary investigator used the two-step intervention in an attempt to improve the interview performance of students with ID. Specifically, students worked on: (a) overt behaviors, (b) verbal communication style, and (c) content of answers. Students took part in live pre-interviews with the University of Central Florida (UCF) Office of Career Services measuring their current levels of employment interview performance. They then participated in interviews with avatars (a graphical icon that represents a real-life user or citizen of an avatar world [Hudson-Smith, 2002; Talamo & Ligorio, 2000]) in the TLE TeachLivE™ lab. After each treatment interview in the lab, students received individualized coaching sessions. This two-step intervention continued for six treatment sessions. Finally, students participated in live post-interviews with Office of Career Services to determine whether this two-step instructional training intervention resulted in the improvement of interview performance in a natural, live interview setting.

### Research Questions

Specifically, this research study sought to answer the following questions:

1. Will the combination of interview practice in the TLE TeachLivE™ lab and coaching increase job interview performance for 18-22 year old student participants with intellectual disabilities as measured by an interview rubric?

2. Will interview skills, as demonstrated following the combination of interview practice in the TLE TeachLivE™ lab and coaching, transfer to a live simulated job interview for young adults ages 18-22 with intellectual disabilities?
3. How socially important do student participants, parents/primary caregivers, and employee experts rate the goals, procedures, and outcomes of this research study as measured by a survey?

### Methods

The first research question was addressed with a multiple probe across participants design using purposive sampling. Multiple probe designs “consist of data being collected intermittently during what is often referred to as a probe trial” (Gast, 2010, p.295). This design is appropriate for skills that cannot be unlearned (Gast, 2010; Kazdin, 1982) and the study employed intersubject replication across five participants. A multiple probe across participants design was selected in order to make the most efficient use of the virtual lab and to minimize potential decreases in student participant motivation. After selection of the participants and baseline performance was established, an intervention combining practice interviews and coaching sessions took place.

The second research question was answered through comparing individual scores on the pre and post interviews as recorded on the interview rubric. Before baseline and treatment sessions began in the TLE TeachLivE™ lab, student participants completed a pre-interview with the Office of Career Services at UCF. After the intervention concluded, a post-interview was administered and pre-post results were compared.

Finally, as a measure of social validity, surveys were given to student participants, parents/primary caregivers, and the employee expert panel in order to gather information about their perceptions and feelings on the usefulness of the two-step intervention consisting of practice interviews within TLE TeachLivE™ and coaching sessions. Upon exiting the intervention, student participants were also asked to participate in a social validity interview. The social validity interview was used to ascertain student participant opinions on the value of both steps of the intervention.

#### Definition of Terms

Avatar. An avatar is a graphical icon that represents a real-life user or citizen of an avatar world (Hudson-Smith, 2002; Talamo & Ligorio, 2000).

Coaching. Personal coaching is a relationship where professionals work with individuals to improve their functioning and performance while working toward a specific skill (Biswas-Diener, 2009).

College Transition Program (Mixed-Hybrid Model). Students participate in social activities and/or college academic classes (for audit or credit) and may also participate in classes with other students with disabilities (sometimes referred to as "life skills" or "transition" classes). Transition programs typically provide students with both educational courses and on or off-campus employment experiences (Hart, Grigal, Sax, Martinez, & Will, 2006).

Intellectual Disability. According to the American Psychological Association (APA), Intellectual Developmental Disorder is also referred to as Intellectual Disability.

A. Intellectual Developmental Disorder is characterized by deficits in general mental abilities such as reasoning, problem-solving, planning, abstract thinking, judgment, academic learning and learning from experience. Intellectual Developmental Disorder requires a current intellectual deficit of approximately two or more standard deviations in Intelligence Quotient (IQ) below the population mean for a person's age and cultural group, which is typically an IQ score of approximately 70 or below, measured on an individualized, standardized, culturally appropriate, psychometrically sound test.

AND

B. The deficits in general mental abilities impair functioning in comparison to a person's age and cultural group by limiting and restricting participation and performance in one or more aspects of daily life activities, such as communication, social participation, functioning at school or at work, or personal independence at home or in community settings. The limitations result in the need for ongoing support at school, work, or independent life. Thus, Intellectual Developmental Disorder also requires a significant impairment in adaptive functioning. Typically, adaptive behavior is measured using individualized, standardized, culturally appropriate, psychometrically sound tests.

AND

C. Onset during the developmental period (APA, 2011).

Interactor. Dieker et al. (2008) note:

An interactor is a person trained in acting, improvisation, and human psychology. They are renaissance artists who develop live, human-to-human, interactive story experiences.

They facilitate a non-actor's natural capacity to play in a virtual context. Interactors

develop a character and then play out that character's behaviors based on family history, ethnic and political identity, living environment, personal motivations, friendships, and so on. In the mixed-reality classroom the interactor provides the deep, human, interpersonal behaviors that artificial intelligence is still incapable of producing. Each time the student works with a different virtual character, the interactor "jumps into the skin" and plays the nuances of that character, giving it life and personality. This use of an interactor is vital to students feeling that the experience is real rather than a game. (p. 11)

Mentoring. A process whereby an experienced individual transmits knowledge to a protégé (Blechman, 1992). Mentoring is a dynamic, reciprocal, formal or informal relationship that focuses on personal and/or professional development. A mentor is a sounding board and guide (Foster-Heckman, Brown, & Roberts, 2007).

Mixed-Reality Learning Environments. Mixed-reality (MR) refers to a spectrum that extends from real to virtual experiences, with augmented reality and augmented virtuality bridging the two (Milgram, Takemura, Utsumi, & Kishino, 1994).

Self-advocacy. Self-advocacy can be defined as the “ability to recognize and meet the needs specific to one's... disability without compromising the dignity of oneself or others” (Brinckerhoff, 1994, para.3).

Social Skills. Social skills are defined as the set of skills people use to interact and communicate with one another including such things as social perceptiveness, coordination, persuasion, negotiation, instructing, and helping others (Mumford, Peterson, & Childs, 1999).

TLE TeachLivE™. A learning environment in which an interactor guides the behaviors of one (or more) of the virtual characters (Dieker, Lignugaris-Kraft, Hynes, & Hughes, 2011).

Transition. When applied to secondary-age students, refers to that period of time during which students leave school and begin to assume adult roles in their communities (Halpern, 1994).

Virtual Learning Environments. Virtual learning environments are computer-generated, three dimensional environments designed to react in real time to the actions and/or motions of the individuals within the environment (Cobb, 2007; Schmidt, Laffey, Stichter, Goggins, & Schmidt, 2008).

## **CHAPTER TWO: LITERATURE REVIEW**

### Introduction

This chapter provides a summary of the literature on the purpose, process and value of transition education for individuals with disabilities with specific research on defining an intellectual disability (ID) and the status of postsecondary employment for this population of individuals. Literature is provided that presents evidence of the current educational programming for individuals with ID both in school and in the workplace. A particular emphasis is placed on the importance of social skills and the role these skills play in interviewing and job performance while also reporting on employer attitudes towards individuals with ID. The chapter concludes with a focus on teaching social competence through coaching/mentoring and by examining the use of technology, including mixed-reality learning environments, to prepare individuals with ID to gain employment.

### Transition

In an educational context, the term transition typically includes completing school, gaining employment, participating in postsecondary education, contributing to a household, participating in the community, and experiencing satisfactory personal and social relationships (Wehman, 2006). As Test and colleagues (2004) note, “one of the more significant transitions in a person’s life is being graduated from high school and pursuing a productive adulthood” (p. 16). However, the term transition is also commonly used to refer to special education programming.

In a position paper for the Division for Career Development and Transition (DCDT), Halpern (1994) suggested:

The word “transition” as it applies to special education and rehabilitation programs, has developed two distinctive meanings within the United States literature. In its generic sense, transition refers to that period of time during which students leave school and begin to assume adult roles in their communities. In recent years, however, the term has also been adopted as a label for a specific program of federal support that was designed to enhance transition programs and services for adolescents and young adults with disabilities. (p. 194-195)

The transition from school to adulthood can be a particularly difficult time for all students, with unique challenges present for adolescents with significant disabilities (deFur & Patton, 1999; Schall & Wehman, 2008; Sitlington, Neubert, & Clark, 2006). This struggle is documented by Kochhar-Bryant and Greene (2009), who state, “Young people with disabilities lag behind their peers without disabilities on every measure of success—graduation rates, diploma achievement, employment, postsecondary education participation and completion, and independent living” (p. 7). The difficulties of transitioning for this population may be because the change from secondary to postsecondary environments represents a move from a protected environment, where many of the student’s needs are being met, to an environment where students’ needs are only met when they speak up or self-advocate (Wehmeyer, 1997). Self-advocacy is part of a larger set of verbal and non-verbal skills commonly referred to as social skills (Matson, Matson, & Rivet, 2007; Smith & Matson, 2010). Teaching social skills, including self-advocacy, to secondary students with communication, socialization, and



behavioral deficits is critical in order to ensure successful transitions from secondary to postsecondary environments (Andrews & Rose, 2010; Iovannone, Huber, Dunlap, & Kincaid, 2003; Johnson, Douglas, Bigby, & Iacono, 2010). Social skills, in turn, make up a larger proficiency called social competence (Greenspan & Granfield, 1992). One group of individuals that struggle with social competence and the transition to postsecondary environments are those who have ID (Baer et al., 2011; Carter, Austin, & Trainor, 2011; Carter, Trainor, Owens, Sun, & Swedeen, 2009; Crites & Dunn, 2004; Grigal, Hart, & Migliore, 2011; Kleinert, Harrison, Fisher, & Kleinert, 2010; Newman et al., 2009; Verdonschot, de Witte, Reichrath, Buntinx, & Curfs, 2009). The reasons for this struggle may have to do with the characteristics that define intellectual disability.

### Intellectual Disability

Intellectual developmental disorder is more commonly referred to as intellectual disability (ID) and was formerly recognized as mental retardation (MR) (Schalock, Luckasson, & Shogren, 2007). As defined by the American Association of Mental Retardation (AAMR), the original definition of MR focused on characteristics within individuals including their intelligence quotient (IQ) (Leonard & Wen, 2002). The definition and classification of MR was debated for several decades and inconsistency in early definitions and labeling may have been due to the great differences in the reported prevalence of MR due to the constant revisions and variations in some major definition and classification systems (Leonard & Wen, 2002). For example, Schroeder, Gertz, and Velazquez (2002) found that labels such as idiot, imbecile, and moron were in the past given to students with ID. Goodey (2005) states that some of the terms used to

describe the characteristics of ID include idiocy, feeble-mindedness, mental deficiency, mental disability, mental handicap and mental subnormality. In an effort to more specifically define MR, the AAMR devised an extensive classification system that included a 'dual criteria' approach (Greenspan, 1999). Included in these criteria were "subaverage general intelligence functioning which originates during the developmental period and is associated with impairment in adaptive behavior," (Heber, 1961, p.499).

Over time, the classification of individuals with ID, "evolved to emphasize an ecological perspective that focuses on the person–environment interaction and recognizes that the systematic application of individualized supports can enhance human functioning" (Schalock et al., 2007, p. 117). In order to define the disability more clearly and more fairly, Luckasson and Reeve (2001) discussed the factors that need to be considered when using terminology:

First, the term should be specific and consistent. Second, in a variety of settings and among different people, the term should be used the same way. Third, the exchange of ideas, messages, and information that is the essence of communication should be enhanced by the use of the term. Fourth, the purposes of the term should be clearly expressed and agreed upon. Fifth, it should reflect an essential component of naming a group of people, which is to communicate important values, especially towards the group.

(p. 48)

In the last decade Luckasson and Reeve's fifth aspect of the naming process had many individuals asserting that the term *mental retardation* does not convey dignity or respect and may result in the humiliation of those identified (Finlay & Lyons, 2005; Schalock et al., 2007). The term, *intellectual disability*, is preferable for a number of reasons including that it (a) aligns

better with current professional practice; (b) is less offensive to persons with the disability; and (c) is more consistent with international terminology (Schalock et al., 2007).

Intellectual disability can be summarized as significantly sub-average general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period that adversely affects a child's educational performance (APA, 2011). The measured IQ of an individual with ID is approximately 70 or below (APA, 2011). Schalock et al. (2007) conducted an analysis of the definitions of ID/mental retardation used over the last 50 years and results demonstrate that the three essential elements— limitations in intellectual functioning, behavioral limitations in adapting to environmental demands, and early age of onset—have not changed substantially. The term intellectual disability will be used whenever possible in this document and as a synonym for mental retardation.

### *Intellectual Disability and Employment*

One of the major challenges for individuals with ID is employment. Although entry into the world of work is a marker of postschool success in the United States, students with severe disabilities, including ID, often leave high school without the skills, experiences, and supports that lead to meaningful employment (Carter et al., 2011). Employment is also a major aspect of social integration into the community (Ju, Zhang, & Pacha, 2012). Gaining employment not only provides an individual with a meaningful activity and related income, but also has the potential to positively affect their skills, self esteem, social competency, autonomy and sense of well being (Eggleton, Robertson, Ryan, & Kober, 1999).

To evaluate the impact of employment on quality of life for individuals with ID, Eggleton et al. (1999) compared the quality of life of a group of individuals with ID who had secured employment (N=25) with that of a matched sample of individuals (N=25) seeking employment through a vocational rehabilitation agency using Schalok's "Quality of Life Questionnaire". This questionnaire measures the domains of interpersonal relations, social inclusion, personal development, physical well-being, self-determination, material well-being, emotional well-being, and rights by surveying individuals and, if necessary, surveying two raters who know the individual well (Schalock, 2004). Questionnaire results from Eggleton's study indicated that employed individuals expressed a statistically significant higher quality of life than their unemployed counterparts. The authors suggested that "providing open employment for people with ID not only provides an economic benefit to the community, but it also benefits the individuals themselves by contributing to a higher quality of life" (Eggleton et al., 1999, p.105).

More recently, Kober and Eggleton (2005) confirmed the findings of Eggleton's study by interviewing 117 people with ID employed in either open or sheltered employment. The participants were also surveyed using Schalock's Quality of Life Questionnaire. Results demonstrated that, for those participants with high functional work ability, competitive employment led to statistically significant higher quality of life scores. Achieving a higher quality of life may be because secured employment also plays a significant role in an individual's overall social status and community participation (Jahoda et al., 2009). In a longitudinal study, Jahoda et al. (2009) demonstrated the importance of employment as related to community participation by interviewing 35 individuals with ID (mean IQ= 66.9) recruited from supported employment agencies. Participants were interviewed when starting new jobs and again 9–12

months later. Analysis of the semi-structured interviews at the start of employment indicated that the participants perceived continuing benefits from entering mainstream employment, including more purposeful lives and increased social status. At the follow-up interview, the majority of participants felt that work was good for both their self-worth and for social interactions. The authors reported

Most of the reported experiences of moving into work were very positive, bringing a greater sense of purpose and self-confidence, a feeling of autonomy and financial control, and an enjoyment of meeting people in the work place. (p. 425)

However, continuing fears were also expressed about having a fragile position in the workplace, and a quarter of the authors' sample lost their original jobs by the follow-up interview. Jahoda and colleagues (2009) found that employment brought considerable perceived benefits while, in a few cases, reinforcing the limits of the participants' abilities and marginal social status.

Further demonstrating the lack of quality of life for unemployed individuals with ID, Verdonschot and colleagues (2009) conducted a review of articles published between 1996-2006 on individuals with ID, their social networks, and community participation. Domains of community participation studied included: (1) domestic life; (2) interpersonal interactions and relationships; (3) major life areas; and (4) community, civic and social life. Of 2,936 initial studies reviewed, 23 quantitative studies eventually met the selection criteria and were included in the study. Among other empirical findings, people with ID were less likely to be involved in community groups, and their leisure activities were mostly "solitary and passive in nature" (p. 303), perhaps due to their lack of employment, as many of the individuals with ID investigated were also unemployed and/or underemployed.

Perhaps most telling of the significance that employment can have on individuals with ID is the effect of losing a job. Banks, Jahoda, Dagnan, Kemp, and Williams (2010) interviewed 49 people with ID within three months of entering supported employment and the authors interviewed participants again 9–12 months later. Data collection included interviews with the individuals, guardians or caretakers, and employers as well as the participants' completion of a self-report measure on depression and anxiety as well as a self-report measure of quality of life. In the second interview, 13 of the 49 jobs had been lost or removed for a variety of reasons. While the analysis of results measuring quality of life, anxiety and depression showed no effect for loss of employment, the authors reported that in-depth interviews with participants indicated that job loss had a traumatic impact on those affected. The authors found that many individuals who had lost their job felt they were “left with reduced income, too much time on their hands, and experienced feelings of failure and hopelessness” (Banks, Jahoda, Dagnan, Kemp, & Williams, 2010, p.350). In addition to providing evidence of the importance of employment, results may indicate that certain measures are not sensitive enough to indicate the impact of employment.

Although employment is an important factor in overall quality of life, most individuals with ID struggle to find jobs after completing secondary schooling and many begin a lifetime of being unemployed or underemployed. In a recent study of postschool employment outcomes for high school graduates with developmental disabilities (including ID) receiving long-term supports, Simonsen (2010) found that only 39.9% of the 338 graduates in the study were engaged in paid work one year after exiting high school. Of those who were working, only 14.2% were employed in positions where they completed job tasks individually and were paid at least

minimum wage. The remaining 204 individuals were engaged in tasks with support personnel and received subminimum wages.

In addition, Carter et al. (2011) conducted a secondary analysis of the National Longitudinal Transition Study II (NLTS II) examining how student, family, and school factors were related to employment during the two years following high school for those with ID. In a stratified random sample study that included 500 school districts and 40 special schools, Carter et al. (2011) found that only 26% of young adults with severe disabilities (including ID) were working when contacted up to two years after leaving high school. Study participants who were employed worked an average of 21 hours per week and were paid an average of \$6.15/hr. In addition, 43% of employed young adults worked in jobs where most of the other workers also had a disability. The authors noted that having held a paid, community-based job while still in high school was strongly correlated with post-school employment success. Other factors associated with increased odds of employment for those with severe disabilities included being male and having additional independence in self-care, higher social skills, more household responsibilities during adolescence, and higher parent expectations related to future work. Thus, the study analyses seems to indicate that increased student responsibility and parental expectations in secondary settings can lead to better postsecondary outcomes.

The research findings by Carter et al. (2011) are bolstered by research showing that expectations play a large part in postsecondary outcomes. In fact, poor employment outcomes may be due to low expectations from individuals, parents, and support personnel for the competitive employment of individuals with ID (Grigal et al., 2011). Also analyzing variables from the NLTS II database, Grigal et al. (2011) compared more than 520 students with ID to

students with other disabilities on many factors including postsecondary education and employment outcomes. Students with ID were more likely to have sheltered and supported employment goals than competitive employment goals compared to students with other disabilities. The authors also found that more than half of students with ID (54%) were not working, and 29% had not worked since high school. While further analysis is needed on the correlation between expectations (Grigal et al., 2011) and success (Carter et al., 2011), the researcher did not find additional studies related to the power of expectations on outcomes for individuals with ID.

In summary, employment is an important indicator of improved quality of life in the United States and students with severe disabilities, including ID, often leave high school without the skills, experiences, and supports that lead to meaningful employment (Carter et al., 2011). Moreover, employment plays a large part in increasing community engagement and social interaction for all individuals including those with ID (Eggleton et al., 1999; Kober et al., 2005; Verdonschot et al., 2009). Unfortunately, individuals with ID struggle to find employment both immediately after high school and throughout their lives (Carter et al., 2011; Newman et al., 2009; Simonsen, 2010).

### Educational Programming

In addition to low expectations for those with ID, poor employment outcomes may also be due to poor preparation programs (Anderson, 2011; Hendricks, 2010). In order to effectively prepare students for employment, it may be necessary to teach specific career and developmental skills that will can be utilized in postsecondary environments (Morningstar, 1997; Morningstar,



Turnbull, & Turnbull, 1995). Most vocational education and employment preparation programs for all students include job-search skills (Benz, Yavonoff, & Doren, 1997), career education classes (Colley & Jamison, 1998), and participation in work-study (Bear, Kortering, & Braziel, 2006; Fabian, 2007) and there is value in this programming. In fact, one-in-five (22%) currently employed people with disabilities report that training enabled them to begin or continue working. Ten percent attribute being able to work to the benefits of assistive technology, an accommodation, or telecommuting (Kessler, 2010). However, training should include both the hard skills (specific job tasks) and the soft skills (e.g. self-advocacy, collaboration) that allow students to both gain and retain employment (Hendricks, 2010). The focus for educators when planning for employment should not necessarily include multiple layers of training but rather that the right training is provided (Anderson, 2011).

To determine what exactly should be included in transition preparation programs, Landmark, Ju, and Zhang (2010) replicated Kohler's 1993 comprehensive review and analysis of transition best practices by dividing studies from the years 1991-2009 into substantiated and implied best practices based on the existence of empirical evidence. A total of 29 documents were collected that substantiated best transition practices. Employment preparation and paid or unpaid work experience were the two most substantiated practices for predicting post-school employment for students with disabilities. More specifically, Cobb and Alwell (2009) conducted a systematic review of 31 transition intervention studies for 859 youth with a wide variety of disabilities. The authors found that students with identified special needs, such as those with ID, benefit from less time spent on homework catch-up and more time spent on cognitive and meta-cognitive strategy instruction based on students' interests and talents. In fact, the authors report

that student-focused planning by both educators and vocational agencies is vital to understanding what skills each student needs individually. Once the needs are established, it is important that cognitive and meta-cognitive strategy instruction is used to teach the social skills that individuals with ID clearly need to be successful in the workplace and in life. However, as the authors note, “the need for flexibility in creating and providing individualized supports to youth with disabilities, rather than simply fitting them into existing service continuum options” (Cobb & Alwell, 2009, p. 79) is vital when planning and implementing interventions for individuals with ID. In short, individuals need to be taught skills based on their ability to think independently about strategies for success and their corresponding needs.

### Social Skills Training

Social skills are specific measurable interpersonal behaviors such as establishing eye contact, smiling, or taking turns that increase the probability of obtaining positive reinforcement or minimize the likelihood of negative reinforcement (Jacobson, Mulick, & Rojahn, 2007; Lecavalier & Butter, 2010). In a recent study by Ju, Zhang, and Pacha (2012), social skills were found to be highly valued by employers in the service/business industry. In fact, the authors noted that employers “valued personal attributes and nonspecific job skills over technical skills... prevocational and vocational training curricula should emphasize positive work attitudes, habits, and social skills” (Ju et al., 2012, p.36). Thus, it is clear that students with ID need basic work skills training to gain employment but such training without social skills instruction may not provide for sustained employment.

Social skills deficits are a critical component of ID and are related to countless significant outcomes for this population including gaining and maintaining employment (Lecavalier & Butter, 2010). People with disabilities report that vocational success is not contingent solely on completing job duties but often lies in the social aspect of employment (Hurlbutt & Chalmers, 2004; Muller, Schuler, Burton, & Yates, 2003). While the ability to fulfill job duties is one of the factors important to work success, social skills and relationship building can be just as important (Black & Langone, 1997; Butterworth & Strauch, 1994; Huang & Cuvo, 1997; Lecavalier & Butter, 2010). Successfully employed adults with and without disabilities need to possess proficient social skills (Benz et al., 1997; Goleman, 1997; Hudson, Schwartz, Sealander, Campbell, & Hensel, 1988; Lecavalier & Butter, 2010; Mithaug, Horiuchi, & Fanning, 1985). Proper social abilities, in addition to other factors, can lead to enhanced social inclusion and better outcomes both in and out of work settings (Nota, Ferrari, Soresi, & Wehmeyer, 2007; Nota & Soresi, 2004).

There is substantial evidence that social skills and social competence are considered the primary barriers to gaining and maintaining employment for individuals with disabilities. Greenspan, Shoultz, and Weir (1981) report “it is an inability to interact effectively with other people, rather than an inability to operate machines or perform job tasks that often causes many mentally retarded adults to get fired from competitive jobs” (p. 23). Chadsey-Rusch (1992) makes the same point: “a major reason for job loss for persons with mental retardation may be their lack of appropriate social skills” (p. 405). Research has shown that workers with ID generally do not partake in workplace small talk (Holmes, 2003), have a personal social network at work (Storey, Rhodes, Sandow, Loewinger, & Petheridge, 1991), engage in appropriate

conversations (Parent, Kregel, Metzler, & Twardzik, 1992), or connect during workplace banter (Holmes, 2003). However, despite these deficits, individuals with ID are aware of the need for good social skills as evidenced by the fact that they express concern about not only securing employment but also about being socially isolated in the workplace (Lindsay, 2011).

Individuals with ID also report that social skills and social interactions in the workplace affect their own motivation to work (Andrews & Rose, 2010). During interviews with eight males and two females aged 18-22 with mild ID, Andrews and Rose (2010) found that participants with ID felt more anxious about job tasks when perceiving judgments of their social skills by others. The researchers also found that, from introducing themselves to the staff to performing the job tasks, students were concerned about social interactions. Andrews and Rose (2010) noted that perceived task competence was an important factor in employment motivation since participants' confidence in their abilities affected whether or not they felt able to do certain jobs. However, participants' confidence in their abilities to complete the job tasks was secondary to the social aspects they valued in the workplace and how that effected their motivation to work.

To learn how to improve the social interactions of individuals with ID, Johnson et al. (2010) performed a case study on the interactions of an adult with severe ID, moderate ASD, and epilepsy during her normal daily routine. The participant's social network of 14 members was identified and interviewed. Data were analyzed using a grounded theory approach and the researchers found that social interactions for people with severe ID can be challenging. The authors suggest a focus on learning more about developing social interactions for those with ID. The authors specifically suggested that educators and service providers "take a more direct role in practicing person-centered approaches to promote relationship building" (p. 185).

The value of effective social skills and social awareness in the workplace for those with ID cannot be overstated (Andrews & Rose, 2010; Greenspan et al., 1981; Johnson et al., 2010; Storey et al., 1991). Researchers concerned with the needs of workers with ID have noted the lack of materials which examine the skills and interventions needed to teach social awareness in the specific workplaces where these workers typically find employment (Black & Langone, 1997; Huang & Cuvo, 1997). For example, while evidence suggests that social skills as measured by a structured interview can predict job performance in team settings for all adults (Morgeson, Reider, & Campion, 2005) no research was found regarding interventions for the interview experience or the specific training that must occur for individuals with ID to improve their own interview performance.

### Workplace Attitudes

In addition to poor transition preparation, employer attitudes effect the ability of an individual with ID to gain employment (Eigenbrood & Retish, 1988; Hernandez, 2000; Millington, Szymanski, & Hanley-Maxwell, 1994; Schloss & Soda, 1989; Wilgosh & Skaret, 1987). Millington et al. (1994) found employers had lower expectations of workers with ID in comparison to workers without ID for entry level positions. Furthermore, Wilgosh and Skaret (1987) reported that a discrepancy existed between employers' expressed willingness to hire applicants with disabilities and their actual hiring. Eigenbrood and Retish (1988) reported that 87% of their sample of employment managers expressed a willingness to hire people with disabilities but only 32% of the sample actually employed such a worker. Most recently, Hernandez (2000) conducted a review of 37 research studies and found a continued contradiction

between employers' attitudes and their practices. Specifically, employers continued to express positive general attitudes toward workers with disabilities but tended to be more negative when their own specific attitudes towards workers were assessed. The contrast between attitude and practice is best exemplified by the fact that employers' expressed a willingness to hire applicants with disabilities but their statements still exceeded their actual hiring practice. Perhaps most unfortunate for those with ID, Hernandez found that workers with ID were viewed more negatively than workers with other disabilities.

One theory for negative attitudes towards individuals with ID may be due to the management's expectations for higher level social abilities of individuals with ID. Schloss and Soda (1989) conducted a study on employer attitudes towards those with ID by surveying 80 business managers in the upstate New York area. The managers had, on average, almost 15 years leadership experience. The researchers separated managers into four groups and provided them with two sets of resumes: one for a normal 18 year-old student and one for an 18 year-old with an ID. After conducting a factorial analysis of the results of the survey and conducting post-survey discussions with the managers, the researchers found that the pessimistic views managers had about students with ID was not based on their beliefs about task or specific job performance. Rather, "many suggested that the youth would not be able to perform socially. The managers were particularly concerned with the youth's ability to "interact with coworkers, customers, and management" (p. 131).

### Social Skills Training in the Workplace

Part of the reason for poor employer attitudes towards individuals with ID is that interpersonal workplace interaction provides many challenges for these workers (Holmes & Fillary, 2000). Despite these challenges, social skills training throughout work placement can improve the management of interpersonal relationships engaged in by individuals with ID (Hughes, Killian, & Fischer, 1996; Schloss & Wood, 1990). Specifically, the combination of “natural supports” (i.e., helpful co-workers) and a considerate, planned design for each individual in the workplace appears to be beneficial when developing the social skills needed to improve employment outcomes (Claes, Van Hove, Vandeveld, van Loon, & Schalock, 2011; Hagner, Rogan, & Murphy, 1992; Huang & Cuvo, 1997).

In a study on social interactions in the workplace, Lee, Storey, Anderson, Goetz, and Zivolich (1997) observed 30 employees at Pizza Hut to compare the effects of the job coach model and coaching on social integration for individuals with ID. The job coach used the traditional model of direct instruction for training and retraining job tasks. The coaching model used natural supports to provide training on both job tasks and social skills in the workplace. The study observed 13 men and 17 women working at least 20 hours per week. After one year of observation, the study found that employees with severe disabilities trained using the coaching model of natural supports and mentoring had more interactions with nondisabled coworkers than those trained using the job coach model of direct instruction.

In another study of the social interactions of those with ID in the workplace, Holmes and Fillary (2000) analyzed over 500 interactions and 350 hours of tape-recorded workplace small

talk collected in various New Zealand workplaces including workplaces employing individuals with ID. The authors note that

“It is clearly crucial for workplace success that those with intellectual disabilities acquire the sociolinguistic skills which will enable them to establish good relations with co-workers. An attractive and outgoing social manner can have a major impact in predisposing co-workers positively, and can even over-ride irritation when tasks are not done with maximum efficiency.” (p. 288)

In fact, the authors found it particularly useful for individuals with ID to:

1. Practice automatic and brief responses.
2. Practice extending small talk.
3. Practice spotting the errors made when engaged in small talk (p. 288)

The importance of social ability is critical to success for any person including those with ID (Holmes & Fillary, 2000). Employers report a willingness to hire individuals with ID but further examination indicates that hiring practices do not reflect their perceived willingness (Eigenbrood & Retish, 1988; Hernandez, 2000; Wilgosh & Skaret, 1987). Even if hired, employers have lower expectations of individuals with ID (Millington et al., 1994). Lower expectations are not based on job task performance but on the ability to interact with others socially in the workplace (Schloss & Soda, 1989). One strategy that has been shown to increase social skill performance in the workplace is coaching and practicing social skills before employment interactions begin (Holmes & Fillary, 2000).



## Interviewing

Researchers have concluded that the job interview presents a situation that highlights the importance of social skills. In organizations around the world, employment interviews continue to be one of the most frequently used techniques to evaluate candidates for employment (Macan, 2009). Goleman (1998) presented this example about social skills and interviewing:

Penn was a brilliant and creative student, an exemplar of the best Yale had to offer. The trouble with Penn was he knew he was exceptional – and so was, as one professor put it, “unbelievably arrogant.” Even so, he looked spectacular on paper. When he graduated, Penn was highly sought after. He got a lot of invitations for job interviews. But Penn’s arrogance came across all too clearly; he ended up with only one job offer from a second-tier outfit. Matt, on the other hand, wasn’t as academically brilliant. But he was adept interpersonally. Everyone who worked with him liked him. Matt ended up with seven job offers out of eight interviews and went on to success in his field, while Penn was let go after two years at his first job. Penn lacked – and Matt had – emotional intelligence. (p. 3)

Goleman’s example speaks clearly to the need for social competence in securing and maintaining employment. Rosenfield (1997) reports that, during job interviews, self-advocacy and good social skills are vital as the interviewee tries to “sell oneself” in order to gain employment. Fabian and Leucking (1995) point out that the ability of the candidate to highlight their own personal skills (e.g. openness, flexibility, willingness to take risks) is desired by employers, particularly for those individuals who may have very limited, or no, previous job experience. Explicit skill development may help students demonstrate competent social skills in an interview setting.

Although Hall, Sheldon-Wildgen, and Sherman (1980) report that a number of research studies have described programs designed to teach people the skills required to find and apply for a job, most of these studies were conducted with people of average or above-average intelligence such as students (Braukmann et al., 1974), those from economically disadvantaged backgrounds (Barbee & Keil, 1973), psychiatric patients (Bell & Weinstein, 2011; Furman, Geller, Simon, & Kelly, 1979; Kelly, Laughlin, Claiborne, & Patterson, 1979) or those with a combination of mental, physical, and emotional disabilities (Venardos & Harris, 1973). Venardos and Harris' (1973) research took place in a rehabilitation center where the participants were selected based on their perceived lack of social ability. As the authors report, "their disabilities included physical, emotional, and/or mental handicaps," (Venardos & Harris, 1973, p. 365). Unfortunately, the reported disabilities were not described further which make it difficult to analyze data from the study even though it was done on individuals with disabilities.

Two studies have examined interview training for individuals with ID. Grinnel and Lieberman (1977) conducted one study with 24 participants (14 female, 10 male) whose average IQ score was 65.4. In this research study, a total of seven skill areas were grouped into three domains entitled attending skills (eye contact, posture, minimal encourage, and verbal follow), questioning skills (open and closed-ended questions), and reflection skill (reflection of content). Participants were assigned to one of four groups (three experimental groups and one control group) and received video modeling and video feedback of their interview performance. Pre and post-test scores demonstrated significant improvements in eye contact and posture after video modeling and feedback. However, no significant statistical differences were found in the other skill areas based on their pretest and posttest scores.

Additionally, Hall, Sheldon-Wildgen, and Sherman (1980) conducted a multiple baseline across behaviors study on employment interview training for those with ID. In the study, the research team gathered six female participants ages 19 to 41 with a mean IQ of 61 for interview training. Interview training consisted of three types of skills:

- (1) Office Skills, which included introducing oneself to a receptionist, stating one's purpose for being there, and following directions;
- (2) Application Skills, which involved filling out standard job application forms; and
- (3) Interview Skills, which included good posture, appropriate voice tone and rate, and asking and answering questions appropriately. (p. 434)

The study first conducted pre-training probes in the three areas to provide a comparison when generalizing post-training. Four methods were used to teach the skills: instruction and providing rationales, modeling, role playing, and constructive feedback. The researchers found that all methods led to improved performance within the three domains. The degree of improvement varied across participants and skill domain. Positive results were obtained in the interview skills area even though the results were “less dramatic than the other areas” (p. 441). Additionally, data from the generalization evaluations demonstrated that, although there was some decline in performance in the generalization probe as compared with the last regular probe interview, the performance levels for three of the participants in the study were still above pre-training levels.

Although the literature on the relationship between social competence and success in securing employment is extensive in various areas, these two studies are two of the only research based reports found that report specifically on securing employment and the importance of social skills in the interview process for individuals with ID. While it has been demonstrated that social

skills are an area that individuals with ID struggle with and that employers are greatly concerned about when hiring this population, little has been documented that details interview training for individuals with ID. Moreover, individuals with ID understand that they are “being judged at employment interviews” and that the interview is seen as a reflection of their social skills (Andrews & Rose, 2010, p.242). This concern highlights the need for training with interview techniques during employment preparation for individuals with ID (Andrews & Rose, 2010).

### Teaching Social Skills and Social Competence

Educators should look for ways to develop social skills and this goal should take on the same priority as content area development (Boyatzis, Stubbs, & Taylor, 2002). Skills such as collaboration are as important as content-driven knowledge in postsecondary settings (Goleman, 1998; Partnership, 2011; Weisinger, 2000). In fact, Goleman (1997) has indicated that emotional intelligence and social skills can matter twice as much as IQ or technical skills in job success for all individuals. Although combining conversational practice, coaching, and on-the-job practice of what has been learned has proved to be a successful combination when focusing on social skill development for students with ID (Holmes & Fillary, 2000; Lee et al., 1997), it is particularly challenging for teachers of students with disabilities to integrate the development of social skills competencies into the curriculum.

Greenspan and Granfield (1992) developed a model of social competence that may explain why traditional social skills training programs have not resulted in increased social competence and employment outcomes for individuals with ID. The authors state that practical intelligence and social intelligence make up the two intellectual aspects of social competence.

Social intelligence is made up of social skills and social awareness. Traditional social skills training including modeling, consequence management, peer-mediated strategies, and self-management may increase social skills but do not necessarily increase social competence. To effectively increase social competence and, as a result, performance in an interview setting, interventions must address the social-cognitive abilities of the individual with ID (Siperstein, 1992).

In a meta-analysis comparing two intervention strategies for teaching social skills to individuals with ID in the workplace, Soto, Toro-Zambrana, and Belfaire (1994) defined social-vocational competence as including: (a) engaging in appropriate behavior, (b) using social language, (c) caring for appearance, and (d) good hygiene. One of the strategies used in this comparative analysis, behavior training, consisted of developing a rationale for a behavior, modeling the behavior, practicing the behavior, self-managing the behavior, and providing feedback. The alternative strategy, cognitive processing, consisted of teaching generic rules for social interactions which can be adapted to different environments and across different social skills. The authors found that both behavior training and cognitive processing strategies can lead to individuals with moderate to severe ID performing targeted social skills more effectively.

### *Coaching and Mentoring*

Important to the development of behavior training and cognitive processing is coaching and/or mentoring. Grant (2003) reports that behavior can be modified and metacognition can be increased through life coaching (Grant, 2003). Life coaches facilitate an individual's development much like a mentor but the focus is on the individual's own self-regulation (Grant,

2003). While mentors can be described as wise advisers and teachers for those with disabilities (Daughtry, Gibson, & Abels, 2009), coaches focus on helping an individual discover the answer themselves instead of providing an answer for the individual (Bearwald, 2011; Parker & Boutelle, 2009). Coaches use mentoring techniques as coaching is an evolving, reciprocal relationship between two people that focuses on personal and professional development (Foster, Heckman, Brown, & Roberts; 2007). One of the mentoring techniques that coaches use is to act as a “sounding board and guide. Mentors provide perspective, resources, and ask thought-provoking questions” (Foster, Heckman, Brown, & Roberts; 2007, p.2). Coaches serve in a variety of capacities such as listener, guide, supporter, encourager, role model, advocate, ally, and helper. For the purposes of this research study, mentoring and coaching are used interchangeably.

One difference between coaching or mentoring and didactic models of instruction is best described by Parker and Boutelle (2009). The authors describe didactic teaching models as those used to explain the correct answer or model a specific way to solve a problem. Didactic models may only be effective in the short-term as students can learn the effective skills or behaviors but experience trouble engaging in those behaviors in self-regulated environments (Byron & Parker, 2002; Wedlake, 2002). Instead, coaching focuses on supporting students as they find their own solutions and create their own strategies to maximize their performance (Parker & Boutelle, 2009). As one participant remarked, “My coach doesn’t feed me answers or anything. She’ll sort of prompt me to get to my own solution” (Parker & Boutelle, 2009, p. 209).

A key element contributing to coaching success is the formation of a collaborative and nurturing relationship between coach and mentee (Bearwald, 2011; Daughtry et al., 2009;

Hartnett-Edwards, 2011; Knight, 2011). Typically, coaching and mentoring involves regular meetings between a child or young adult and an older person who provides the individual with guidance, support, attention, and caring (Karchar, Kupermin, Portwood, Sipe, & Taylor, 2006). Principles of a quality coaching/mentoring relationship include encouraging the mentee or participant to have a voice in the process and allowing them time to reflect on both what they have done and how to improve their performance (Knight, 2011). In addition, good coaches go to great lengths to create a connection, listen to the participants, and ask thoughtful questions to prompt further participant ideas (Bearwald, 2011; Knight, 2011; Tschannen-Moran & Tschannen-Moran, 2011).

Recently, Brown, Takahashi, and Roberts (2010) performed an extensive literature review on mentoring and postsecondary education for individuals with disabilities. The authors were only able to find 10 articles that were research-based and were not able to differentiate by disability category. However, several themes did emerge from those articles for establishing a mentoring protocol. One such theme the authors found is that it is important to focus on persons with a specific disability, such as learning disabilities, psychiatric disabilities, or ID and that mentorship/mentoring was “useful for academic, career, and social skills” (p. 108). While the authors do not report on why it is important to focus on a specific disability, it may be because individuals with a specific disability have their own specific characteristics, traits, and needs. Mentors who become familiar with the strengths and weaknesses of each individual may be able to better connect with those learners.

Burgstahler and Cronheim (2001), in a study using adult mentors to coach secondary students with disabilities, indicate that the participants with disabilities whom they studied

experienced a positive change in their motivation to work toward a career and an increase in the skills needed in a workplace when provided mentoring. In this study, the researchers reviewed the content of e-mail messages exchanged between high school students with disabilities (N= 49) and adult mentors (N= 35). They also reviewed survey and focus group data. Analysis of the data suggested that mentoring can help youth fulfill their personal, academic, and career goals. Burgstahler and Cronheim (2001) recommend practitioners and parents consider using positive mentoring relationships, and that such relationships may help students with disabilities reach their social, academic, and career potential.

A key skill that coaches may be able to help develop in individuals with ID is the ability to self-monitor their social interactions (Greenspan & Granfield, 1992; Schloss & Wood, 1990). In a study of two young women with ID, Schloss and Wood (1990) found that self-monitoring can be a key to improving social abilities. Both study participants in the research had deficits in skills such as asking and answering direct and non-direct questions, making eye contact, and giving complete answers. Through the use of a self-monitoring device, participants were encouraged to count the number of times they thought about their own behavior in social interactions. After baseline scores were established, participants were coached by a teacher during 30-minute daily training sessions. These sessions, both in lab and public settings, consisted of prompts by the teacher and the reinforcement of positive feedback or correction of incorrect responses. Participants were also instructed to practice behaviors learned anytime they had a conversation in a natural setting. After training, students were again told to self-monitor their behavior throughout their daily conversations using the self-monitoring device. Schloss and Wood (1990) reported that there was a significant improvement in conversational abilities after



the introduction of teaching and self-monitoring. While the authors suggested further research on the generalization and maintenance of certain conversational skills, the results were promising.

An interesting result of this study was that, although the combination of mentoring and self-monitoring was found to be effective for social skill improvement in lab settings, one difficulty was practicing in generalized environments. Oftentimes, the individual engaged in conversation (e.g. a cashier or customer service agent) was unfamiliar with the research project and would not take the time to engage in conversation with the participant, instead addressing their conversation to the coach who was prompting the individual. While the results show promise, it is also important to look at other ways for students to practice vital social skills before entering live, natural settings.

### Technology

The use of technology may be a means to help students practice social and career preparation skills before entering live environments. As technology evolves, so does its impact on our lives. The integration of technology and academics is increasingly important for academic persistence and success (Getzel & Thoma, 2008; Johnson et al., 2010; Mellard, 2005; Tagayuna, Stodden, Chang, Zeleznik, & Whelley, 2005). Technology-based learning and assessment systems are pivotal to improving student learning and generating data that can be used to continuously improve the education system at all levels (National Education Technology Plan (NETP), 2010). Technological tools can also empower adolescents transitioning into young adulthood (Autism Speaks, 2011).

The NETP (2010) calls for states, districts, and others to develop and implement learning resources that exploit the flexibility and power of technology to reach all learners anytime and anywhere. These learning resources will help meet the goal of all learners having engaging and empowering learning experiences both in and out of school that prepare them to be active, creative, knowledgeable, and ethical participants in a globally networked society. Technology has tremendous power to engage digital natives, and it is important that educators use technology to educate all learners (NETP, 2010). Advances in technology, especially those that infuse technology into academic support/interventions for students with disabilities, may be able to benefit learners who struggle with environments not designed to meet their learning needs and styles (Bauer & Ulrich, 2002; Fitzgerald, Koury, & Mitchem, 2008).

To see how technology may impact those with ID, Wehmeyer et al. (2006) conducted an extensive search for articles published in peer-reviewed journals that addressed the use of technology by people with ID or development disabilities (DD). Thirteen single subject design studies were selected for inclusion in the meta-analysis involving a total of 42 unique study participants with ID and DD. The results of the study confirmed indications in the literature that technology use can contribute to more positive vocational and employment-related outcomes for youth and adults with ID and DD. The authors point out that perhaps the most compelling finding was that there are still relatively few empirical evaluations of technology use by people with intellectual and developmental disabilities in the literature. Given the promising findings reported in the study, it is necessary to focus more research and development efforts on this population (Wehmeyer et al., 2006).

In a separate study by Carey, Friedman, Bryen, and Taylor (2005), adults with ID expressed interest in using today's electronic technology. The authors surveyed 83 adults with ID examining factors affecting use and interest in using three key electronic technologies: the computer, the internet, and electronic organizers. Analysis of the surveys showed that adults were very interested in using technology and it seemed clear to the authors that "people benefit in their work, school, community, and leisure activities from these technologies" (Carey, Friedman, Bryen, & Taylor, 2005, p.331). Other studies have shown that, for students with ID, electronic technologies create more conducive learning environments by allowing students to learn at their own pace, repeat steps as necessary, and develop a feeling of control over the learning process (Claes et al., 2011; Pantelidis, 1993; Wehmeyer et al., 2006). Researchers have begun to document more closely the benefits of specific electronic technologies for adults with ID. For example, Stock, Davies, Wehmeyer, and Palmer (2008) found that cell phones provide promise for supporting universal design and that other software development methodologies may, in turn, increase independent access for students and adults with ID. Several researchers believe technology helps students learn executive functioning skills (Bauer & Ulrich, 2002; Gillete & Depompei, 2008) and may enhance their academic skills (Dieker et al., 2008). Another potential setting in which technology may have a positive impact is in employability preparation.

### *Virtual Reality*

From a generic perspective, virtual reality (VR) is one specific application of technology that may make a positive contribution to the ability of educators to provide employment preparation. Cline (2005), in the book *Power, Madness, and Immortality: The Future of Virtual*

*Reality*, states that VR will lead to a number of important changes in human life and activity. He believes that (a) VR will be integrated into daily life and activity; (b) techniques will be developed to influence human behavior, interpersonal communication, and cognition; (c) as we spend more and more time in virtual space, there will be a gradual "migration to virtual space" resulting in important changes in economics, worldview, and culture; and (d) the design of virtual environments may be used to extend basic human rights into virtual space, to promote human freedom and well-being, and to promote social stability as we move from one stage in socio-political development to the next.

For individuals with ID, Standen and Brown (2005) report that VR environments have many qualities that give it rehabilitative potential as both an intervention and as an assessment.

“It can provide a safe setting in which to practice skills that might carry too many risks in the real world... The very characteristics that help VR appeal to educators also give it a role in rehabilitation, especially for the acquisition and maintenance of skills necessary for independent living. As adults, acquiring or maintaining these skills through practice is difficult for the same set of reasons. Their caregivers may be scared of the consequences of allowing them to do things on their own, they may fear the reaction of others to appearance or challenging behavior, and scarce resources may mean that accompanied visits to a real environment sufficient to learn a skill may be impossible to arrange. However, in the virtual environment, the person with ID can make mistakes without suffering the real, humiliating, or dangerous consequences of their errors. The ease with which virtual environments can be manipulated has another advantage for their

use in rehabilitation for people with ID. As a group, they are considered to be poor at generalizing skills learnt in one setting to another.” (pp.272-273)

Standen (2001) successfully developed and tested virtual environments in which computer-based instruction was used for teaching community skills in the United Kingdom to individuals with ID. Langone, Clees, and Rieber (2003) replicated this study in the United States. Results in both studies indicated that “virtual environments are effective in facilitating the acquisition of living skills and that these skills can transfer from the virtual to the real environment (p. 291). Fears that skills or habits learned in a virtual setting would not transfer to a real world setting have not been supported by research with the exception of a limited number of studies including participants with autism spectrum disorders that have been found to have mixed results (Standen et al., 2001; Wallace et al., 2010). Brooks et al. (2002) found there to be no difference between virtual and real training for those with other disabilities.

### *Mixed-Reality Environments*

While virtual technology for training individuals with disabilities has been the basis for a few promising studies, it is also important for the field of education to learn from the fields of business and entertainment, which have used technology to improve outcomes and productivity (NETP, 2010). Immersive virtual environments, or mixed-reality, may be one of these powerful educational resources. An example of a mixed-reality environment is called TLE TeachLive™ (Teaching and Learning in Virtual Environments) and is housed at UCF.

TLE TeachLive™ is the result of a distinctive partnership formed to develop educational technology for teacher training programs (Andreasen & Haciomeroglu, 2009). This partnership,

between groups of educators, computer scientists, and simulation technology personnel, was initially designed to create a working, mixed-reality environment to train beginning teachers (Dieker et al., 2008). The goal was to create an interactive, simulated environment that would help prepare beginning teachers in specific content areas before they enter the real classroom with students of all ages (Dieker et al., 2008).

The methodology for developing this mixed-reality environment used research related to the training of people in the military and in corporate America as the foundation for its development (Dieker et al., 2008). Mixed-reality training may have applications for students with disabilities in addition to pre-service teachers. Hughes, Stapleton, Hughes, and Smith (2005) report how the TLE TeachLivE™ lab centers its work on the blending of real and synthetic content. In mixed-reality settings, students are no longer solely immersed in technology (such as a virtual reality world) or in reality. Rather, students see the blending of both technology and reality.

The success of TLE TeachLivE™ is based on the ability of an interactor to play a single avatar on the screen or to transition seamlessly between avatars. Dieker et al. (2008) notes that one interactor can play the role of the avatar for all different characters. The authors go on to describe an interactor:

An interactor is a person trained in acting, improvisation, and human psychology. Interactors from UCF's Interactive Performance Lab are pioneers in live simulation for entertainment, training, and education. They are renaissance artists who develop live, human-to-human, interactive story

experiences. They facilitate a non-actor's natural capacity to play in a virtual context. (p. 11)

Dieker et al. (2008) also describes the work they do in the following way:

Unlike typical acting, which is based on scripts, and improvisation, which is based on response to an immediate environment, interactors develop a character and then play out that character's behaviors based on family history, ethnic and political identity, living environment, personal motivations, friendships, and so on. In the virtual classroom the interactor provides the deep, human, interpersonal behaviors that artificial intelligence is still incapable of producing. (p. 11)

Each time a student works with a virtual character (the avatar), the interactor adopts the nuances of the character to make it come alive for the participant. The motions and the expressions, both nonverbal and verbal, of the interactor are transferred to the virtual character. One interactor can "puppeteer" all the members of an interview panel, for example, and exhibit the wide variety of behaviors seen in different personalities (Dieker et al., 2008). The physical appearance of the interactor (age, gender, etc.) is not seen by the student in the virtual lab; the virtual character is what is seen. This use of an interactor is vital to students feeling that the experience is real rather than a game. The interactor is the difference between a regular virtual environment and the mixed-reality TLE TeachLivE™ setting (Dieker et al., 2008). By providing participants with the opportunity to engage in normal, everyday, interactions, we are more likely to see a change in social skills including performance in interview settings.

To date, TLE TeachLivE™ has been used primarily for teacher training. Work with teachers has focused on potentialities in TLE TeachLivE™ for not only deepening content knowledge through discussion of correct, incorrect, and incomplete student work samples, but also for developing behavior management strategies. Andreasen and Hacıomeroglu (2009) sought to examine the advantages of using the TLE TeachLivE™ lab with fifteen pre-service teacher candidates. These future secondary mathematics teachers developed and taught lessons in the mixed-reality environment during a semester long course. The students focused primarily on lesson delivery and classroom management. Data were collected through videos of the teaching episodes and classroom discussions, interviews, classroom observations, students' lesson plans and reflections. Results suggested the use of virtual environment can be beneficial to teacher training. The authors also concluded that TeachLivE™ could be beneficial for pre-service teachers in the development of content knowledge as well as behavior management strategies.

If there is specific research related to mixed-reality environments and students with ID, none was found. However, Wallace and Maryott (2009) propose that there could be interesting clinical applications for mixed-reality technologies for all individuals with disabilities including those with ID. In particular, providing more authentic and naturalistic means of assessing social difficulties and addressing specific anxieties and phobias has been improved through repeated, yet safe and supported, exposure as seen in the application of virtual reality to other clinical groups and domains (Rothbaum et al., 1999). Wallace et al. (2010) conducted a study that demonstrated that children with Autism Spectrum Disorders (ASD) were able to make links between the images in a mixed-reality environment and their everyday experiences. The students



had no significant negative experiences from being immersed in ‘reality rich’ virtual worlds (Wallace et al., 2010). The findings suggest that mixed-reality can be realistic enough for students with ASD to simulate and assess social situations with which they self-report having difficulties within the real world (Wallace et al., 2010). Students with ID also have difficulties with social skills (Crites & Dunn, 2004) and, therefore, mixed-reality environments may provide interesting clinical applications for this population of learners as well.

### Summary

Students with disabilities are less likely to participate in the same degree of education or vocation as their non-disabled peers (Izzo & Lamb, 2003; Wagner, Newman, Cameto, Garza, & Levine, 2005). Students with disabilities have lower rates of academic, social, and personal success when compared to their non-disabled peers (Baer et al., 2011; Carter et al., 2011; Carter, Owens, Trainor, Sun, & Sweeden, 2009; Crites & Dunn, 2004; Grigal et al., 2011; Kleinert et al., 2010; Newman et al., 2009; Verdonshot et al., 2009). However, the importance of social skills, education, and transition skills will become more apparent as the workforce becomes increasingly diverse and specialized (Izzo & Lamb, 2003). In fact, social skills are so important to this population that Lecavalier & Butter (2010) submit that “social functioning is at the heart of ID” (p. 190). Transition goals related to employment reflect low expectations for students with ID to be competitively employed and these expectations may affect all stakeholders- students, parents, teachers, support personnel- involved in creating and implementing transition services and the outcomes achieved (Grigal et al., 2011). In addition, worker attitudes (Eigenbrood & Retish, 1988; Hernandez, 2000; Millington et al., 1994; Schloss & Soda, 1989;

Wilgosh & Skaret, 1987) and poor educational preparation (Anderson, 2011; Hendricks, 2010) contribute to the outcomes currently reflected in the high percentage of those who are unemployed.

Individuals with ID urgently need preparation for potential employment opportunities. Individuals must be afforded opportunities to engage in career preparatory activities with the use of socially and empirically validated methodologies (Huang & Cuvo, 1997). It is vital for students with ID to receive sound instructional programming that will adequately prepare them to successfully work and function within their communities. Instruction needed includes both the social skills to secure and maintain competitive employment and the hard skills to complete job duties.

Specialized technology holds great promise for individuals with ID in order to achieve access and full inclusion within their community. Using mixed-reality environments to prepare students in interviewing techniques is one example of vocational and social skill preparation that is both needed and useful for students in the future. By integrating mixed-reality technology into transition education programming, educators may be able to utilize the dynamic nature of the mixed-reality environments while at the same time addressing the complex career preparation needs of students with ID.

## CHAPTER THREE: METHODOLOGY AND PROCEDURES

### Introduction

The purpose of this study was to identify if a functional relationship exists between a treatment package combining interview practice in a mixed-reality learning modality (TLE TeachLivE™) with individualized coaching sessions and interview performance for young adults with ID as scored on a rubric. In addition, the study sought to identify if interview performance generalized from a mixed-reality setting to a live interview setting. Finally, the study investigated whether this two-step intervention was rated as socially important according to student participants, parents/primary caregivers, and employers given the goals, procedures, and outcomes for this research (Wolf, 1978). Both the University of Central Florida (UCF) (Appendix A) and Orange County Public Schools (OCPS) (Appendix B) cleared this study for human research.

Specifically, the study sought to answer the following research questions:

1. Will the combination of interview practice in the TLE TeachLivE™ lab and coaching increase job interview performance for 18-22 year old student participants with intellectual disabilities as measured by an interview rubric?
2. Will interview skills, as demonstrated following the combination of interview practice in the TLE TeachLivE™ lab and coaching, transfer to a live simulated job interview for young adults ages 18-22 with intellectual disabilities?

3. How socially important do participants, parents/primary caregivers, and employee experts rate the goals, procedures, and outcomes of this research study as measured by a survey?

### Participants and Settings

#### *Participants*

This study included five 18-22 year-old student participants. To participate in the research study student participants needed to meet specific criteria. First, student participants needed to be enrolled in the OCPS transition program for 18-22 year-olds. The OCPS training program is for young adults who have not yet received a high school diploma. The transition program entails classroom instruction on the UCF campus and work internships both on-campus and in the community. Second, student participants were identified as possessing an intellectual disability within an IQ range from 55 to 65. IQ scores were obtained by a licensed school psychologist through the use of the Stanford-Binet Intelligence Scales and reported in psych-educational files. Third, student participants could not have had more than two years paid work experience as documented on a completed employment history questionnaire (Appendix C) as part of the transition program. Fourth, in an attempt to ensure regular participation in the study, selection criteria for student participants included consistent and regular school attendance. Consistent and regular attendance was defined as less than eight absences for the prior semester, namely Fall 2011. Finally, an informational letter and consent form (Appendix D) was provided to the student participants and their parents/primary caregivers. Confirmation of receipt was obtained through a follow-up phone call with the transition program coordinator. The student

participant letter acknowledged a voluntary agreement to participate in this study. Student participants and their legal guardians signed the consent form in accordance with OCPS requirements.

Members of the research team included (a) a virtual avatar interactor; (b) a coach; (c) six members of an employee expert panel; (d) the lead investigator; (e) two undergraduate research associates; and (f) the parents/primary caregivers of student participants. The virtual avatar interactor was a trained doctoral student employed by the TLE TeachLivE™ program. For this study, the virtual avatar interactor was required to receive protocol training for implementing the simulated avatar interviews. The interactor also participated in practice interviews with members of the research team. The coach was a former OCPS certified special education teacher and transition programming administrator who has worked extensively with students entering postsecondary environments. The employee expert panel included members of the UCF Career Services team and members of the local business community. Members of the panel had several years' experience hiring, training, and managing young adults in entry level positions. The lead investigator was a doctoral candidate at UCF with ten years experience working with transition populations and their postsecondary paths. The undergraduate research associates were recruited by the lead investigator. They were honors students majoring in psychology with an interest in disability research and school psychology. Parents/primary caregivers were used to rate the social relevance of the research goals, procedures, and outcomes.

### *Settings*

This study took place in two locations. First, the TLE TeachLivE™ virtual classroom laboratory at UCF served as the setting for student participants to practice interview skills in a real-time mixed-reality setting. Student participants took part in both baseline and intervention treatments in this setting. During baseline and treatment interviews, the student participant was seated facing the television. This space is a windowless room with three beige colored walls and one green wall. A large projection screen was located slightly left of the center of the room, and was roughly 12 feet from the entryway. A 70-inch high-definition flat screen television suspended approximately three feet from the floor is placed in front of this screen for use in this study. A screened space adjoined the projection screen on the left-hand side and provided a divider for an on-site TLE TeachLivE™ technician to assist in program operations. A logistics webcam mounted on the top of the projection screen allowed the interactor to view the participant during sessions. Speakers behind the screen enabled the interactor to hear what the participant said during sessions. Real time communication between the interactor and the student participants occurred via Skype. The trained interactor is in control of the behavior of the avatar from a remote setting.

The second setting was a small classroom which the coach used immediately following treatment interviews with student participants. The small classroom (15'x 21') contained a round table and chairs. The coaching sessions were administered in this setting.

### Independent Variable

The independent variable comprised of a two-step intervention consisting of both virtual interviews within the TLE TeachLivE™ environment and subsequent coaching sessions. The independent variable was delivered as a package and no attempt was made to analyze the contribution of the separate components. The focus of this project was to determine if a functional relationship exists between the combination of interviews in the TLE TeachLivE™ lab followed by live coaching and three domains of interview skills (i.e., overt behaviors, verbal communication style, content of answers).

#### *TLE TeachLivE™*

Interviews in the TLE TeachLivE™ lab began with a research associate leading the participant into the lab. Introduction to the treatment was scripted (Appendix E). Student participants were introduced to the avatar interviewer and were seated at a small desk facing the screen. The avatar interviewer was seated at a desk in the virtual office and manipulated by the interactor who was located at a remote site. After the participant was seated, the interview began.

Interviews consisted of 11 scripted questions (e.g. Appendix F) selected from a bank of 27 questions (Appendix G). Selection of these questions is explained in the procedures section. The interactor began the interview by stating “To begin, I would like you to give me a summary of your education and any work-related experiences you've had”. After the participant responded to this prompt, the interactor continued to ask questions in the order they were presented on the script. The interactor was allowed to ask one follow-up probe per question if needed based on

defined criteria. Follow-up probes were only allowed in order to (a) clarify a concept, (b) elongate an important answer, or, (c) repeat the question for the participant. Interviews took between 5-15 minutes. After the interview was complete, student participants were escorted out of the lab by the lead investigator and accompanied to the coaching room by a member of the research team.

### *Rubric Scoring*

The lead investigator was responsible for both the oversight of the study and the scoring of interview performance in the TLE TeachLivE™ setting. In order to ensure correct scoring of the rubric, the lead investigator and independent observers were trained during a two-hour pre-study session with UCF Office of Career Services personnel. The interview rubric was explained and correct/incorrect responses were demonstrated through video clips of sample interviews. The lead investigator and the independent observers scored sample interviews using the rubric and compared scores for teaching purposes. As established by set criterion, ninety percent agreement was obtained during the training session between the lead investigator and the independent observers before beginning the study. Members of the research team were seated in the TLE TeachLivE™ lab out of the view of the student participants in order to observe the interview and score the rubric. At the end of each day of the study, interobserver agreement was calculated through comparing scores on the rubrics. The lead investigator collected rubrics scored by the interobserver and did a point by point check to calculate interobserver agreement from observation of live interviews.



### *Interactor Training*

The interactor training consisted of meeting with the lead investigator and other members of the research team to discuss the interview questions, the importance of fidelity regarding the order of those questions, and how to begin, conduct, and end an interview professionally. Training sessions followed an interactor script (Appendix H) to make sure experimental procedures were consistently employed. During the training, the interactor demonstrated 100% accuracy when asking questions in the correct order as evidenced through observation by the research team. During baseline and treatment sessions, accuracy of interview delivery was measured utilizing the interview checklist (Appendix I). A member of the research team observed and calculated fidelity on 30% of the interview sessions randomly selected throughout the study.

### *Coaching*

The second part of the intervention, coaching, was conducted following each TLE TeachLive™ interview for student participants in the intervention phase. Coaching sessions were based on mentoring and reflection and guided by both analyzing participant performance in the treatment interview and focusing on strategies to improve participant responses. Following a brief introduction of the procedures of the coaching session, the coach followed a coaching script (Appendix J) consisting of eight discussion prompts based on Layng's (2007) study of successful communication during an interview. The coaching prompts were explained to the student participants before the coaching sessions began (Appendix K) so they were familiar with all the terminology used. Throughout the course of the coaching sessions, modeling behavior and

participant rehearsal of correct behavior was allowed. Coaching included identifying correct and incorrect responses, probing errors made, and modeling responses as requested by the student participant. Each coaching session lasted between 10-20 minutes depending on the participant. Initial coaching sessions tended to take longer as student participants were unfamiliar with the prompts. As sessions progressed and the student participant's familiarity with the prompts increased, they were quicker to respond when prompted.

### *Coach Training*

One coach was utilized in this study. Training consisted of a two-hour training session with the UCF Office of Career Services personnel and the lead investigator. In order to ensure the coaching sessions were administered correctly, the coaching prompts were provided and discussed. The coach performed a mock interview session by practicing the interview script with the research team in two practice sessions one week prior to the lesson. Treatment coaching sessions did not begin until 100% fidelity occurred based on the coaching fidelity checklist (Appendix L). The coach was responsible for administering all coaching sessions following treatment interviews in the TLE TeachLivE™ lab. Fidelity checks on treatment interviews (Appendix H) and coaching sessions (Appendix L) were conducted by an independent observer on 30% of the sessions selected randomly by the research team.

In addition to following the coaching prompts outlined in the script and practiced by the coach, the other variables associated with building a good coaching relationship were discussed. For example, building trust, focusing on practical strategies, and focusing on growth, not mastery, are all considered to be important in coaching (Bearwald, 2011). While these are

crucial components of successful coaching, these are also skills that are not “trainable” per se, and it was important to recruit a teacher with experience and a keen interest in working with this population of students. In searching for a coach, the lead investigator contacted representatives of OCPS to find someone who may be ideal for this position. Based on the recommendations of current and former OCPS employees, a candidate was identified. The lead investigator and the candidate, Ms. Janet, first met one month prior to the study in order to discuss the research study, the participants, and the role of the coach. The lead investigator believed that Ms. Janet was uniquely qualified to serve in the role of coach based on her experience and expertise to go to great lengths to create a connection, listen to the participants, and ask thoughtful questions to prompt further participant ideas (Bearwald, 2011; Knight, 2011; Tschannen-Moran & Tschannen-Moran, 2011). Ms. Janet expressed excitement about the possibility of the research and agreed to take part in the study. After the initial meeting, the training session with Ms. Janet and the research team began two weeks prior to the study.

#### Dependent Variable

The dependent variable in this study was the observed and recorded measurement of interview skills. Three discrete observable dependent domains were scored on a rubric measuring the construct “interview skills”. The same rubric (Appendix M) was used for all interviews (pre-treatment, baseline, intervention, post-treatment). The discrete observable domains were selected because the skills measured are often associated with successful interviews for people with disabilities (Allen, 1994; Brown, 2000; Kissane, 1997).

The three domains listed on the rubric were (a) overt behaviors, (b) verbal communication style, and (c) content of answers. Examples of overt behaviors include (a) eye contact, (b) posture and, (c) hand gestures. The domain of overt behaviors measured was not based on student participants' disabilities and was free from such conditionality. Appropriate responses in the verbal communication style domain targeted (a) lack of slang or other inappropriate language including poor use of grammar, (b) lack of distracting communication habits such as "umm's", and other verbal patterns and, (c) not needing to repeat the response due to volume or clarity of voice. Verbal communication style was scored solely on behaviors that were not disability-based. Appropriate responses to interview questions in the content of answers domain focused on (a) answering the question asked, (b) highlighting the abilities of the interviewee and, (c) responses which were positive in nature. Examples of proficient and non-proficient behaviors/responses can be seen in Appendix N.

For each of the eleven questions, all three constructs were scored for each domain. For example, question number one had nine possible points based on the three constructs defined under the overt domain, the verbal communication style domain, and the content of answers domain. Each of the constructs was evaluated for each question asked and recorded as either Proficient (P) or Non-proficient (NP). Proficiency was determined based on the rubric and resulted in a score of either P or NP. One point was awarded for a P and zero points were awarded for a NP score. First impressions are considered to be important (Allen, 1994; Brown, 2000; Hawkins, 2004; Shipley & Wood, 1996) so the student participant's greeting was also scored as part of the rubric. The rubric (Appendix M) consisted of a total of 100 possible points. The use of a P or NP scale was developed and piloted by the lead investigator and employment

interview experts in order to promote consistency based on scoring procedures that are well-defined.

To identify the social relevance of this study's goals, procedures and outcomes, a survey was administered at the conclusion of the experimental conditions (Wolf, 1978). The surveys were completed by student participants, parents/primary caregivers, and employee expert panel members. The surveys (Appendices O-Q) were developed by the lead investigator using the Tailored Design Method (Dillman, Smyth, & Christian, 2009) and steps to support the social validity and reliability of the survey included working with an expert in survey development (S. Sivo, personal communications, November, 2011).

#### Validity and Reliability

Since interview performance was measured on a rubric, it was important that the rubric be considered valid for scoring interviews. The rubric and scoring system were designed and validated through consultation with the employee expert panel. The lead investigator first worked with employee expert panel members during the fall of 2010 and spring of 2011 to modify the regular interview assessment rubric used by Career Service professionals when administering mock interviews. The rubric and interview questions were selected and designed by the lead investigator in consultation with the UCF Office of Career Services (W. Blank, personal communications, November, 2010- March, 2011). In addition, the lead investigator consulted with experts from local businesses (employee expert panel) to validate the modified rubric in order to yield a measure of content validity. The employee expert panel was also used

when choosing the interview questions and determining the typical length of entry-level employment interviews.

Interviews (pre-treatment, baseline, intervention, post-treatment) and coaching sessions were video-archived for purposes of monitoring and documenting interobserver agreement. Videos were also used by the interobservers to score interviews. The lead investigator and the independent observers performed checks for interobserver agreement on 30% of the total sessions through the use of live observation or video recordings. To control for threats to internal validity due to instrumentation, interobserver agreement was calculated on the primary dependent variable with the point-by-point method as shown in Figure 2 (Baer, 1977).

$$\frac{\textit{Agreements}}{\textit{Agreements} + \textit{Disagreements}} \times 100 = \textit{Percent Agreement}$$

*Figure 1. Point-by-point method*

The social validity survey was also subject to fidelity and reliability checks as part of the implementation. The OCPS transition program director distributed all surveys to parents/primary caregivers at the end of the treatment phase. After all surveys were gathered, 30% of the surveys were randomly selected and checked for scoring accuracy through interobserver agreement.

#### Procedures, Experimental Design, and Conditions

The first research question, “Will the combination of interview practice in the TLE TeachLivE™ lab and coaching increase job interview performance for 18-22 year old student participants with intellectual disabilities as measured by an interview rubric?” was addressed

with a multiple probe design across participants. Multiple probe designs “consist of data being collected intermittingly during what is often referred to as probe trial” (Gast, 2010, p.295). A multiple probe design across participants study was selected in order to make the most efficient use of the virtual lab and to minimize potential decreases in participant motivation. The multiple probe design provides a procedure for collecting data that allows a thorough functional analysis of the variables related to behavior and provides an “alternative method for establishing stable baselines when continuous measurement during extended multiple baselines proves impractical or unnecessary” (Horner & Baer, 1978, p.196). Since “a student seldom acquires a new skill through repeated practice alone” (Gast, 2010, p.295) improvement through baseline exposure and practice effect should be considered negligible.

The second research question, “Will interview skills, as demonstrated following the combination of interview practice in the TLE TeachLivE™ lab and coaching, transfer to a live simulated job interview for young adults ages 18-22 with intellectual disabilities?” was addressed through the use of a non-experimental pre-post study. This question was answered by comparing the individual performance of each participant in pre and post live interviews. Scores were not compared across participants or as an aggregate score. Only individual differences were analyzed to see if demonstrated or observable change in performance occurred.

The third research question, “How socially important do participants, parents/primary caregivers, and employee experts rate the goals, procedures, and outcomes of this research study as measured by a survey?” was addressed through the use of a non-experimental post-treatment survey. As early as 1978, Wolf proposed that “we must develop systems that allow our consumers to provide us feedback about how our applications relate to their values” (p. 213).

The social validity survey measured goals, procedures, and outcomes in order to gather evidence demonstrating that the treatment is both appropriate and significant, and to provide the lead researcher with feedback from the consumers of this research.

### *Pre-Treatment Interviews*

After student participants were selected, the lead investigator organized pre-treatment interview times with the UCF Office of Career Services. The 11 questions (Appendix F) used in these pre-interviews were randomly selected by a random number generator from the bank of 27 questions (Appendix G) and were provided to the live/human interviewer by the lead investigator. Student participants were directed to the Office of Career Services where scripted directions were read aloud (Appendix R). Student participants were led into an interview room where the pre-treatment interview was conducted and introduced to the interviewer by a member of the research team. The pre-treatment interview was conducted by the university's Director of Career Development. All pre-treatment interviews were video-archived for purposes of monitoring and documenting treatment integrity.

### *Baseline Phase*

All five identified student participants were brought into the baseline condition simultaneously. Treatment was staggered across participants based on the phase change criteria described below. If student participants needed to wait before entering the lab, a lounge area with couches and desks was provided. Student participants were instructed not to interact about the treatment or procedures during the research study. In order to ensure that student participants did not interact between sessions about questions asked during the interview, an undergraduate



research associate monitored student participants as they waited for their interviews. Protocol before the interview, during the interview, and after the interview appears in Appendix S.

Baseline consisted of virtual interviews in the mixed-reality environment. The student participants did not receive coaching sessions during baseline. For each student participant, a minimum of four data points were collected in order to establish stable and predictable data. A stable and predictable trend was defined as four data points which did not vary more than an average of 20 percent on the interview rubric (Gast, 2010).

### *Phase Changes*

Given the criteria established for stable and predictable data, participant one (P1) was selected using visual analysis. Prior to implementing coaching sessions, the lead investigator inspected the baseline trend of interview performance for all student participants and determined that data were stable and predictable for P1. When treatment was initiated for P1, the remaining student participants remained in baseline until P1 demonstrated a distinct pattern of data or six treatment sessions occurred. The second participant (P2) entered treatment when visual inspections by the lead investigator demonstrated a change of slope and level in three data points for P1. A 20% change was used as a guideline but was not considered an absolute rule. The slope trend forming a distinct pattern was used to transition a participant into the treatment phase. Visual analysis of baseline data for student participants two through five was repeated to determine if their data were stable and predictable, and, therefore, could serve as experimental controls for P1. When a distinct pattern of data was demonstrated, P2 began intervention. P2 was chosen based on lowest level performance while demonstrating stable and predictable

performance. Lowest level of performance criterion was used as a guideline rather than as an absolute rule. Level, trend, and variability of all legs of the multiple probe design were considered in making decisions on phase changes (Gast, 2010). When the participant reached criterion level of mastery (i.e. 80% for three data points in a row) or six sessions occurred, treatment for the participant could be terminated.

### *Treatment Interviews in TeachLivE<sup>TM</sup>*

In each treatment interview session, the avatar greeted the participant once the participant was seated. After the initial greeting, the interview began with the first question from the interactor. Each interview consisted of 11 total questions or prompts. The first prompt was “To begin, I would like you to give me a summary of your education and any work-related experiences you've had”. The last prompt to close the interview was “As we close, why should I hire you and why do you think you will be a good employee?” These prompts were standard for every student participant interview.

The nine questions between the opening and closing prompts were randomly selected by the lead investigator from the bank of 27 questions (Appendix G). Random selection occurred through the use of a random number generator found at <http://www.random.org/integers/>. Within the bank of questions, there were three domains of questions with nine questions in each domain as labeled in the question bank. The domains were behavioral, opinion, and experiential questions (Keever, 2008). For each interview, three questions from each domain were randomly selected.

Although the questions were randomly selected, baseline interview number one consisted of the same questions for each participant, baseline interview number two consisted of the same questions for each participant, thereby consistency was ensured across student participants for each and all subsequent interviews. One follow-up prompt was allowed per question as agreed upon in the training session where the criterion for prompts was specified. Each interview was allotted 20 minutes in the TLE TeachLivE™ lab. After the interview was complete, the student participants were escorted out of the lab by a member of the research team.

### *Coaching Sessions*

Following the treatment interview, a research associate escorted the student participant to the coaching room. The student participant was provided a brief introduction on the procedures of the coaching session. The coach followed the coaching script (Appendix J) by asking the eight discussion prompts. While the prompts helped lead discussion, the coach had the freedom to ask follow-up questions in order to help the student participant clarify statements or concerns, brainstorm solutions, or gauge progress. Throughout the course of the coaching session, modeling behavior and subject rehearsal of correct behavior occurred based on participant responses. The tone and flow of the coaching session was left to the discretion of the coach provided they utilized the procedural coaching prompts as a guide. At the conclusion of the eight prompts and discussion, the coach closed the session by following the coaching script. The participant was then escorted out of the coaching room by a research associate. Coaching sessions lasted an average of 14 min 40 s.

### *Social Validity Interview*

After each participant exited out of the treatment interview phase, they completed a social validity interview with a member of the research team. Based on the work of Peterson (2010), the social validity interview (Appendix T) was comprised of four simple components: (1) list up to three things you think went well during the interviews in TLE TeachLivE™ session, (2) list up to three things that you think need improvement in the TLE TeachLivE™ session, (3) list up to three things that you think went well with the coaching sessions, and, (4) list up to three things that you think need improvement in the coaching sessions. The interview questions were provided to the student participants, the questions were read aloud, and student participants were asked to answer verbally. Responses were recorded by a member of the research team.

### *Post-Treatment Interview*

Between 14 and 21 days after completion of each participant's treatment phase, they engaged in a live interview with a member of the employee expert panel to check generalization in a live setting. While the pre-treatment interviews were conducted by the Director of Career Services, the post-treatment interviews were conducted by the university's Coordinator of Career Development. This was by research design to avoid participant familiarity with the interviewer from the pre-interview.

The 11 questions used in the post-treatment interview were generated from the same bank of 27 questions and were provided to the Coordinator of Career Development by the lead investigator. The interviewer scored the interview using the same evaluation rubric as used in the TLE TeachLivE™ laboratory. The same eleven questions were used for all student

participants during their post-treatment interviews. All post-treatment interviews were video-archived. Up to 30% of the video-archived interviews were randomly selected and scored by a member of the research team for purposes of monitoring and documenting treatment integrity.

### Data Analysis Procedures

#### *Visual Data Analysis of Multiple Probe Design*

Evaluation of data included visual analysis of data points (via a line graph created in an Excel spreadsheet) collected for each participant throughout each phase (i.e. baseline, probes, treatment) of the research study. Analysis of single-subject research traditionally uses systematic visual analysis of data within and across conditions; as such, the lead investigator considered changes in: (a) mean level, (b) trend line slopes, and (c) variability (Gast, 2010). The first visual analysis was conducted to determine the change in trend direction. This analysis served to determine the reliability of effect on the participant's behavior as measured by the dependent variable.

#### *Percent of Non-Overlapping Data (PND)*

In an attempt to quantify effect, percent of non-overlapping data was calculated to measure treatment outcomes. Assessing PND assisted in determining the impact that the treatment intervention (treatment interviews in the TLE TeachLivE™ lab and individual coaching sessions) had on the target behavior (interview performance). The PND was calculated by (a) determining the range of data-point values of the baseline condition, (b) counting the number of data points plotted in the treatment phase, (c) counting the number of data points

within the treatment condition that fall outside the range of the baseline condition, and (d) dividing the number of data points that fall outside the range of the baseline condition by the number of data points on the treatment condition and multiplying this number by 100. Scruggs and Mastropierri (1998) offer guidelines for evaluating effect using PND. They state that 90% equals a large effect; 70% to 89% equals a medium effect; and 50% to 69% equals a small effect. The higher the PND, the greater the impact the intervention has on the target behavior (Scruggs & Mastropierri, 1998).

#### *Mean Comparison of Pre and Post Data*

In order to analyze pre-post treatment data concerning question number two, the lead investigator utilized descriptive statistics to compare the differences of rubric scores for each participant. This assured that individual differences were accounted for and acknowledged. Aggregate analysis of the data was not appropriate as it would not allow for individual differences.

#### *Social Validity*

At the end of the study, the lead investigator surveyed student participants, parents/primary caregivers, and employment experts to gather data answering research question number three. Research question three focuses on providing consumers with an opportunity to “provide... feedback about how our applications relate to their values” (Wolf, 1978, p.213). Three separate surveys (Appendices O-Q), one for student participants, one for parents/primary caregivers, one for the employment experts, consisted of six questions for the student participants and parents/primary caregivers and five questions for the employee experts. Each survey was

analyzed on a per question basis. The descriptive analysis compared responses across surveys for participants, parents/primary caregivers, and the employee expert panel. There was also one question that asked for general comments or responses on each separate survey. Responses to this prompt were analyzed qualitatively by coding themes and reporting trends accordingly.

## CHAPTER FOUR: RESULTS

### Introduction

The purpose of this study was to examine the effects of the combination of interview practice in a mixed-reality setting and coaching on interview performance for young adults with ID. Specifically, three questions guided this research:

1. Will the combination of interview practice in the TLE TeachLivE™ lab and coaching increase job interview performance for 18-22 year old student participants with intellectual disabilities as measured by an interview rubric?
2. Will interview skills, as demonstrated following the combination of interview practice in the TLE TeachLivE™ lab and coaching, transfer to a live simulated job interview for young adults ages 18-22 with intellectual disabilities?
3. How socially important do student participants, parents/primary caregivers, and interview experts rate the goals, procedures, and outcomes of this research study as measured by a survey?

A multiple probe across participants design was used to determine if a functional relationship exists between the treatment package and interview performance. The multiple probe graph (Figure 2) presented in this chapter illustrates interview performance for young adults with ID over 27 days of treatment. Pre-post data are also presented on interview performance in a live interview setting. Finally, survey results are reported regarding the social validity of the treatment as viewed by student participants, parents/primary caregivers, and



employee experts. For confidentiality reasons, pseudonyms are used throughout the text for student participants.

### Interobserver Agreement (IOA)

Displayed on Table 1 are the interobserver agreement (IOA) outcomes across the three different domains of the interview. The lead investigator and independent observers performed checks for interobserver agreement on 30% of the total sessions by coding and analyzing data. Interobserver agreement was performed during the live interview or through the use of video recordings. Interobserver agreement was calculated on each of the three domains of the interview rubric using the point-by-point method (Figure 2) to control for threats to internal validity due to instrumentation (Baer, 1977):

$$\frac{\textit{Agreements}}{\textit{Agreements} + \textit{Disagreements}} \times 100 = \textit{Percent Agreement}$$

Figure 2. *Point-by-point method*

Each rubric was scored by calculating the IOA on the three separate domains: overt behaviors, communication style, and content of answers. Each domain was comprised of three possible Proficient/Non-Proficient (P/NP) scores for each of the 11 questions. This calculation resulted in 33 scores per domain for each rubric. The IOA mean agreement on each domain was above 88% as seen in Table 1. Overall, on the rubric, there was a mean agreement of 91.92% (range 70-100%) between two independent observers.

*Table 1: Interobserver Agreement Outcomes Across Interview Domains*

Domain	Number of Sessions Observed	Mean of IOA
Overt Behaviors	19	98.42%
Communication Style	19	88.72%
Content of Answers	19	88.63%
Total Rubric Score	19	91.92%

#### Fidelity of Implementation

To assess the fidelity of implementation, the research team utilized fidelity checklists (Appendices H and L). Fidelity of implementation checks were performed on both the interactor and coach in all experimental conditions (i.e., baseline and treatment across all participants). Fidelity was assessed for 24% (15/62) of the interviews and for 77% (23/30) of the total coaching sessions. Fidelity of implementation for the coach and for the interactor was 100% using the point-by-point method.

#### Multiple Probe Across Participants

The most common method for determining the effects of interview practice and coaching on interview performance is visual analysis of the data. Presented in Figure 2 are the outcomes of interview practice within the TLE TeachLivE™ lab. The dependent measure, rubric score, is displayed on the ordinate (y- axis) while the number of sessions are displayed on the abscissa (x-axis). The total score possible on the rubric was 100 points. An example of a scored rubric sheet

can be seen in Appendix U. The baseline phase is separated from treatment sessions by a phase change line.

### *Jane*

Jane's baseline mean rubric score was  $M=26.5$  with a range of 21 to 29 (see Figure 2). After implementing the independent variable (i.e., combination of treatment interviews and coaching), Jane's mean performance was  $M=57$  with a range of 37 to 68 over six treatment sessions and included a noticeable change in both level and slope ( $R=.23$ ) from baseline to treatment ( $R=.61$ ). Jane's percent of non-overlapping data points (PND) was 100%, a significant predictor of the large effect for this treatment (Scruggs & Mastropierri, 1998). She finished with a high score of 68 out of 100 total points on the interview rubric. The rated scores on the rubric show an increase in Jane's performance of targeted interview behaviors in a mixed-reality interview setting.

### *Anne*

Anne's baseline mean score was  $M=25.2$  with a range of 17 to 33 with a slightly increasing slope during the baseline phase ( $R=.32$ ). After beginning treatment, visual analysis of Anne's data shows a large variance between baseline and treatment scores including a consistent increase in the level of performance as depicted by the accelerating slope ( $R=.84$ ). After her third treatment, Anne had a family emergency and she missed 1.5 weeks of school. This incident delayed her treatment sessions and resulted in a slight loss of experimental control. By having to move Carlitos into treatment immediately due to TLE TeachLivE™ lab time constraints, the assumptions of the research design were violated by not allowing the participants to stagger the

baseline sessions. However, sufficient replication exists to suggest that the violation was not large enough to impact the overall results of the study. After the missed sessions, Anne's performance stabilized at a much higher level during her last three treatment sessions. She ended with a mean score of 68.1 over the six treatment sessions. Anne also had 100% PND.

### *Carlitos*

Carlitos, the third student participant taking part in the study, had a baseline mean of  $M=58$  with a consistently flat slope during baseline ( $R=.28$ ). His high score was a 63 during the baseline sessions while his low score was 49 as displayed in Figure 2. After implementing the independent variable (i.e., combination of treatment interviews and coaching), Carlitos' mean performance was  $M =78.7$  with a range of 75 to 83 over six treatment sessions and included an increasing slope ( $R=.63$ ). Carlitos had 100% non-overlapping data and he finished with a high score of 83 during the treatment sessions. The data provides evidence of a statistical increase in the ability of Carlitos to improve his performance in a mixed-reality interview setting.

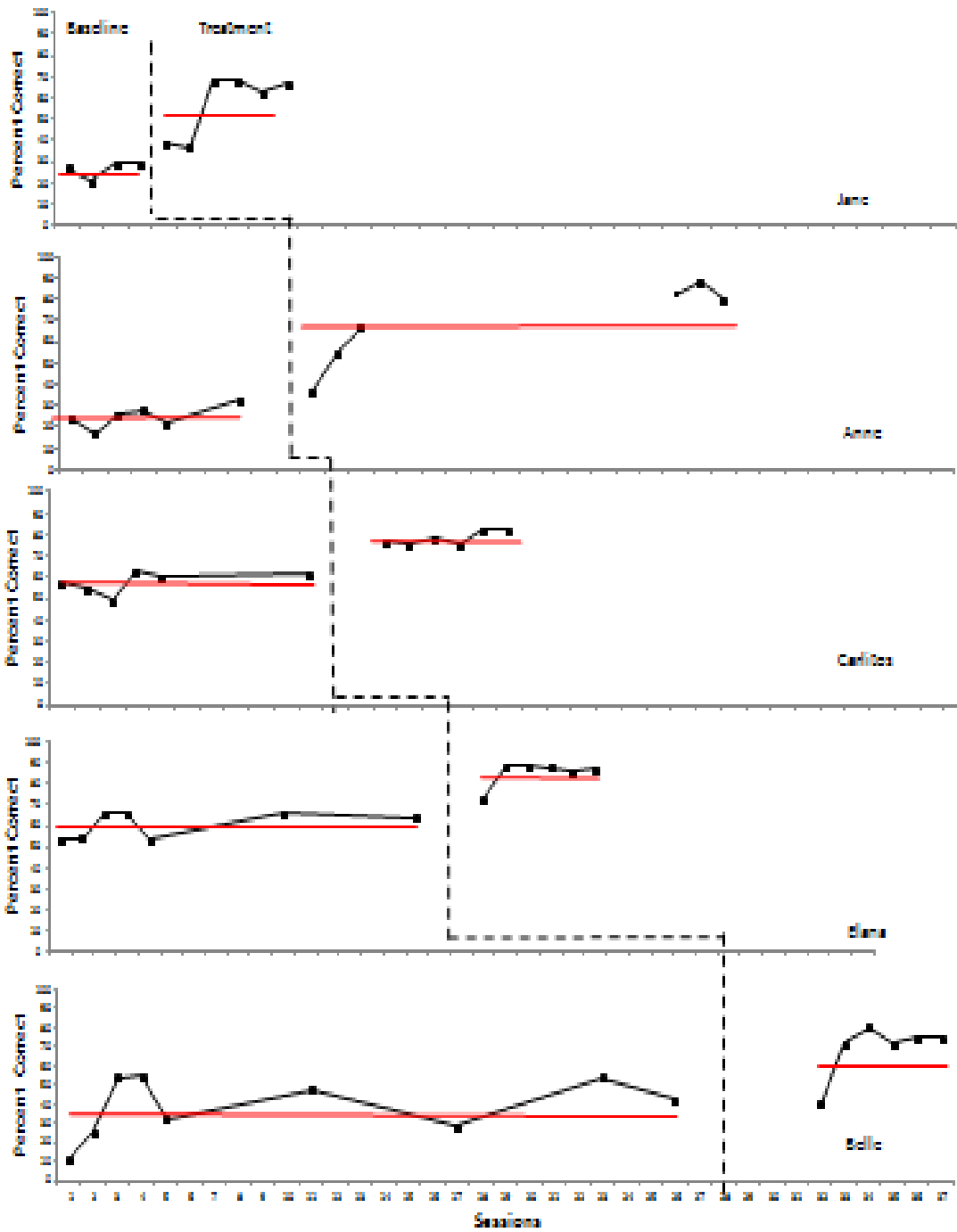


Figure 2. Interview Scores Demonstrated by Student Participants

### *Elana*

Elana recorded the highest mean performance of all student participants during baseline ( $M=60.3$ ) and treatment ( $M=85.3$ ) phases as observed in Figure 2. She participated in seven baseline interviews and six treatment sessions. Visual analysis of Elana's baseline data demonstrates a stable and predictable trend with range of performance scores between 53 and 66 ( $R=13$ ). She recorded a mean performance of 60.25 and a stable baseline increasing slope ( $R=.27$ ). After the phase change was implemented, a clear change in the level of performance from baseline to treatment is noted although the slope ( $R=.27$ ) stayed the same between baseline and treatment phases. Her high score during treatment was 89 out of 100 possible points. Her final five interviews all scored in the 80's demonstrating consistent performance above 80<sup>th</sup> percentile. Elana had 100% non-overlapping data.

### *Belle*

Belle had a range of scores between 11 and 55 in baseline sessions (Figure 2). She ended baseline with a mean of  $M=38.8$  and a slope of  $R=.20$ . Visual analysis of Belle's data shows a large variance in the level of performance throughout the baseline and intervention sections of the study. After entering treatment, Belle's data indicate a noticeable change in both slope ( $R=.36$ ) and level when compared to baseline. After her third treatment, Belle missed the school bus and, combined with spring break, had to miss one week of treatment. The events resulted in a slight loss of experimental control and the missed treatment is demonstrated by the break in treatment scoring in Figure 2. Belle completed treatment with a mean of  $M=69$  during her treatment sessions and a high score of 80. Belle did have one overlapping data point which

resulted in 93.4% non-overlapping data. This data point is still above the 90% threshold for establishing a large treatment effect (Scruggs & Mastropieri, 1998). The rated scores on the rubric show an increase in Belle’s performance of targeted interview behaviors in a mixed-reality interview setting.

Pre-Post Scores in Live Settings

Non-experimental pre and post data were collected for student participants interviewing with a live representative from UCF Career Services to address the second research question. All five student participants made marked improvements in their interview performance as measured by the rubric and the results are displayed in Table 2. All student participants were exposed to the exact same number of treatment sessions (6) in the treatment phase and this conformity strengthens the internal consistency of the study.

*Table 2: Pre-Post Interview Scores Comparison*

Participant	Pre-Interview	Post-Interview	Difference
Jane	37	58	<b>19</b>
Anne	41	59	<b>18</b>
Carlitos	44	90	<b>46</b>
Elana	53	83	<b>30</b>
Belle	28	67	<b>39</b>

Individually, Carlitos made the greatest gains (increase of 46%) in performance while Anne increased the least (increase of 18%). When analyzing the student participants as a whole, the mean gain was 30.4, a large improvement over the six-week timeframe of the study. Live interview performance, as scored on the same rubric used during the intervention, indicated improved performance for each participant, with a range of 18 to 46 points.

### Social Validity Interview

The social validity interview was intended to collect data reflecting the perceptions of each participant with regard to the treatment sessions in the lab, with the avatar, the coaching sessions, and the coach. All student participants engaged in the interview (Appendix T) and all (N=5) were very positive about the experience. Immediately following their last treatment session a member of the research team would sit down with the student participant for their social validity interview. Student participants were asked to list three things they thought went well with the interview sessions in the TLE TeachLive™ lab and in the coaching sessions. The student participants were also asked to list up to three things that they thought could be improved in the interview sessions and in the coaching sessions. When asked what went well during the interviews, 100% of the student participants initially mentioned things they improved upon (e.g. “eye contact”, “posture”, “not swiveling in chair”). After being asked more specifically what they thought was good in the lab (Ms. Lowery’s features, desk setup, etc.), all mentioned that they enjoyed the experience and that Ms. Lowery was “cool”. One participant, Carlitos, went so far as to say that Ms. Lowery and he “had fun”.



When asked what could be improved on in the lab, the student participants pointed out things they felt they needed to work on (e.g. “rephrasing a question I don’t understand”, “having good posture”, “answering questions more quickly”). When asked more specifically what could be better in the lab, one participant noted that Ms. Lowery (the avatar) should make more eye contact and that her mouth movements were a little off-sync with her words. One student participant also suggested that Ms. Lowery should “talk slower”. The conversation is controlled by the interactor and this feedback will be taken into account in future studies.

All five student participants were very complimentary of the coaching sessions and clearly found value in spending time with a professional who gave them individual feedback. Some of the feedback included:

“Ms. Janet (the coach) helped me practice skills that I needed to improve on”

“Ms. Janet helped me to think about saying hi, thanks, and bye. I didn’t do that before.”

“She pointed out that it was okay to take my time and think before I answer.”

“The coach was polite and was patient with me. She also helped me with some of the physical things I was doing like cracking my knuckles and swiveling in my chair.”

There was one suggestion for improvement for the coaching sessions and that was that the “room was too cold”. Everything else was “perfect” with one participant saying she had “learned enough.”

### Social Validity Surveys

Social validity was measured through the use of separate surveys given to student participants, employers, and parents/legal guardians at the completion of the study. Wolf (1978)

suggested that single-subject research needs to be socially valid given the goals, procedures, and outcomes of a research study. The surveys containing statements were distributed to student participants, parents/legal guardians, and the employee expert panel. These surveys measured the importance of the goals of this research through statements one and two. Experimental procedures were measured by statements three and four. The outcomes of the research study were addressed in the fifth and sixth statements. All surveys were presented with a five point scale with 1= strongly disagree, 2= disagree, 3= mixed feelings, 4= agree, 5= strongly agree, and N/A= not applicable. The surveys can be found in Appendices O-Q.

Table 3 displays data showing that the five student participants varied between agreeing (4.0) and strongly agreeing (5.0) with all the statements presented. Based on the data, student participants reported the coaching sessions to be slightly more valuable to their development than the practice interviews with the avatars. Interpretation of the survey results indicates that the goals, experimental procedures, and outcomes of the survey were valuable to the student participants involved in the study. Student participants also stated that they improved their interview skills through the treatment combination of practice interviews with avatars and coaching sessions.

*Table 3 : Student Participant Survey*

Statement	Mean Response
I would like to get a job someday.	4.6
I believe the job interview is an important part of the job search process.	4.6
I believe that practicing the interview with the avatars was helpful to me.	4.2
I believe that the coaching sessions conducted after the practice interviews were helpful to me.	4.4
I believe that I improved my interview skills through practicing and coaching sessions.	4.8
I feel better prepared to get a job since I have completed this training.	4.4

Five sets of parents/legal guardians responded to the survey for representation of each participant as reported in Table 4. Although parents/primary caregivers did not view the practice interviews or the coaching sessions directly, each parent/legal guardian communicated positive expressions for the treatment combination based on survey results. All of the parents surveyed strongly agreed that the job interview is an important part of the job search process.

Interestingly, parents believed the treatment interviews were more valuable to their student participant while the student participants themselves believed the coaching sessions were more valuable. Overall, parents approved of the goals, experimental procedures, and outcomes of this research study.

*Table 4: Parent/Legal Guardian Survey*

Statement	Mean Response
I would like child to get a job someday.	4.6
I believe the job interview is an important part of the job search process.	5
I believe that practicing the interview with the avatars was helpful to my child.	4.6
I believe that the coaching sessions conducted after the practice interviews were helpful to my child.	4.4
I believe that my child improved their interview skills through practicing and coaching sessions.	4.6
I feel my child is better prepared to get a job since completing this training.	4.4

Table 5 displays the results of the employee expert panel survey. Based on survey results, the six-member employee expert panel recommended a high level of validation for the treatment combination based on survey results. One member of the employee expert panel expressed, “while job interviewing is a standard part of the process”, it is not of great importance. While this individual reports taking the interview process seriously when hiring new employees, the manager also believes there are more important criteria for evaluating candidates. Despite this outlier, the employee expert panel agreed that job interviewing is important. In addition, interpretation of the survey results leads to the conclusion that the employee expert panel found the goals, experimental procedures, and outcomes of this study to be valuable and beneficial for student participants.

*Table 5: Employee Expert Panel Survey*

Statement	Mean Response
I believe the job interview is an important part of the job search process.	4.35
I believe that practicing the interview with avatars could be helpful for students trying to improve their interview skills.	4.85
I believe that coaching sessions conducted after the practice interviews could be helpful to students trying to improve their interview skills.	4.7
I believe that the interview process is especially important for students with disabilities who may need special accommodations.	4.8 <sup>a</sup>
I would like to hire people with disabilities who are qualified for positions within the business I manage.	4.65

<sup>a</sup> One of the employee expert panel members choose not to answer the question as he stated he was too unfamiliar with disability to know whether the interview process was “especially” important or not.

### Summary

Interviewing is an important skill to possess when searching for employment. A combination of interview practice in a mixed-reality environment and individual coaching sessions is effective at increasing overall interview skills for the individuals with ID who participated in this research study. While none of the student participants reached a 100% score on the rubric, each participant did show increases that demonstrate a noticeable difference given the combination of coaching and practice within the TLE TeachLive™ lab. In addition, student participants showed marked improvement as evidenced by their increased scores during treatment and individual gains from pre to post test. The innovative technology used in the TLE TeachLive™ lab, demonstrated that practice taking place in a virtual environment, combined with coaching, can provide performance that generalizes to simulated live interview situations.

Finally, student participants, their parents/legal guardians, and employers overwhelmingly saw the value in both the practice and coaching sessions. Quantitative data and qualitative feedback points to a successful treatment according to the stakeholders involved.

## **CHAPTER FIVE: DISCUSSION**

### Introduction

The purpose of this study was to explore if the treatment combination of interview practice and individualized coaching sessions would increase interview performance for 18-22 year-old student participants with ID. The study was also designed to see if participant performance would generalize from a mixed-reality environment to a live setting. Finally, the study was designed to determine the social validity of using mixed-reality and individualized coaching for the purpose of improving interview performance. This chapter summarizes the current findings, discusses limitations of the current study, highlights implications for practitioners and researchers, and addresses future research possibilities.

### Summary of Findings

The treatment combination of practice interviews in mixed-reality environments and coaching was effective for improving interview performance across all participants. Although two student participants missed treatment sessions due to family and transportation issues, these treatment sessions were rescheduled and all five student participants saw improvements in their performance in both the TLE TeachLivE™ lab and in live settings. Further, all stakeholders (student participants, parents/legal guardians, employers) judged the goals, procedures, and outcomes of the combination of interview practice and individual coaching to be important and meaningful for young adults with ID.

### Technical Demands and Challenges

This particular intervention requires trained personnel, dedicated space, and certain technical components as detailed in the methodology. Personnel include trained career service personnel, educators with experience in transition, and an interactor trained in improvisation, education, and psychology. Dedicated space included two separate classrooms within the same building. One room was the TLE TeachLivE™ lab and the other was used for coaching sessions. The technical components required included specific software, namely, the TLE TeachLivE™ system and Skype. The hardware included cameras, speakers, and microphones. Technology can falter from time to time and there were two days when the sessions had to be delayed by approximately 30 minutes so that the TLE TeachLivE™ system could be rebooted and tweaked by study personnel. There were also four interviews that were not recorded due to camera failure. However, all interviews were scored in real-time and the technical issues did not impact the study in any way.

Feedback from student participants provided interesting insight into their perspectives on working with avatars. In general, student participants found Ms. Lowery (the avatar interviewer) to be “cool” and they enjoyed working with her. One student participant even went so far as to say that “we had fun”. One participant noted that the avatar’s lips “didn’t always move with her words”. This non-synchronization is a function of the technology and advancements are being made that will improve the ability of the avatar to mirror interactor movements and words. Another participant claimed that Ms. Lowery “talked too fast”. This feedback is valuable and will be addressed with the interactor in future research studies. Overall, however, the perception



of the research team based on student participant feedback is that the interview process was very realistic and the valued the process of interviewing with an avatar.

### Individual results

#### *Introduction*

One of the most interesting outcomes of this study was the demonstration to a wide variety of different skills despite similar psycho-educational profiles. In this particular study, the student participants were all diagnosed with intellectual disability (ID) and their IQ scores ranged from 55-65 according to the profiles retrieved from their school system. However, in the lab and coaching settings, very distinct differences in personality emerged that appeared to be influential during interview performance. When analyzing the data from the pre-post live interviews, it is evident that gains in performance are varied in each domain and that distinct differences do exist between participants (Figure 2). These distinctions are now discussed to illustrate the differing impact for individuals with different social competencies.

Table 6: Results from Pre-Post Interviews in Each Domain

<b>Difference in Domain Pre-Post Scores</b>										
<u>Each Domain Score out of 11 points</u>					<u>Total Score out of 100 points</u>					
	<b>Jane</b>		<b>Anne</b>		<b>Carlitos</b>		<b>Elana</b>		<b>Belle</b>	
<u>Overt Behaviors</u>	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Eye Contact	10	7	4	1	0	10	1	4	6	10
Posture	0	1	11	11	11	11	0	8	0	11
Hand Gestures	0	2	7	11	4	11	0	9	0	11
<u>Verbal Communication</u>	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Avoidance of slang/inappropriate language	8	7	8	11	7	7	11	8	9	11
Lack of distracting communication habits (“um’s”)	6	9	1	11	1	11	11	11	6	11
Clear volume and clarity of voice (repeat question?)	7	8	1	6	7	11	9	10	7	3
<u>Content of Answers</u>	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Answers questions asked	0	4	0	4	2	7	6	10	0	5
Highlights qualities of interviewee	0	9	0	0	2	10	4	11	0	0
Positive in nature (enthusiasm, energy, excitement)	6	10	9	0	10	11	10	11	0	5
<b>Total Score out of 100 points</b>	<b>37</b>	<b>58*</b>	<b>41</b>	<b>59</b>	<b>44</b>	<b>90*</b>	<b>53*</b>	<b>83*</b>	<b>28</b>	<b>67</b>

\*Score includes one additional point for positive greeting.

### *Jane*

Jane, the first participant, initially presents as very shy and timid. She had to have her full-time job coach present in order for her to enter the TLE TeachLive™ lab during the first few sessions and often walked away several times before entering the lab. During initial interviews, Jane repeated the same words many times, kept her hands in her pockets or cracked her knuckles, swiveled in the interview chair, and often did not answer the question asked by the interviewer. Jane often became fixated on a phrase or answer and would use the same answer for many questions even if the answer was not content appropriate for the question asked.

During her first coaching session, Jane stated that she “did good” during the interview and she was not aware that any of her behaviors could be distracting. In addition, Jane felt that she answered all the questions appropriately. However, as Jane and the coach discussed examples of various interview behaviors, Jane became aware that some of what she was doing could be distracting to the interviewer and she began to modify her performance. She began to sit still, place her folded hands on the table, and sit up straight. In addition, Jane began to focus on the question asked and was able to provide more concrete, appropriate responses, including providing multiple answers to certain questions. During her social validity interview, Jane stated that she felt the coaching sessions were very beneficial to her and appreciated the way that the coach, Ms. Janet, was “patient with me” and “polite”.

Visual analysis of post-study live interview results (Score= 58) indicate that Jane made a 21 point improvement from her pre-study interview (Score=37). Jane did improve by 21 points, however, her final score of 58 does fall below her final score of 67 in the TLE TeachLivE™ setting. The live interviewer reported that Jane was hesitant to come in for the interview, used slang throughout the interview, and slumped in her chair. This behavior may be further evidence of Jane's anxiety and timidity around new people as the individual conducting the live post-interviews was not an individual that any of our student participants had met before the post-interview.

#### *Anne*

The second participant, Anne, also presented as shy and timid but she was willing to come into the lab and told the research team that it was important to her to improve. During baseline interviews, Anne would start playing with her hair the first time she was presented with a question. She continued playing with her hair the entire interview. This behavior appeared to be a nervous tick. During this period, she was very soft-spoken, hunched over, and made little to no eye contact with the interviewer.

Following the intervention, Anne's overt behaviors changed considerably. Although she did not realize she her actions when first prompted by the coach, she recognized that certain behaviors were distracting when they were demonstrated for her. She mentioned to the coach that she was eager to improve her performance and she made an effort to improve her posture, maintain eye contact, and to quit playing with her hair. She recognized that she was saying "um" too many times during the interview and started to pause when trying to formulate her answers.

Anne felt that the practice sessions after the coaching started were very important to her and, other than the coaching room being “too cold”, she felt “everything was perfect” about the lab, the practice interviews and coaching sessions.

Anne received a final score of 59 in her live post-interview. This change is an improvement of 18 points over her live pre-interview. Analysis of results indicates (Table 6) that the content of her answers during the live post-interview was very poor, and these results may be an indication of her insecurity around a new person. While her overt behaviors (eye contact, posture, and hand gestures) greatly improved and were very strong during the post-interview, she struggled with her verbal content of answers. Overt behaviors had improved based on the rubric scores during treatment but this improved behavior was not exhibited during the post-interview.

### *Carlitos*

Carlitos presents as a very social young man and he frequently voiced his desire to “get a job” repeatedly throughout the research process. Carlitos uses a manual wheelchair and constantly needs support to navigate campus which may be one reason for his willingness to interact with people he does not know. Carlitos presented as excited to begin the research study and entered each practice interview in the lab with a smile on his face and a cheerful, “Hello Ms. Lowery!”. Carlitos maintained strong eye contact throughout each interview and was very enthusiastic and positive in all his answers. During one question about resolving a conflict with a colleague, friend, or co-worker, Carlitos said, “I never really had a conflict with nobody,” and it is easy to believe that this is accurate.

When analyzing Carlitos' interview performance, his needs were much different than Jane and Anne. Carlitos was very social but needed guidance with the content of his answers specifically to make sure that he tried to answer each question with details. Carlitos did show improvement in this area once treatment began. As the research study concluded, he was clearly happy that he had participated. Carlitos reported that the coach helped him take his time with his answers and to "think before you answer". He also reported that he and Ms. Lowery (the avatar) "had fun" and that he really enjoyed the process.

Carlitos had the largest gain from pre to post live interviews. His pre-interview score was 44 while his post-interview score was 90. Carlitos was the only participant whose score in the live post-interview was higher than in his final treatment interview. This improvement may be attributed to Carlitos' social personality and enjoyment of people. He seems to enjoy being around people and this factor, coupled with the skills he learned during the practice interviews and coaching sessions, may explain his significant improvement between the pre-treatment and post-treatment live interviews.

### *Elana*

Elana, our fourth participant, also appeared as very social and voiced her eagerness to improve during her interviews. Like Carlitos, Elana appeared to begin the study with more advanced social strategies than many other student participants. For example, she would always repeat the question before she answered it in order to help her remember the question. Elana also maintained good eye contact and made a strong first impression by greeting the interviewer

immediately, sometimes even before an introduction had been initiated by a member of the research team.

Elana's challenge was to expand her answers and provide as much detail as possible. As she continued her combination of practice and coaching sessions, Elana appeared to become more comfortable lengthening her responses and answering in specifics when possible. In the social validity survey, Elana pointed out that she enjoyed the sessions but did not have anything else to add because she had "learned enough".

During the post-interview with a live person, Elana earned a score of 83 as recorded on the interview rubric. This score was consistent with her treatment interviews in which the mean score was 85.3. The live interviewer mentioned that she was impressed with "the content of Elana's answers and the clarity" of her verbal communication. Analysis of the rubric scores indicate that Elana lost most of her points due to lack of eye contact which is surprising considering overt behaviors are an area in which she scored high during the treatment sessions.

### *Belle*

Belle, the final participant, presents as a very social person outside of the lab but appeared very nervous and timid once the baseline interviews started. She displayed poor posture and spoke very quietly without annunciating her words. Additionally, Belle did not present as enthusiastic throughout the baseline interviews. Belle's baseline scores ranged from 11 to 55 with no stability shown throughout baseline treatments. Although the behaviors described above were consistent, the reason for Belle's variability in scores was due to her not answering certain questions asked. In certain cases, after being asked a question, Belle would visually fixate on

Ms. Lowery and not answer the question for 30-40 seconds. Occasionally, Belle would ask Ms. Lowery to repeat the question and would then stare again without answering the question. This behavior could have been due to her not fully understanding the questions asked and not understanding how to clarify the question when confused. If Ms. Lowery suggested that they “move on to the next question” Belle would agree and, oftentimes, demonstrated the ability to answer the next question fluently and precisely.

After coaching began, Belle explained to the coach that she did not always understand the questions so she did not answer them. Working with the coach, Belle learned to say, “I don’t understand the question. Could you ask it in a different way?” This technique proved to be very helpful to Belle and her scores stabilized and improved almost immediately after she entered treatment. Although she still was not able to answer all of the questions asked, she was able to create a more conversational tone and appeared to feel more comfortable during the interview after learning that it is acceptable to state that she did not understand. In her social validity interview, Belle pointed out that the coaching sessions helped her “ask about questions that needed explained” and that this technique was helpful to her.

Analysis of post-study interview results for Belle show a 39 point improvement in her performance from pre-post live interviews. Belle answered every question and, while the content of her answers were still scored low (Table 6), analysis indicates that she made gains in both the overt behaviors and the verbal communication measured in this study. Her live interview score of 67 was slightly below her final treatment score of 75.



### Other Findings

Interestingly, there were two patterns that seemed consistent across student participants. First, student participants seemed to become bored and inattentive between the fourth and fifth coaching sessions. Based on the coach's feedback and visual examination of the data, it appears that participant's lost focus as their attentiveness and scores stabilized or dropped between treatments 4-6. This drop in scores could be due to many factors. First, due to time constraints within the lab, all six treatment sessions were held over the course of two days. The intensity of the schedule could have led to treatment fatigue. Second, each individual may have a level in which performance stabilization would occur naturally due to "deficits in general mental abilities such as reasoning, problem-solving, planning, abstract thinking, judgment, academic learning and learning from experience" (APA, 2011). While it is impossible to know exactly why performance leveled off between the fourth and fifth coaching sessions, either of the two reasons listed or a combination of both could be the impetus for the perceived loss of interest in the coaching sessions and the stabilization of performance scores.

The second most interesting finding was that student participants were very confident of their performance in initial coaching sessions and during the social validity interviews. Almost all participants thought they had made very few mistakes, if any, and seemed very confident in their interviewing ability. While they all felt the interviews and the coaching were helpful and clearly expressed their desire to improve during the coaching sessions, they also felt that they were good interviewees. After coaching started, all student participants were very receptive to it and responded well according to their treatment scores and their feedback during the social validity interviews. In the follow-up surveys, student participants thought they had improved and

that they were very adept at interviewing. Both during and after treatment sessions, all student participants expressed a high level of confidence in their abilities.

### Ties to Literature

Two decades ago, researchers reported that coaches and mentors may be able to help individuals with ID develop the ability to self-monitor their social interactions (Greenspan & Granfield, 1992; Schloss & Wood, 1990). Researchers continue to report that individuals with disabilities derive a great deal of benefit when being coached or mentored at work (Brown, et al., 2010; Burgstahler & Cronheim, 2001), as well as when serving as a mentor (Daughtry et al., 2009; Sword & Hill, 2002). In fact, studies have shown that individuals with ID benefit more from a coaching/mentoring model of guidance than from having a job coach who uses direct instruction to teach completing employment tasks and social competence (Lee et al., 1997). One of the most interesting findings from this research study was observing student participants, after coaching sessions, demonstrate self-monitoring during the job interview. Self-monitoring occurred most often with overt behaviors. Video analysis of interviews allowed researchers to watch student participants make changes in their overt behaviors during the social interaction. Although the definition states that ID includes sub-average intellectual functioning and deficits in adaptive behavior that adversely affect performance (APA, 2011), the fact that student participants thought about their actions while in a social situation is encouraging. This social awareness is promising and suggests a need for more in-depth research regarding metacognition and ID.

A quality coaching relationship is dependent upon establishing trust, giving the participant a voice in the process, asking the right prompts to promote further thought, promoting growth instead of mastery, focusing on the practical instead of the abstract, and allowing the participant to take responsibility for their learning (Bearwald, 2011; Hartnett-Edwards, 2011; Knight, 2011, Parker, 2009; Tschannen-Moran & Tschannen-Moran, 2011). In this research study, we were fortunate to have a former transition educator who was responsible for the implementation of the coaching prompts. Ms. Janet, the coach, was trained on effective coaching prior to the implementation of the intervention and was provided a script of the coaching prompts that she followed during the intervention. Ms. Janet also practiced administering two coaching sessions with two research team members prior to the start of the study. While the coaching prompts guided the coach to perform the process with fidelity, Ms. Janet also displayed a strong ability to build trust and establish a relationship with participants. In addition, Ms. Janet was very careful to encourage the participants to come up with their own solutions. This supporting strategy occurred by her asking questions such as, “And how could you change that behavior if you think it may be distracting?” or “What could you do if you don’t understand the question?”. The ability to build trust and still encourage participants to find their own solutions was vital to the success of the students.

The amount of time student participants spent with Ms. Janet in the coaching sessions is also evidence they found these sessions useful and important. Analysis of data shows students spent an average of 14 min 40 s answering the eight coaching prompts. In contrast, the 11 question interview lasted an average of only 6 minutes during baseline and treatment sessions. This difference in length of time for each part of the intervention may be an indication of the

importance of coaching and the impact it has on interview performance as opposed to only practice interviews themselves. However, it is important to note that the coaching sessions were based on participant's perceptions of their practice interviews. Both practice interviews and coaching sessions are linked and should be seen as a combination intervention and not as separate treatments.

While students performed better on the social competence measures evaluated in the formal interview setting, the combination of coaching and interview practice also impacted their behavior in the classroom according to reports by their lead teacher. The teacher reported that students appeared more confident, asked more questions to clarify, and showed more persistence when engaging in social interactions instead of "shutting down" as they had before they began the research study. While practice in the TLE TeachLive™ lab was vitally important to student participant development, the benefit of having a quality coach who followed a script of prompts but also mastered the nuances of quality coaching cannot be overstated as the student participants engaged in social interactions.

The value of social competence and social skills for individuals with ID transitioning into the workplace cannot be overstated (Andrews & Rose, 2010; Greenspan et al., 1981; Johnson et al., 2010; Storey et al., 1991). Social skills are interpersonal behaviors such as establishing eye contact, smiling, or taking turns (Lecavalier & Butter, 2010). According to self-reports from people with disabilities, vocational success is not contingent solely on completing job duties but also lies in the social aspect of employment (Hurlbutt & Chalmers, 2004; Muller et al., 2003). Successfully employed adults with and without disabilities need to possess proficient social skills (Benz et al., 1997; Goleman, 1998; Hudson et al., 1988; Lecavalier & Butter, 2010; Mithaug et

al., 1985). Effective and appropriate social abilities, among other factors, can lead to enhanced social inclusion and better outcomes both in and out of work settings (Nota, Ferrari, Soresi, & Wehmeyer, 2007; Nota & Soresi, 2004). Previous literature suggests that learning specific social competencies, such as those developed during this intervention, may benefit individuals with ID in their preparation for the workplace (Bear et al., 2006; Benz et al., 1997; Colley & Jamison, 1998; Fabian, 2007; Morningstar, 1997). The results of this study suggest that social behaviors important to securing and maintaining employment may also improve through a coaching model with an experienced, qualified teacher serving as a coach.

According to Carey et al., (2005), adults with ID express interest in using today's electronic technology. This interest was apparent in this research study as all of the student participants appeared genuinely engaged with the technology. In addition to being enjoyable, technology can help individuals learn executive functioning skills (Bauer & Ulrich, 2002; Carey et al., 2005; Gillete & Depompei, 2008) and may enhance their academic skills (Dieker et al., 2008). While virtual realities have been promising for teaching community skills to individuals with ID (Langone et al., 2003; Standen et al., 2001; Standen & Brown, 2005), this research study also shows that mixed-reality technologies may be an exciting new medium to assist individuals with disabilities in practicing social competence.

### Limitations

There are a number of limitations to the present study which should be taken into account when interpreting these findings. This multiple baseline study used an across participants design. Due to nature of single subject design, several threats to internal validity were present. Kazdin

(1982) identified these potential threats to internal validity including history, maturation, and selection biases. These threats to internal validity were taken into account in the design and implementation of this research study; however, there were some factors that provide limitations.

First, the student participants were volunteer mature-age university students who had a specific interest in improving their interview performance or gaining employment and may not be representative of the general population and persons with ID. This specific population of learners and their experiences may be unique to the central Florida region. All student participants were part of the same class in the same transition program. This homogeneity limits the variability of the student participants and enhances experimental control by having participants that are “functionally independent but also functionally similar” (Gast, 2010, p.281). However, this homogeneity may also limit generalization to individuals labeled as ID but with different skill sets due to various educational backgrounds.

Second, social skills and self-advocacy, in particular, are important for individuals with disabilities so they become involved in stating their workplace needs and “selling themselves”. These skills are vital in a live interview setting and in the workplace. However, social skills are only one of several barriers that limit individuals with ID from securing successful employment. While individuals with disabilities who possess strong social skills may have more success in securing and maintaining employment, social skills alone may not compensate for less than adequate academic preparation or other’s perceptions and treatment of individuals with ID in the workplace. Other factors such as dress, personal grooming, hygiene and punctuality that may be judged in determining interview success (e.g. Allen, 1994; Brown, 2000; Kissane, 1997; Stewart & Cash, 1997) also were not addressed in this study.

Third, it is important to note that interviewing is a subjective process from both the perspective of the interviewee and the interviewer. This subjectivity can lead to differing perspectives by both parties. The differing views on what is a successful interview may also limit generalization outside of a controlled setting as outside interviews use differing measures when evaluating interview performance. While the research team attempted to address this issue through the use of multiple interviewers, the same rubric was used for each pre, baseline, treatment, and post-interviews. Other interviewers may use different criteria when judging interviews.

Fourth, individuals with ID have a wide range of abilities and this variance in skills should be taken into account when considering generalization data. For example, Jane and Anne appeared much more timid around people they did not know than Carlitos and Elana. Although all student participants appeared to enjoy working with the avatar, Jane and Anne seemed more reluctant when working with a real person as demonstrated when analyzing their performance in pre and post-live settings. While all of the student participants in this study seemed to acclimate quickly, other participants may take longer to adjust to working in a mixed-reality setting and results from the rubric alone will not measure participants' comfort level throughout the study. Although the lead researcher attempted to appraise the generalization of performance to live settings, it will be difficult to know if performance results will generalize to other young adults with ID as they pursue interview success. However, one could also see the variance of the population's skill sets as a positive demonstrating that procedures will work for a variety of participants.

Fifth, two student participants missed their scheduled time in the lab due to a family emergency or transportation issue. The sessions were made up when the student participants returned to school, however, there was a gap in treatment for each participant. In addition, the post-interviews were held on-campus in a formal, quiet setting with a professional in professional dress. This may not be consistent with the conditions of an entry-level interview.

Finally, the combination of independent variables, practice and coaching, may not allow for differentiation between variables and their responsibility for the outcome. Nevertheless, this study has begun the process of evaluating the effectiveness of the combination of interview practice in the TLE TeachLive™ lab and coaching and has further advanced our knowledge of the effectiveness of social skills training in these environments for students with ID.

#### Implications for Practitioners

The advantage of the TLE TeachLive™ lab is that the individual has the ability to repeat interviews without sacrificing the valuable first impression since the virtual interviewer can be reset and used for repeat experiences. The ability to manipulate impressions is unlike a real employment interview which only affords the interviewee one opportunity to make a first impression. The chance to practice in a virtual environment may eventually allow an individual the opportunity to practice interviewing skills with multiple interviewers in a quick, easy, and cost-effective setting. Although only one avatar was used in this study in order to strengthen the reliability of results, it is possible to have multiple avatars available for mock interviews. While mock interviews with real people perform the same function, mixed-reality virtual environments allow for fewer personnel and, as the technology scales up, the ability to change avatars



seamlessly should become more affordable (Dieker et al., 2008). Interviewing in a simulated office environment allows for participants to adjust their overt behaviors, practice the communication of their answers, and to gain experience understanding the type of questions an interviewer may ask without losing a potential job because of a mistake in any of the areas (e.g. overt behaviors, verbal communication, content of answers) during a real interview.

The advantages of using a mixed-reality environment to allow individuals to practice certain skills reach far beyond practicing interviewing. For example, individuals both with and without disabilities may be able to practice self-advocacy skills, language fluency, behavior management, or practice working with multiple avatars on group projects in which good interpersonal communication and social relationships are vital to success. The mixed-reality environment could have many uses for students and teachers in a classroom, school, or school district (Dieker et al., 2008). The interactors can provide the opportunity to interact with one avatar as was done in the present research study or to interact with multiple avatars (Andreasen & Haciomeroglu, 2009). Individuals can practice academic, social, leisure, or work skills with an avatar in the mixed-reality environment while gaining confidence in a wide variety of functional areas including speaking to unknown individuals or groups, collaborating in group projects, conversing with angry or upset colleagues, or advocating in unfamiliar environments.

### Implications for Researchers

The use of mixed-reality environments and coaching to provide instruction for individuals with disabilities is innovative and has many possibilities for further research. Mixed-reality environments can be seen as a medium for instruction and practicing behaviors while the

coaching can be seen as the instruction itself. The particular type of instruction that a teacher uses (e.g. direct instruction, constructivist method, etc.) could be used in any setting. What makes mixed-reality unique is the opportunity for individuals to practice these skills in a setting that is realistic but does not result in harm to the participant or the “practice partner” since they are not real (Dieker et al., 2008).

In regards to this study, it will be interesting to investigate if interview practice in a mixed-reality environment is the most significant factor in altering interview performance or if the utilization of coaching adds a dimension that allows student participants to increase or decrease their performance. The effect of each variable could be analyzed by comparing interview performance after practice interviews with no coaching to interview performance after coaching sessions with no practice. The combination of variables was successful in this study but to what degree each component was responsible for increased performance would need to be identified by further research.

Further research should also study the role that specific characteristics such as the gender, age, and dress of the avatar or the participants might play in contributing to a difference in treatment outcomes. For this study, we used one middle-aged female avatar dressed very formally and practicing a set collection of questions. Further development of avatars will be helpful in future studies as differentiating the age, gender, style of dress, and manner of questioning may lead to different results. The coach in this study was a retired female teacher. Perhaps results would have been different had the coach been a different age, gender, or personality. Additionally, the study included only had one male participant. Results may be different if more males were introduced to the study. Changing the variables associated with the

avatar, the coach, and the participants may lead to differences in results. Determining the most effective arrangements, while a challenge, may be useful.

Future research may also be conducted to test the reliability and compare the validity of other evidence based models of instruction (e.g. direct instruction, video modeling, etc.). For example, would results improve if we added a video modeling component to instruction? Would results occur sooner or generalize differently if a different type of instruction is used? It may also be useful to study the combination of video modeling and coaching before practicing in the mixed-reality environments.

### Conclusions

Research clearly demonstrates that postsecondary employment outcomes including employment, community participation, and quality of life for individuals with ID are poor when compared to those without disabilities. One reason for these disappointing outcomes is that many individuals with ID struggle in social situations and this lack of social competence affects employer attitudes and employment outcomes for this population of individuals. Evidence from a variety of sources demonstrates that employment is a major predictor of increased quality of life, level of income, and amount of community participation.

This research study demonstrated that using the combination of interview practice in mixed-reality environments and coaching can result in improvements in the interviewing skills of individuals with disabilities. The improvements were seen in both the laboratory setting and in a live environment. Further, student participants in the study, their parents/legal guardians, and an employee expert panel all validated the need and effectiveness of this treatment. Although the

results of this research are promising, the use of this type of technology is very innovative and has not scaled to utilization by mass participants yet. The research in this area is so sparse that more well-designed studies are needed before the use of mixed-reality environments can become an evidence-based practice as defined by Odom et al. (2005) and advocated for by the Council for Exceptional Children.

## **APPENDIX A: UCF IRB APPROVAL**



University of Central Florida Institutional Review Board  
Office of Research & Commercialization  
12201 Research Parkway, Suite 501  
Orlando, Florida 32826-3246  
Telephone: 407-823-2901 or 407-882-2276  
[www.research.ucf.edu/compliance/irb.html](http://www.research.ucf.edu/compliance/irb.html)

### Approval of Human Research

From: UCF Institutional Review Board #1  
FWA00000351, IRB00001138  
To: Zachary M. Walker  
Date: December 13, 2011

Dear Researcher:

On 12/13/2011, the IRB approved the following human participant research until 12/12/2012 inclusive:

Type of Review: UCF Initial Review Submission Form  
Project Title: THE EFFECTS OF INTERVIEW PRACTICE IN MIXED-  
REALITY ENVIRONMENTS (THE TEACHLIVETM) AND  
INDIVIDUALIZED COACHING SESSIONS ON INTERVIEW  
PERFORMANCE FOR STUDENTS WITH DISABILITIES  
Investigator: Zachary M. Walker  
IRB Number: SBE-11-08033  
Funding Agency:  
Grant Title:  
Research ID: N/A

The Continuing Review Application must be submitted 30 days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form cannot be used to extend the approval period of a study. All forms may be completed and submitted online at <https://iris.research.ucf.edu>.

If continuing review approval is not granted before the expiration date of 12/12/2012, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a copy of the consent form(s).

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., CF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 12/13/2011 09:22:04 AM EST

**APPENDIX B: ORANGE COUNTY PUBLIC SCHOOLS RESEARCH**

**APPROVAL**

Accountability, Research, and Assessment  
P.O. Box 271  
Orlando, FL 32802-0271

**RESEARCH REQUEST FORM**

- Purpose and Research Problem
- Instruments
- Procedures and Proposed Data Analysis

RECEIVED DEC 06 2011

Requester's Name Zachary H. Walker Date 11/30/11  
 E-mail ZacharyWalker@brighton.edu Phone (205) 246-0263  
 Address 2521 Luster Rd Orlando FL 32828  
Street City, State Zip  
 Institutional Affiliation UNIVERSITY OF CENTRAL FLORIDA  
 Project Director or Advisor Dr. Wallace Wiggins Phone (407) 227-2402

Degree Sought (check one):  Associate  Bachelor's  Master's  Specialist  
 Doctorate  Not Applicable

Project Title: The effects of practicing inferential skills in a mixed reality environment for students with intellectual disabilities

ESTIMATED INVOLVEMENT			
PERSONNEL/CENTERS	NUMBER	AMOUNT OF TIME (DAYS, HOURS, ETC.)	SPECIFY SCHOOLS BY NAME AND NUMBER OF TEACHERS, ADMINISTRATORS, ETC.
Students	5	Tuesday 9:00-1:00, Th 9:00-1:00	The Walden Charter School #0013
Teachers			
Administrators			
Schools/Centers			
Others (specify)			

Specify possible benefits to students/school system: 19-22 year-old students from the USF Lakes campus will come on campus at USF to work on their employability skills through interactive practice and modeling. This will be a very valuable intervention for students with disabilities to help try to secure employment. Please let me know if you have any questions. Thank!

**ASSURANCE**  
 Using the proposed procedures and instrument, I hereby agree to conduct research in accordance with the policies of the Orange County Public Schools. Deviations from the approved procedures shall be cleared through the Senior Director of Accountability, Research, and Assessment. Reports and materials shall be supplied as specified.

Requester's Signature Zachary H. Walker

Approval Granted:  Yes  No Date: 1-3-12

Signature of the Senior Director for Accountability, Research, and Assessment Debbie Gentry

NOTE TO REQUESTER: When seeking approval at the school level, a copy of this form, signed by the Senior Director, Accountability, Research, and Assessment, should be shown to the school principal who has the option to refuse participation depending upon any school circumstance or condition. The original Research Request Form is preferable to a hard document.

Reference: School Board Policy DCS, s. 916 CCPS1044674 (Revised 2/10)

*Students living at home or with guardians should have an informed consent agreement signed by the legal guardian in addition to themselves.*



## **APPENDIX C: STUDENT PARTICIPANT QUESTIONNAIRE**

**STUDENT PARTICIPANT QUESTIONNAIRE**

**Employment History**

Please list the names of employers with present or last employer listed first.

**Name of Participant:**

<b>Name of Employer:</b>	<b>Job Title:</b>
Address:	<b>Duties:</b>
City, State, Zip Code	Dates of Employment: From: _____ To: _____
Supervisor:	Hourly pay or salary: Starting pay: _____ Ending pay: _____
Telephone:	Reason for Leaving:
<b>Name of Employer:</b>	<b>Job Title:</b>
Address:	<b>Duties:</b>
City, State, Zip Code	Dates of Employment: From: _____ To: _____
Supervisor:	Hourly pay or salary: Starting pay: _____ Ending pay: _____
Telephone:	Reason for Leaving:

**APPENDIX D: STUDENT PARTICIPANT/PRIMARY CAREGIVER  
INFORMED CONSENT**



**A research study on the relationship between the treatment combination of interview practice in a mixed reality learning modality (TLE TeachLivE™) and individualized coaching sessions for young adults with intellectual disabilities.**

**Informed Consent**

Principal Investigator(s): Zachary M. Walker, M.B.A., M.A., Ph.D. Candidate

Faculty Supervisor: Wilfred Wienke, Ph.D.

Investigational Site(s): University of Central Florida  
TLE TeachLivE™ Lab, Teaching Academy

**Introduction:** Researchers at the University of Central Florida (UCF) study many topics. To do this we need the help of people who agree to take part in a research study. You are being invited to take part in a research study which will include about 5 people from local transition programs. If you are between the ages of 18-22, we would like you to participate in research that will gather information on the effectiveness of the combination of practice and coaching on interviewing skills. This study is being conducted to help students improve their interview skills in preparation for employment.

The person doing this research is Zachary Walker of the Child, Family, and Community Sciences Department in the College of Education. Because the researcher is a graduate student he is being guided by Dr. Wilfred Wienke, a UCF faculty supervisor in Child, Family, and Community Sciences.

UCF students learning about research are helping to do this study as part of the research team. Their names are Daniella Chavez and Amirica Nicholson.

**What you should know about a research study:**

- Someone will explain this research study to you.

- A research study is something you volunteer for.
- Whether or not you take part is up to you.
- You should take part in this study only because you want to.
- You can choose not to take part in the research study.
- You can agree to take part now and later change your mind.
- Whatever you decide it will not be held against you.
- Feel free to ask all the questions you want before you decide.

**Purpose of the Research Study:** The purpose of this study is to identify if the treatment combination of interview practice in a mixed-reality learning modality (TLE TeachLivE™) and individualized coaching sessions helps improve interview performance.

**What you will be asked to do in the study:** You will be asked to participate in up to ten practice interviews with avatars in the TLE TeachLivE™ lab. These interviews will be conducted on Tuesdays and Thursdays over the course of seven weeks (Jan 16<sup>th</sup>- March 1); however, you will only need to be present on assigned Tuesdays and Thursdays from 9 AM- 1 PM. Interviews will consist of 11 questions. After the interview is completed, you will participate in a coaching session with a Florida certified teacher. Coaches will ask you a series of questions to which you can respond however you like. The coaching sessions are designed to improve your interview performance as well as gather your feedback on the success of using avatars to practice interviewing. All interview questions and coaching prompts will be explained to you before research begins.

**Location:** UCF Teaching Academy, TLE TeachLivE™ lab, 3<sup>rd</sup> floor

**Time required:** The research sessions will take place between January 16<sup>th</sup> and March 3<sup>rd</sup>, 2012. Each session will take approximately 30 minutes to complete.

**Audio or video taping:** You will be video-taped during this study. If you do not want to be taped, you will not be able to participate in the study. Please feel free to discuss this with the researcher or a research team member. The tapes will be kept in a locked, safe place. The tapes will not be shared with any other sources outside the research team and will be used to establish trends in interview performance. We will be able to share the tapes with you at the end of the study if you would like to have access to them.

**Risks:** There are no reasonably foreseeable risks or discomforts involved in taking part in this study.

**Benefits:** We cannot promise any benefits to you or others from your taking part in this research. However, possible benefits include improve their interview skills in preparation for employment. The intervention studied in this research study will consist of practice interviewing and coaching with a Florida certified teacher.

**Compensation or payment:** There is no compensation or other payment to you for taking part in this study.

**Confidentiality:** We will limit your personal data collected in this study to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of UCF.

**Study contact for questions about the study or to report a problem:** If you have any questions or comments about your selection or treatment as a research participant or if you would like to obtain a hard copy of this Informed Consent document, please contact:

Zachary Walker, University of Central Florida  
College of Education  
4000 Central Florida Blvd.  
Orlando, FL 32816-1250  
(205) 240-0263

**IRB contact about your rights in the study or to report a complaint:** Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901. You may also talk to them for any of the following:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You want to get information or provide input about this research.

**Withdrawing from the study:**

If you decide to leave the study, contact the investigator so that the investigator can make appropriate plans and revisions to the research design. We will tell you about any new information that may affect your health, welfare or choice to stay in the research.

## **APPENDIX E: START OF INTERVIEW SCRIPT**



## INVESTIGATOR START OF INTERVIEW SCRIPT

Thank you for coming today \_\_\_\_\_. You will be interviewing with \_\_\_\_\_. We will enter the room, I will introduce you to \_\_\_\_\_ and you can be seated. You and I will not speak again until after the interview is complete when we will leave the interview room together. Do you have any questions before we begin? Are you ready to begin?

## **APPENDIX F: SAMPLE 11 QUESTIONS FOR INTERVIEW SCRIPT**

### Sample 11 Questions for Practice Interview

1. *Opening Question (Required):* To begin, I would like you to give me a summary of your education and any work related experiences you've had.
2. As you think about your future, what long term/short term goals have you identified for yourself?
3. As an employee, what would you consider your greatest strength/weakness to be?
4. How would you describe your perfect supervisor (management style, communication style, feedback process, etc.)?
5. What accomplishments have given you most satisfaction in your life and why?
6. Tell me about a tough time you've faced- how did you deal with it?
7. Tell me about the last incident that made you angry and how you handled it.
8. Tell me about a time when you worked as part of a team (classroom or work setting) and how you contributed as a team member.
9. Tell me about the best classmate or teammate you've ever had and why you enjoyed working with that person.
10. Tell me about a time when you had a conflict with a friend, colleague, or peer at school or work and how you dealt with it?
11. *Closing Question (Required):* As we close, why should I hire you and why do you think you will be a good employee?

Adapted from Keever, S. (2008). Behavioral-based interviewing: Taking the guess work out of interviewing. *National Association of Colleges and Employers Journal*, 3, 31-36; and conversations with Dr. William Blank, University of Central Florida Office of Career Services (W. Blank, personal communications, November, 2010- March, 2011).

## **APPENDIX G: INTERVIEW QUESTIONS**

## **Interview Questions**

### Intro (Required Question)

To begin, I would like you to give me a summary of your education and any work related experiences you've had.

### Closing (Required Question)

As we close, why should I hire you, and why do you think you will be a good employee?

### Opinion

1. As you think about your future, what long term/short term goals have you identified for yourself?
2. As an employee, what would you consider your greatest strength/weakness to be?
3. How would you describe your perfect supervisor (management style, communication style, feedback process, etc.)?
4. In a work setting, what motivates you to do well?
5. How do you handle pressure/stress? And give me an example.
6. Who are your role models and why?
7. What are your short, medium, and long-term goals?
8. What do you consider to be your greatest success?
9. What is important to you in a job and why?

### Experience

1. If I were to ask one of your teachers or prior employers to describe you, what would they say?
2. What accomplishments have given you most satisfaction in your life and why?
3. Tell me about a tough time you've faced- how did you deal with it?
4. Tell me about the last incident that made you upset and how you handled it.

5. Tell me about any other work experience you have had and what your duties were as an employee.
6. What experiences in your transition program will you find helpful in a job?
7. Tell me about a stressful situation you have been in recently. How did you handle it?
8. Tell me about a school experience where you learned a great deal.
9. What do you like to do in your free time for fun or relaxation?

### Behavioral

1. Tell me about a time when you worked as part of a team (classroom or work setting) and how you contributed as a team member.
2. Tell me about the best classmate or teammate you've ever had, and why you enjoyed working with that person.
3. Tell me about a time when you had a conflict with a friend, colleague, or peer at school or work and how you dealt with it?
4. Have you ever had a conflict with a supervisor or teacher? How did you resolve it?
5. Describe a situation where you demonstrated initiative by taking action without being told to. What was the result?
6. When was the last time you felt enthusiastic about helping a colleague or co-worker to succeed? Explain.
7. Do you prefer to work alone or as part of a team?
8. Describe a situation in which you were successful.
9. Give an example of how you successfully solved a problem in a work or school setting.

Adapted from Keever, S. (2008). Behavioral-based interviewing: Taking the guess work out of interviewing. *National Association of Colleges and Employers Journal*, 3, 31-36; and conversations with Dr. William Blank, University of Central Florida Office of Career Services (W. Blank, personal communications, November, 2010- March, 2011).

## **APPENDIX H: INTERACTOR TRAINING CHECKLIST**

## The Interactor Training Session Checklist

### The Interview

**Always start with:** "Hi \_\_\_\_\_. My Name is \_\_\_\_\_ and I will be interviewing you today."

**Intro:** To begin, I would like you to give me a summary of your education and any work related experiences you've had.

**Ask 9 remaining question in exact order provided by investigator. See attached example.**

**Closing:** As we close, why should I hire you and why do you think you will be a good employee?

**Always end with:** " \_\_\_\_\_, thank you for coming in today. We will be in touch."

### Extension Probes

\* Extension Probes may be asked to:

- (a) clarify the question, concept, or content
- (b) elongate an important answer
- (c) repeat the question for the participant.

### Practice Interview

Perform practice interview with lead investigator to confirm adherence and understanding of procedures and protocols.



**APPENDIX I: PROCEDURE CHECKLIST FOR THE INTERACTOR**

**APPENDIX II**

<b>Procedures for Interactor</b>		
<b>Student Name</b>	<b>Scored By:</b>	<b>Date:</b>
	<b>Y</b>	<b>N</b>
<b>Start with:</b> "Hi _____, My Name is _____ and I will be interviewing you today."		
<b>First question:</b> To begin, I would like you to give me a summary of your education and any work related experiences you've had.		
<b>Asked 9 remaining question in exact order provided by investigator.</b>		
<b>Last question:</b> "As we close, why should I hire you and why do you think you will be a good employee?"		
<b>End with:</b> " _____, thank you for coming in today. We will be in touch."		
* Extension Probes may be asked to (a) clarify a concept, (b) elongate an important answer, or, (c) repeat the question for the participant.		

## **APPENDIX J: INVESTIGATOR SCRIPT FOR COACHING SESSION**

## INVESTIGATOR SCRIPT FOR COACHING SESSION

This coaching session is intended to improve interview performance. You are not being graded on how you answer these questions so please feel free to answer them honestly and completely. You can also ask any questions if you do not understand a concept. Thank you again for your participation. Do you have any questions before we begin?

Okay, I am going to ask you a few questions about your performance in the practice interview today.

1. On what parts of the interview did you perform well?
2. What mistakes did you make during the interview?
3. What questions surprised you?
4. How did you handle questions that surprised you?
5. What distracting physical characteristics might you have used during the interview ?
6. What verbal ticks or patterns did you use that could have been distracting for the interviewer?
7. Do you feel that the content of your answers was appropriate?
8. What did you learn about interviewing today that can help you improve?

Thank you for participating today. You did a great job.

Adapted from Layng, J. M. (2007). You're hired! successful communication makes all the difference. *Communication Teacher*, 21(2), 54-57.

**APPENDIX K: COACHING QUESTIONS EXPLAINED TO  
PARTICIPANTS**

## Coaching Questions Explained to Participants

Coach: I am now going to explain each of the eight questions to you. Please let me know if there is anything you do not understand or if you have any questions.

1. On what parts of interview did you perform well?

Coach: Do you understand what this question means? *If subject agrees, "Okay, the next question will be...." If the participant does not agree, the coach will explain the question to the participant until the participant affirms their understanding. This will continue for each of the questions below.*

2. What mistakes did you make during the interview?
3. What questions surprised you?
4. How did you handle questions that surprised you?
5. What distracting physical characteristics might you have used during the interview?
6. What verbal ticks or patterns did you use that could have been distracting for the interviewer?
7. Do you feel that the content of your answers was appropriate?
8. What did you learn about interviewing today that can help you improve?

Adapted from Layng, J. M. (2007). You're hired! successful communication makes all the difference. *Communication Teacher*, 21(2), 54-57.

## **APPENDIX L: COACHING PROCEDURE CHECKLIST**

## Coaching Procedures: The coach asked the questions in order

Student Name _____	Scored By: _____	Date: _____	
Coaching Questions	Y	N	
Coach read the coaching session protocol to the participant before beginning.	<input type="checkbox"/>	<input type="checkbox"/>	
On what parts of interview did you perform well?	<input type="checkbox"/>	<input type="checkbox"/>	
What mistakes did you make during the interview?	<input type="checkbox"/>	<input type="checkbox"/>	
What questions surprised you?	<input type="checkbox"/>	<input type="checkbox"/>	
How did you handle questions that surprised you?	<input type="checkbox"/>	<input type="checkbox"/>	
What distracting physical characteristics might you have used during the interview?	<input type="checkbox"/>	<input type="checkbox"/>	
What verbal ticks or patterns did you use that could have been distracting for the interviewer?	<input type="checkbox"/>	<input type="checkbox"/>	
Did you feel that the content of your answers was appropriate?	<input type="checkbox"/>	<input type="checkbox"/>	
What did you learn about interviewing today that can help you improve?	<input type="checkbox"/>	<input type="checkbox"/>	



## **APPENDIX M: INTERVIEW RUBRIC**

## Interview Rubric

Student Name _____		Scored By: _____										Date: _____
		P= Proficient/NP= Non-Proficient										
Overt Behaviors	Greeting	Int. Q	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Closing Q
Eye Contact												
Posture												
Hand Gestures												
Verbal Communication	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Closing Q	
Avoidance of slang/inappropriate language												
Lack of distracting communication habits ("um's")												
Clear volume and clarity of voice (repeat question?)												
Content of Answers	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Closing Q	
Answer question asked												
Highlights qualities of interviewee												
Positive in nature (enthusiasm, energy, excitement)												
<b>Total Score</b>												

Created based on conversations with Dr. William Blank, University of Central Florida Office of Career Services (W. Blank, personal communications, November, 2010- March, 2011).

**APPENDIX N: EXAMPLES OF PROFICIENT/NON-PROFICIENT  
BEHAVIORS AND RESPONSES**

## **EXAMPLES OF PROFICIENT/NON-PROFICIENT BEHAVIORS AND RESPONSES**

### **Overt Behaviors**

#### **Eye Contact**

Proficient: Eyes are oriented towards interviewer during question and answer

Non-Proficient: Eyes are constantly looking away or are diverted the majority of the time during the answer

#### **Posture**

Proficient: Chest is oriented towards interviewer during question and answer with back and shoulders are not slouched

Non-proficient: Chest is faced away from interviewer and shoulders and back are slouched

#### **Hand Gestures**

Proficient: Uses appropriate hand gestures to make a point or keeps hands in lap

Non-proficient: Inappropriate hand gestures used or abundance or nature of hand gestures used are distracting to observer or interviewer

### **Verbal Communication**

Question: As you think about your future, what long term/short term goals have you identified for yourself?

### **Avoidance of slang/inappropriate language**

Proficient: “My short-term goals include completing the transition program, getting a job, and making money. My long-term goal is to have a job and get married. I think I can do this because of I am friendly and I work hard. I am excited about my future.”

Non-Proficient: “My short-term goals include getting done with this crappy transition program, finding a damn job, and making money. My long-term goal is to find a wifey, tie the knot, and make cash money.”

### **Lack of distracting communication habits (“um’s”, run-on sentences)**

Proficient: “My short-term goals include completing the transition program, getting a job, and making money so I can buy a car and house. My long-term goal is to have a job and get married. I think I am capable of this because I am very social and and hard-working. I am excited about my future.”

Non-Proficient: “Ummmm.... short-term goals are... ummmm... completing the transition program and getting a job and making money and my long-term goal is... ummm... to have a job and get married and keep working and.... ummm to live a happy.. ummmm life.”

### **Clear volume and clarity of voice (repeat question?)**

Proficient: If the interactor does not need to ask a follow-up question based on lack of hearing or clarity of voice, the volume and annunciation will be considered proficient.

Non-Proficient: If the interactor does need to ask a follow-up question based on lack of hearing or clarity of voice, the volume and annunciation will be considered proficient.

## **Content of Answers**

Question: As you think about your future, what long term/short term goals have you identified for yourself?

### **Answer question asked**

Proficient: “My short-term goals include completing the transition program, getting a job, and making money. My long-term goal is to have a job and get married. I think I am capable of this because I work hard and am very social. I am excited about my future.”

Non-Proficient: “My short-term goals include the time I went to the soccer game with my friends and all the fans were going crazy when we scored. It was great and a lot of fun. I don’t think there are any other goals.”

### **Highlights qualities of interviewee**

Proficient: “My short-term goals include completing the transition program, getting a job, and making money. My long-term goal is to have a job and get married. I think I am capable of this because I work very hard and am very social. I am excited about my future.”

Non-Proficient: “My short-term goals include completing the transition program, getting a job, and making money. My long-term goal is to have a job and get married.”

### **Positive in nature (enthusiasm, energy, excitement)**

Proficient: “My short-term goals include completing the transition program, getting a job, and making money. My long-term goal is to have a job and get married. I think I am capable of this because I work very hard and am very social. I am excited about my future.”

Non-Proficient: “My short-term goals include getting through this crappy program and trying to find a job even though I’d rather stay home and play video games. I don’t really have any other plans.”

Created based on conversations with Dr. William Blank, University of Central Florida Office of Career Services (W. Blank, personal communications, November, 2010- March, 2011).

## **APPENDIX O: PARTICIPANT TREATMENT QUESTIONNAIRE**



## Participant Treatment Questionnaire

**Instructions:** Please circle one answer for each statement below.

Strongly Disagree	Disagree	Mixed Feelings	Agree	Strongly Agree	Not Applicable
<b>SD</b>	<b>D</b>	<b>NA/D</b>	<b>A</b>	<b>SA</b>	<b>N/A</b>

### START HERE

<b>1. I would like to get a job someday.</b>	1	2	3	4	5	N/A
<b>2. I believe the job interview is an important part of the job search process.</b>	1	2	3	4	5	N/A
<b>3. I believe that practicing the interview with the avatars was helpful to me.</b>	1	2	3	4	5	N/A
<b>4. I believe that the coaching sessions conducted after the practice interviews were helpful to me.</b>	1	2	3	4	5	N/A
<b>5. I believe that I improved my interview skills through practicing and coaching sessions.</b>	1	2	3	4	5	N/A
<b>6. I feel better prepared to get a job since I have completed this training.</b>	1	2	3	4	5	N/A

**\*\* Thank you for your time in completing this questionnaire. \*\***

**Please share any additional comments you have in the box provided below.**

## **APPENDIX P: PARENT TREATMENT QUESTIONNAIRE**

## Parent Treatment Questionnaire

**Instructions:** Please circle one answer for each statement below.

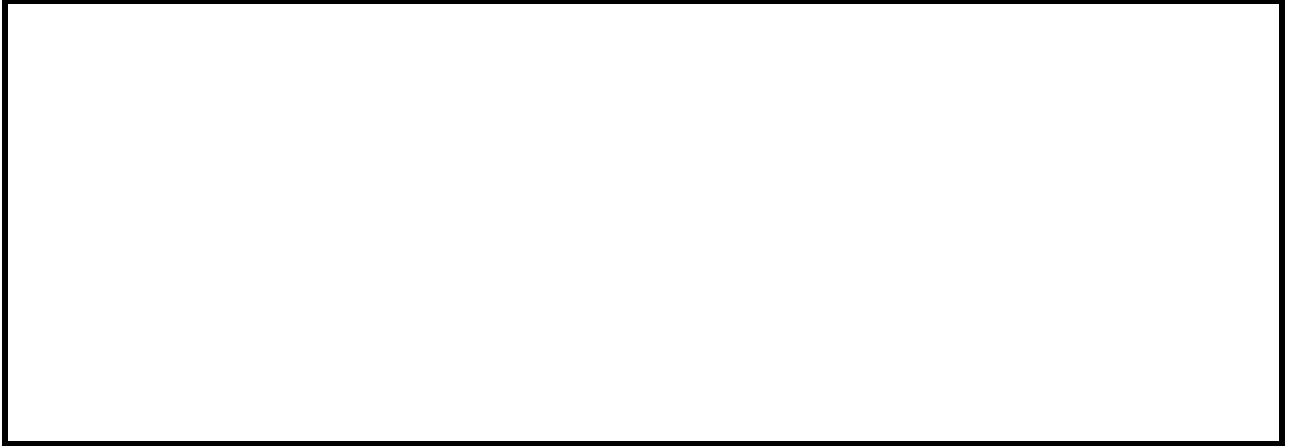
Strongly Disagree	Disagree	Mixed Feelings	Agree	Strongly Agree	Not Applicable
<b>SD</b>	<b>D</b>	<b>NA/D</b>	<b>A</b>	<b>SA</b>	<b>N/A</b>

### START HERE

<b>1. I would like my child to get a job someday.</b>	1	2	3	4	5	N/A
<b>2. I believe the job interview is an important part of the job search process.</b>	1	2	3	4	5	N/A
<b>3. I believe that practicing the interview with the avatars was helpful for my child.</b>	1	2	3	4	5	N/A
<b>4. I believe that the coaching sessions conducted after the practice interviews were helpful to my child.</b>	1	2	3	4	5	N/A
<b>5. I believe that my child improved their interview skills through the combination of practice and coaching sessions.</b>	1	2	3	4	5	N/A
<b>6. I feel my child is better prepared to get a job by completing this training.</b>	1	2	3	4	5	N/A

**\*\* Thank you for your time in completing this questionnaire. \*\***

**Please share any additional comments you have in the box provided below.**

A large, empty rectangular box with a black border, intended for providing additional comments. The box is currently blank.

## **APPENDIX Q: EMPLOYEE EXPERT TREATMENT QUESTIONNAIRE**

## Employee Expert Treatment Questionnaire

**Instructions:** Please circle one answer for each statement below.

Strongly Disagree	Disagree	Mixed Feelings	Agree	Strongly Agree	Not Applicable
<b>SD</b>	<b>D</b>	<b>NA/D</b>	<b>A</b>	<b>SA</b>	<b>N/A</b>

### START HERE

- |                                                                                                                                                     |   |   |   |   |   |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|-----|
| 1. I believe the job interview is an important part of the job search process.                                                                      | 1 | 2 | 3 | 4 | 5 | N/A |
| 2. I believe that practicing the interview with the avatars could be helpful for students trying to improve their interview skills.                 | 1 | 2 | 3 | 4 | 5 | N/A |
| 3. I believe that coaching sessions conducted after the practice interviews could be helpful for students trying to improve their interview skills. | 1 | 2 | 3 | 4 | 5 | N/A |
| 4. I believe that the interview process is especially important for students with disabilities who may need special accommodations.                 | 1 | 2 | 3 | 4 | 5 | N/A |
| 5. I would like to hire people with disabilities who are qualified for positions within the business I manage.                                      | 1 | 2 | 3 | 4 | 5 | N/A |

**\*\* Thank you for your time in completing this questionnaire. \*\***

**Please share any additional comments you have in the box provided below.**



**APPENDIX R: START OF LIVE INTERVIEW SCRIPT**

## INVESTIGATOR START OF LIVE INTERVIEW SCRIPT

Thank you for coming today \_\_\_\_\_. Today's interview will be with \_\_\_\_\_ who works with the Office of Career Services. \_\_\_\_\_ will ask you some questions.

We will enter the room and I will introduce you to \_\_\_\_\_. You and I will not speak again until after the interview is complete. Do you have any questions before we begin? Are you ready to meet \_\_\_\_\_?

## **APPENDIX S: PROTOCOL DURING TREATMENT**

## **Protocol for Waiting Time Before, During, After Interview**

### **Before Treatment Interview Practice Session**

Student participants will be seated in appropriate and comfortable seating area awaiting interview. Student participants are allowed to hold conversations but will not be allowed to discuss the interviews or coaching sessions. Waiting area will be monitored by undergraduate research assistants. When practice interview is to begin, an undergraduate research associate will lead subject to TLE TeachLive™. Scripted instructions will be read and interview will begin.

### **After Treatment Interview Practice Session**

Student participants will be accompanied by an undergraduate research associate to the classroom where they will begin the coaching session. Student participants will not interact with other participants during this time.

### **After Coaching Session**

Student participants will leave the classroom and be asked to not discuss their interview or coaching sessions with other participants. Student participants will be allowed to leave on their own.

## **APPENDIX T: SOCIAL VALIDITY INTERVIEW**

## **SOCIAL VALIDITY INTERVIEW**

Now we are going to complete the social validity interview. Please let me know if you need me to explain anything further when I ask you these questions.

First, please tell me up to three things that went well with the practice interviews.

Second, please tell me up to three things that need to be improved with the practice interviews.

Third, please tell me up to three things that went well with the coaching sessions.

Fourth, please tell me up to three things that need to be improved with the coaching sessions.

This concludes the social validity interview. Thank you again for your participation.

Adapted from: Peterson, K. (2010). How to make evaluation time stress-free! College and University, 77-78.

## **APPENDIX U: EXAMPLE OF SCORED RUBRIC**

EXAMPLE OF SCORED RUBRIC

74

Student Name <b>Carlitos</b>		Scored By: <i>[Signature]</i>		Date: 2/14/12									
P= Proficient/NP= Non-Proficient													
<b>Overt Behaviors</b>	Greeting	Int. Q	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Closing Q	
Eye Contact		P	P	P	P	P	P	P	P	P		P	
Posture		P	P	P	P	P	P	P	P	P		P	
Hand Gestures		P	P	P	P	P	P	P	P	P		P	
<b>Verbal Communication</b>	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Closing Q		
Avoidance of slang/inappropriate language			P	P	P	P	P	P			P		
Lack of distracting communication habits ("um's")	P		'uh uh'	P	P	"uh" uh'					P		
Clear volume and clarity of voice (repeat question?)		P		P	P	P	P	P	P		P		
<b>Content of Answers</b>	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Closing Q		
Answer question asked	P		P	P	P	P	P				P		
Highlights qualities of interviewee	P	P	P	P	P	P	P		P		P		
Positive in nature (enthusiasm, energy, excitement)	P	P	P	P	P	P	P	P	P		P		
<b>Total Score</b>	P	7	6	7	8	9	9	8	6	6	9		

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