Virtual Reality, Immersive as a Safe Place to Improve Interviewing Skills, and Overcome Fear and Anxiety

Paula L. Smith
Department of Learning Technologies, University of North Texas
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Dr. Regina Kaplan-Rakowski
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Abstract

Success in today's global marketplace requires 21st-century talents. Graduates must be technologically proficient to compete in today's fiercely competitive global workforce, and soft skills must be recognized equally (Dean & East, 2019; Hudak et al., 2019). Companies reported difficulties filling positions due to a lack of qualified applicants, inadequate job proficiency, or social and emotional intelligence impairments among graduates (Ajoge et al., 2017; Hudak et al., 2019; Hurrell, 2015). Preparation is vital for a good callback or future interview to secure the job, and many people experience fear, worry, nervousness, and tension before meeting with the interviewer. The participants targeted will consist of graduates from the University of North Texas (UNT) through a convenience sampling method. The research study compares VR-simulated mock interviews to three traditional job interview preparation procedures using a research mixed-methods design approach. The VR curriculum will be created for simulated mock interviews and practice. The semi-structured interviews will be post-follow-ups, and questionnaires will be used to assess introversion-extroversion, public speaking anxiety, and demographics. Following the research study, we proposed that graduates will improve their job interviewing skills by reducing their fear and anxiety.

Keywords: job interviews, mock interviews, immersive, virtual reality, communication skills, public speaking, anxiety, social anxiety, fear

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Section 1: Virtual Reality, Immersive as a Safe Place to Improve Interviewing Skills, and Overcome Fear and Anxiety

Having 21st-century skills is essential for success in today's global marketplace. Most companies seek graduates who can think critically, innovate, collaborate, solve problems, and communicate effectively (Campbell & Kresyman, 2015; Dean & East, 2019; Hudak et al., 2019). Technological proficiency is needed for graduates to participate in this fiercely competitive global workforce, and soft skills must be valued equally (Dean & East, 2019; Hudak et al., 2019). Companies reported challenges filling positions due to a lack of qualified applicants, insufficient job proficiency, or deficits in social and emotional intelligence among graduates (Ajoge et al., 2017; Hudak et al., 2019; Hurrell, 2015). Preparation before the interview is essential for a successful callback or subsequent interview to secure the job, and many face fear, anxiety, nervousness, and stress before meeting the interviewer. These graduates can improve their interviewing skills by learning in an immersive virtual reality (IVR) safe place. There are limited research studies in this area with evidence-based interventions to overcome fear and anxiety for a successful interview. Research on a VR simulation of being immersed in a learning environment and practicing mock interviews while overcoming worry and fear would be helpful.

Rapid VR technology advancements have opened a wide range of potential new uses for interactive technology. Many people use commercial VR headsets for amusement. Some get their first VR experiences via video games and other widely available media because of how popular and well-known VR technology is, heightening interest in it (Allcoat & Von Mühlenen, 2018). Interviewing in the current marketplace is much different now. The traditional way was face-to-face interviews. The COVID-19 pandemic has changed how we interview for jobs, and many companies are doing more Zoom virtual-style or video-recorded interviews (Allcoat & Von Mühlenen, 2018; Dean & East, 2019; Hudak et al., 2019; Hurrell, 2015). Emerging technologies such as VR in an immersive simulation can help with nonverbal and verbal body language, eye contact, communication tones, role-playing, interview preparation, mock interviews, and boosting confidence (Hudak et al., 2019).

Section2: Literature Review

To explore how immersive simulations and VR instruction allow learners to become more confident and perceive high self-efficacy in various mock interview simulations while helping them deal with their fear and worry. We will investigate interview methods, such as traditional face-to-face interviews, video-recorded and zoom virtual interviews versus VR immersive simulations type interviews.

What is Immersive Virtual Reality?

The definition of "**immersion**" is an objective evaluation of a technology's ability to create lifelike virtual environments through sensory-motor dependencies and block out sensory

input from the outside world (Chiquet et al., 2023). A type of environment that a computer simulates is called VR. The user's level of engagement and perception of various stimuli in the virtual environment, known as immersion, is improved through multiple components like screens, speakers, sensors, and other features (Paszkiewicz et al., 2021). It is crucial to remember that the computer-generated virtual environment contains characteristics of an illusion (Paszkiewicz et al., 2021). As a result, learning new skills is possible.

VR has several characteristics that could be effective in education: it shows environments in 3D, it is interactive, and it can provide auditory, visual, and even tactile feedback (Allcoat & Von Mühlenen, 2018). Presenting learning materials in 3D can be very effective when teaching subjects where the learning materials must be visualized (Allcoat & Von Mühlenen, 2018). The adoption of learning by teaching for IVR is encouraging because it offers a flexible learning opportunity appropriate for a range of learning materials and is simple to deploy in a classroom setting (Chiquet et al., 2023). The flexible learning opportunity of various learning materials in the study by Chiquet et al. (2023) supports VR effectiveness in education in presenting learning materials in 3D of the Allocoat & Von Mühlenen (2018) study.

Self-efficacy and Self-confidence Improve Interviewing Skills.

When interviewees go on an interview, they must "know" how they perceive their self-efficacy and confidence in their abilities and competencies to carry out a job role. Self-efficacy is a person's belief in their capacity to change the circumstances of their own lives (Bandura & Adams, 1977; Meyer et al., 2019). A common cognitive mechanism drives changes in defensive behavior brought on by various treatment methods, according to Bandura's (1977a) social learning theory; the more active the coping efforts, the higher the perceived self-efficacy. People who avoid what they fear or lose hope in coping mechanisms too soon will continue to exhibit self-defeating expectations and defensive behavior. Those who persevere in subjectively risky behaviors will overcome their fear, anxiety, shyness, and nervousness via corrective experience (Bandura & Adams, 1977). Some of the effects of efficacy can improve one's confidence. According to Bandura's (2011) reexamination of the self-efficacy study, people confident in their abilities are likelier to engage in activities with higher goals and higher levels of attention and effort to feel more satisfied when they accomplish the desired results (Bandura, 2011).

The findings in Dimopoulos's (2020) study show that job candidates' self-confidence in the interview process can influence and impact a recruiter's decision in the hiring results. One of the candidates' most crucial skills for problem-solving and teamwork is self-confidence. Dimopoulos's (2020) empirical research study examines the significance and relative impact of applicants' "self-confidence" in a sample of 260 Greek recruiters, personnel managers, and employers. Three factors investigate how they would influence the hiring decisions made by the company during the interview process by an independent variable based on the importance of the interview. (Dimopoulos, 2020). Therefore, Dimopoulos's (2020) study of linear regression analysis established that a candidate's confidence level statistically influences the interviewers'

decision to hire them, invite them for a second interview, and consider them qualified for the job.

The Huffcutt et al. (2011) study took a different approach to understanding the interviewee's performance during their job interviews but concurred with Bandura's (2011) study on the effects of self-efficacy. Their theoretical model of interviewer ratings is an alternative to focusing on the interviewer's performance. Many studies that offer significant and practical insights tend to ignore the possibly complicated cause-and-effect sequences that come before these ratings (Huffcutt et al., 2011). Performance, cultural differences, self-efficacy, personality, interviewer-interviewee interaction, and others are a few of these factors. For instance, the interviewee's performance could consist of how they respond to questions, their degree of confidence, or nonverbal cues like their posture, dress, and facial expression (Huffcutt et al., 2011). Another study by Petruzziello et al. (2021) explores the effects of performance feedback following a simulated job interview on interview self-efficacy (ISE) and outcome expectations. The researchers used the career self-management model, and the main predictor was self-efficacy on performance in a job interview (Petruzziello et al., 2021). This study also concurred with Bandura's (2011) and Huffcutt et al. (2011) study on the effects of self-efficacy.

Preparing for the Interview.

Additional methods to help prepare for an interview are aligned with self-confidence and self-efficacy as they are perceived at a higher level. Several interview practice exercises and mock Face-to-Face (FTF) interviews for students in business communication courses are included in the research by Hansel et al. (2021). In these courses, instructors also gave learning activities to help reduce anxiety (Hansel et al., 2021). While more research is required to determine the relationship between the activities and mock interview performance, the study showed that students' confidence levels rose as they prepared for the mock interview (Hansel et al., 2021). The Hansel et al. (2021) study supports Dimopoulos's (2020) research on how self-confidence during the hiring process can affect and impact a recruiter's decision.

However, in another university introductory communication course, Hudak et al. (2019) looked at the variations in students' self-reported communication interview skills before and after they received interview instructions and participated in virtual simulation interviews. This study discovered a substantial difference between students' pre-and post-instruction interview self-assessment results after integrating interview teaching and using mock interviewing software, InterviewStream, into numerous fundamental communication courses. The findings of the Student Assessment of Learning Gains (SALG) also supported students who had more self-confidence, like Hansel et al. (2021) and Dimopoulos (2020), after practicing virtual mock interviews. Other results were that the students sought help from their career services and paid closer attention to nonverbal signals during the mock interviews.

Face-to-Face Interviews

Face-to-face (FTF) interviews with an actual interviewer in this study will be a baseline. FTF interviews will be used in immersive VR as the conventional method to find similarities or differences in how virtual reality technology can improve interviewing skills. Face-to-face interviews were traditional until COVID-19 forced industries to go remote or online (Allcoat & Von Mühlenen, 2018; Basch et al., 2020; Sears et al., 2013). FTF interviews could be a fantastic opportunity to convince a hiring manager or the representative of the best candidate. Some organizations use a screening call or something similar before a face-to-face interview to help hiring managers find the most qualified candidates. The chances of being hired might significantly improve when one is prepared for the interview. Hopefully, this VR research study will enlighten educators or researchers on how powerful immersive learning environments can engage, motivate, and bring excitement to build confidence for a job interview, as in Dimopoulos (2020), Hansel et al. (2021) and Hudak et al. (2019) research studies.

The Miller et al. (2014) study focused on how educators and counselors can motivate students and increase their interest in learning interviewing skills using FTF interviews. Graduates are conscious of the importance of interviews for jobs. Given the significance of interviews and graduates' inexperience, they may become less motivated to perform excellent interviews (Miller et al., 2014). Because some graduates have never conducted an interview before, it is easier for them to put off learning this critical skill. The graduates could feel inadequate and intimidated when they ponder the final, crucial job interviews determining their futures (Miller et al., 2014). Students often avoid thinking about job interviews out of fear of rejection. Although companies frequently worry that job candidates who show little drive during the interview would also lead to this lack of zeal on the job, this apparent lack of enthusiasm may be the product of students' anxiety (Miller et al., 2014). As a result, students should demonstrate their excitement during the interview if they are interested in a particular career. Excitement during the interview might alter and impact a recruiter's decision to show motivating enthusiasm or self-confidence, as in Dimopoulos (2020), Hansel et al. (2021), and Hudak et al. (2019) research using VR.

Virtual Zoom Interviews

When the COVID-19 pandemic hit, there were fewer face-to-face interviews and interactions. The technological advances provide alternative ways to interview online via Zoom, Microsoft Teams, Whatsapp, and any other virtual online platform capable of hosting a virtual video conference. There are different methods through the telephone, interviews by interactive voice response, and asynchronous video interviews (Basch et al., 2020). During these digital interviews, candidates are asked pre-programmed questions on a screen, and the interviewer records the candidates' responses using a webcam and a microphone (Basch et al., 2020). Videoconference interviews are perhaps one of the most prominent alternatives to FTF interviews among the various interviewing methods (Basch et al., 2020).

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Technology advancements like higher-resolution cameras and quicker internet connections have made conversation quality in videoconference and FTF interviews more comparable (Basch et al., 2020). However, in a videoconference interview, the interviewer cannot see the entire body or fully engage in body language. Hence, the study by Hudak et al. (2019), who investigated virtual interviews in an introductory communication course, found that a variety of students (i.e., autistic, veterans, and others) had a higher level of confidence in the mock virtual interview than traditional FTF interviews (Hudak et al., 2019).

360 Video Pre-Recorded Interviews

Video pre-recorded interviews emerged about the same time Zoom and other virtual platforms arose quickly due to the COVID-19 pandemic. The employment interview is the most popular employee selection method. The study by Sears et al. (2013) investigates the impact of videoconferencing (VC) technology on candidate reactions and interviewer assessments. Students from the MBA program took part in mock VC and face-to-face (FTF) interviews. The study examines the most important topics during VC interviews, such as job-relatedness, a chance to perform, and selection information (Sears et al., 2013). In the FTF and VC interviewing research on applicant impressions of the interviewer, researchers concentrated on characteristics most significantly associated with applicant engagement outcomes (Sears et al., 2013).

The media richness theory also draws attention to variances across interview formats since information transmission capabilities among communication devices vary (Sears et al., 2013). In contrast to FTF interviews, which provide visual and aural information, VC interviews offer fewer possibilities to study candidates' nonverbal characteristics, including eye contact and body language. This is a crucial distinction in FTF interviews; nonverbal cues affect interviewer assessments. Only the head and torso of the interviewer and candidate are often seen during VC interviews because one's physical appearance can significantly affect how others perceive them (Sears et al., 2013). The Basch et al. (2020) study also concurs that only seeing half of a person's entire body can be pragmatic in understanding non-verbal and verbal behaviors.

Virtual Reality Immersive Interviews

Immersive VR is emerging quickly as more researchers examine how real-world simulations can help improve different anxiety disorders. Learning theories such as social constructivism, which views each learner as an individual with specific requirements, demonstrate the efficacy of simulations (Watkins & Beckem II, 2012). Social constructivists believe learners are dynamic and diverse, and learning must involve active student participation (Watkins & Beckem II, 2012). According to Watkins & Beckem II's (2012) research with simulations, students can learn new information and strengthen their presentation skills, all thoroughly influenced by their interactions with the environment. Simulations in the classroom

help educators move toward a student-centered approach where students have more significant influence over when and how they study.

Several studies have indicated that VR simulations (desktop and immersive VR) help reduce anxiety compared to alternative learning strategies. Different forms of stress, nervousness, fear, and anxiety can hinder you from having a successful job interview. Practicing mock interviews and simulations in an immersive virtual reality can help overcome fear and anxiety (Dean & East, 2019; Kaplan-Rakowski & Gruber, 2022; Hudak et al., 2019; Petruzziello et al., 2021; Sülter et al., 2022). The Kaplan-Rakowski & Gruber (2022) study uses immersive virtual reality (VR) for language learners who worry about being misunderstood or mocked due to their accent, limited vocabulary, or grammatical mistakes with public speaking anxiety. Seeing a real person while speaking may trigger negative emotions, like nervousness (Kaplan-Rakowski & Gruber, 2022).

The SpeakApp for Kids is another study to help reduce anxiety in children during public speaking (Sülter et al., 2022). There is starting to be more research on adults, but studies involving kids have been minimal in this area. A prototype of the Virtual Reality (VR) SpeakApp for kids was employed in the study (Sülter et al., 2022). Their classmates' opinions heavily influence middle school students' self-esteem, and public speaking appeals explicitly to their fear of others' disapproval, commonly known as social anxiety (Cartwright-Hatton et al., 2005).

The research study involved a treatment group of 40 kids who received VR immersive instruction and a control group of 49 kids who did not. According to Sülter et al. (2022), the treatment group had pre-and post-test assessments and received VR immersive public speaking training at school, speech preparation, and practice at home. The control group only receives speech preparation and practice at home (Sülter et al., 2022). The results of the state anxiety seem to reduce significantly at each practice session (3) for nervousness and heart rate; however, palmary sweat stayed close in measurements. Because a couple of students missed days, their make-up data was not used in the overall data analysis. (Sülter et al., 2022).

For children with autism spectrum disorders (ASD), social functioning, emotion recognition, speech and language, and virtual reality technology are all included in the Zhang et al. (2022) study of viewpoints and evidence-based VR applications focusing on social communication. ASD is a neurodevelopmental illness marked by challenges with or impairments in social interaction, language, cognition, and behavioral activities. In numerous areas of the health industry, including diagnosis, rehabilitation, surgical training, and mental health treatment, VR has proved to be an effective strategy (Hudak et al., 2019; Zhang et al., 2022). In a systematic review by designated topics, several publications in the study relating to ASD interventions or treatments using VR were used as evidence (Hudak et al., 2019; Zhang et al., 2022).

Section 3: Proposed Methodology

Research the main topic of inquiry.

The research explores how immersive simulations and VR instruction make learners more confident and perceive high self-efficacy in various mock interview simulations while helping them deal with their fear and worry. Exploring these mock interview VR simulations can improve self-confidence by responding to questions with a specific tone and voice pitch, maintaining good eye contact, and using appropriate body language. We will investigate interview methods, such as traditional face-to-face interviews, video-recorded and zoom virtual interviews versus VR immersive simulations type interviews.

Study goals

This study aims to help educators, academics, and other disciplines understand the effect of immersive virtual reality technology (IVR) on reducing anxiety disorders in employment interviews. The rapid advancement of virtual reality (VR) technology allowed for a wide range of new potential uses for interactive technology. According to simulation research by Watkins and Beckem II (2012), students may improve their presentation abilities and learn new knowledge through VR interactions within the immersive environment. Stress, tension, fear, and anxiety can make performing well in an interview challenging. Anxiety and fear were reduced by using immersive virtual reality to practice simulations and mock interview runs. The graduate will gain confidence and positive self-efficacy by practicing public speaking or mock interviews. The Kirkpatrick four-level training system was used to evaluate the study.

Delimitations

The research was conducted during the summer months, and the target number of participants may not be as high. Most college students go home during the summer or elsewhere, and research outside the bounds of public speaking and job interviewing will be allowed.

Setting

The study will take place at the University of North Texas in the southern United States, with around 40,000 students from various cultural backgrounds, socioeconomic positions, genders, and sexualities participating.

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Local contextual framing

The local contextual framing will be that participants can do their surveys online, and follow-up questionnaires can be done in the UNT research lab at Discovery Park when school is out.

The physical or virtual setting of the study

The physical interview setting will be a UNT research lab, where privacy is maintained, and limited interruption is allowed. Each interview workstation is housed in the research lab and equipped with a VR headset, IVR software, and computer (desktop or lab) equipment. This layout will allow for the initial training of the VR equipment and the safekeeping of the VR content. The participant may feel better at completing the research in a familiar setting. If the school building is unavailable, the researcher will find a venue near campus with a private space and schedule interview times with participants. The research interview schedule will be online with privacy controls for the participants, investigators, and researchers. It will have pre-arranged timeslots for participants to sign up, reminder notifications via text or email, and be visible to the research team.

Participants

The participants will be graduating students from various programs selected conveniently walking through the hall near the department or recommended to us by word of mouth from peers or faculty. Each participant will be explained the research study and survey and asked to sign an informed consent form to participate. Individuals must agree to the informed consent form, and if they agree, they can continue with the online surveys. The surveys will be created using Qualtrics. The participants' demographics closely reflected the setting described above.

The target number of participants is between 50 and 75**.** The research team will work closely with the UNT Career Workforce office of students who would like to participate in the research. The research team can also send out a notification or flyer with a link to ask if anyone wants to participate through the UNT email system. We will use convenient sampling to ask students as we pass them in the hallways or class. The participants will meet the criteria because they will soon be graduates or near graduation looking for a career job.

Projected Data Collection Methods

Method

The research model was designed to use a mixed-method approach, which explores IVR technologies to help reduce anxiety and fear during job interviews. The participants will follow a job interview script for the mock interviews and a specialized design VR curriculum for

immersive runs or practices in the simulated environment. Participants will practice the mock job interview in all three instances and watch a brief video of a great employment interview using direct instruction modeling. Counterbalancing measures are necessary for this within-subject design. We need to know if participants experienced different conditions of interview practice with varying anxiety levels or if one set was considered more effective for delivering a helpful approach. We will use a multi-strategy research approach (Robson & McCartan, 2016) with empirical data sources such as post-practice semi-structured interviews to capture students' experiences and compare pre- and post-treatment measures of student anxiety and value perceptions of practice under each condition. The job interview practice is carried out under the following conditions:

1. Face-to-face interview vs. high-immersion VR interview.
2. 360 Video recorded interview vs. high-immersion VR interview.
3. Zoom interview vs. high-immersion VR interview.

Instrumentation

The instruments used for the study will be surveys using the Introversion/Extroversion Scale, State and Trait Anxiety Inventory (Spielberger, 1989), Demographics survey, Interview Protocol Questions, and Researcher's Field note schema. *See Appendix C, D, E, F, and G.* Each survey has its purpose in the research study:

- The Introversion/Extroversion scale self-evaluates an individual's perceptions, and Greg D. Grove developed it in 1989. It has 12 inventory items using a five-point Likert scale: 5-Almost Always, 4-Frequently, 3-Occasionally, 2-Rarely, 1-Almost Never, and 0-Doesn't Apply. The Introversion/Extroversion survey data was used to analyze the participant's personality traits. *See Appendix C.*
- The State and Trait Anxiety Inventory developed by C.D. Spielberger in 1989 has 40 inventory items to diagnose anxiety. Form Y has 20 inventory items for assessing trait anxiety, and Form Y-2 has 20 items to evaluate state anxiety. Both forms use a 4-point Likert scale: 4-Almost Always, 3-Often, 2-Sometimes, and 1-Almost Never. *See Appendix D.*
- The demographics survey will be used to capture participants' age, gender, highest degree, major, employment history, number of interviews in the past, practice techniques for public speaking/interviews, and experience with technology (Zoom, low-immersion VR, high-immersion VR). *See Appendix E.*
- The interview questions for the Interview Protocol will consist of open-ended questions for in-depth analysis. *See Appendix F.*
- The field notes will record critical information as the researcher observes the VR simulation sessions for mock interviews. *See Appendix G.*

The semi-structured interview questions for post-survey are still a work in progress.

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The length of study and reason for the length

The research project will take about eight months overall. Collecting the data and executing the research will take three to four months with students who have signed consent forms. The semi-structured interviews with those who have agreed to participate will take about two months or less.

Projected Data Analysis Methods

Data Collection Process

The data will be gathered using online surveys via Survey Monkey and semi-structured interviews for post-survey follow-up. The literature review was used as the foundation for the questionnaire. Data collection will take four to six weeks, and participants will agree to the informed consent form before taking the surveys. The study participants will be selected using the convenient sampling approach; the designated researcher will distribute the data to a shared folder for the research team. Participants and survey questions will be coded to maintain identity, anonymity, and confidentiality. *See Table 1 below*. Any post-survey follow-up will use additional research fieldnote schema to collect further details*. See Table 5 in Appendix G.* The researchers established the data collection strategy before collecting the data.

Table 1.

Coding for Scale items

Coding Description	Codes
Coding for Participants	**P1, P2, P3, P4, P5, P6, P7 and so on.**
Coding for Introversion/Extroversion Survey	**IE1, IE2, IE3, IE4, IE5, IE6, IE7, IE8, IE9, IE10, IE11, and IE12.**
Coding for the State and Trait Anxiety Inventory Survey	**STA1, STA2, STA3, STA4, STA5, STA6, STA7, and STA40**
Coding for Demographics Survey	**Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, and Q11**
Coding for Semi-Structured Interview Questionnaire	**SS1, SS2, SS3, SS4, SS5, SS6**

Data Analysis

The data collected will be analyzed using the IBM Statistical Software System (SPSS). Descriptive statistics are used on applicable demographic data and other survey data, like standard deviation, mean, frequency counts, percentages, and the range of respondent scores—the reliability analysis utilized Scale and then Reliability analysis options to analyze the

survey and questionnaire constructs. The validity of constructs will be checked for internal consistency across the items using Cronbach alpha values. The Factor Analysis utilized *Dimension Reduction* and *Factor* options. Extracting loadings with principal components and the varimax rotation will be used for item groupings in the analysis if needed. Other analyses on scale items on the surveys may use the one-way ANOVA analysis of variance. The one-way ANOVA analysis of variance can be used to investigate reliable variables in the presence of independent variables or factor criteria. Once the data is collected, the research team will decide on what other analysis techniques will best predict the outcomes or results of the research study.

Ethics

Reduction of bias

There will be no subjectivity/bias statement before collecting the data proposed. We are using a mixed methods design for this research study.

Protection of Human Participants

We shall protect human participants during this study by ensuring that the investigator ensures that the research project study meets the federal definition of human participants as it relates to federal research rules. To guarantee compliance with federal requirements, the investigator will submit a "Proposed Human Subjects Research Assessment" form to the UNT IRB review board. Before any research study begins, we will use the UNT IRB consent forms template. We will use Beneficence to ensure the participants' welfare is not jeopardized due to the research endeavor.

We will keep the information of participants anonymous by utilizing pseudonyms or other identifying facts that will be modified or not made public. Human participant protection is consistent with the protocols outlined in UNT IRB SOP 31.01 section 1.2 research and sensitive information. Without the participant's permission, the researcher will not reveal any information about them. The participant may willingly provide this information confidently, knowing it will be safe, secure, and safeguarded. For example, it may not include a person's name, birthdate, residence, or other distinguishing characteristics. The participant's information will be anonymous and not identifiable or associated with contextual or displayed data. Any stored data will be archived following the UNT IRB data collection procedures for participants.

Conflicts of Interest

There is no conflict of interest.

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Research Team

Table 2.

Research Team Roles and Responsibilities

Research Team	Role and Responsibilities
Regina Kaplan-Rakowski, Ph.D.	Principal Investigator (PI) – The principal investigator is ultimately in charge of the research and the project as a whole. Their responsibility is to guarantee that the research team members have the necessary information, resources, and training. They are also the final decision-maker on project-related matters (Elsevier Author Services, 2022).
Paula L. Smith	**Research Associate -** This person conducts research and collects data as directed by the Research Director and the Principal Investigator (Elsevier Author Services, 2022).
Karen Johnson, Ph.D.	**Research Director/ Co-Principal -** This is the person in charge of the day-to-day operations of the research project, including the protocol for completing research and data collection activities (Elsevier Author Services, 2022). Work closely with PI.
Scott Warren, Ph.D.	**Research Director/ Co-Principal -** This is the person in charge of the day-to-day operations of the research project, including the protocol for completing research and data collection activities (Elsevier Author Services, 2022). Work closely with PI.

Timeline

Table 3

Research Timeline Schedule

Action	Date Begins	Expected Completion Date	Date Due	Responsible Person(s)	Approval needed
Kick-off meeting with Research Team	2/7/2023	2/7/2023	2/7/2023	Dr. Regina Kaplan-Rakowski	
Decision on Topic	2/1/2023	2/8/2022	2/7/2022	Paula L Smith	Dr. Regina Kaplan-Rakowski
Decision on roles and responsibilities	2/15/2023	2/15/2023	2/15/2023	Research Team	Research Team

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NIH certificates from the team	2/15/2023	2/15/2023	2/15/2023	All Team members	NIH/CITI – IRB submission
IRB Completion	2/15/2023	TBD	TBD	Dr. Karen Johnson	UNT IRB
Literature Review	2/7/2023	4/7/2023	4/16/2023	Paula L. Smith/All Team Members Peer Reviews	Dr. Regina Kaplan-Rakowski
IRB Approval	2/15/2023	TBD	TBD	IRB committee	IRB
Research framework	4/15/2022	4/30/2023	4/30/2023	Paula L Smith	Research Team
Full methods with instruments	4/30/2023	6/2/2022	6/2/2023	Paula L Smith/ Research Team	Research Team
Data Collection – Survey	6/5/2023	9/1/2023	9/1/2023	Paula L Smith	Research Team
Data Collection – Interviews	TBD	TBD	TBD	Paula L Smith	Research Team
Data Cleaning and Organization	TBD	TBD	TBD	Paula L Smith/ Research Team	Research Team
Data analysis – survey	9/11/2023	9/30/2023	9/30/23	Research Team	
Data analysis - interviews	9/11/2023	9/30/2023	9/30/23	Research Team	Research Team
Write up findings for (dissertation, article, chapter, script, etc.)	9/11/30/2023	9/30/2023	9/30/2023	Research Team	Research Team
Submit an article, etc.	10/9/2023	10/9/2023	10/9/2023	Dr. Regina Kaplan-Rakowski	Research Team
Submit IRB Conclusion/Extension Paperwork	TBD	TBD	TBD	Dr. Regina Kaplan-Rakowski / Dr. Karen Johnson	

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Summary

The ability to talk in front of an audience is necessary. The foci on 21st-century skills in the marketplace as new graduates face fierce competition and more emphasis on soft skills (Campbell & Kresyman, 2015; Dean & East, 2019). As the marketplace demographics change, including retirees, an interviewee must possess excellent soft skills to work with diverse people (Dean & East, 2019; Hudak et al., 2019). These soft competencies include oral communication, teamwork, customer service, and self-presentation (Hurrell, 2015).

The practical implications for the education industry using immersive virtual reality benefit educational professionals and curriculum developers across disciplines where interviewing skills are needed (Campbell & Kresyman, 2015; Dean & East, 2019; Hudak et al., 2019; Kaplan-Rakowski & Gruber, 2022). Hence, the educational sector has limited evidence-based content, and this research article on VR to improve interview skills would increase research findings. There seems to be a gap in research targeting up-and-coming graduates, but there is limited research to help young children who speak in front of audiences like school events or their teachers and peers (Sülter et al., 2022).

Most studies demonstrated that perceived self-efficacy and self-confidence are instrumental in the recruiter's decision for the job role (Adams, 1977; Dimopoulos, 2020; Hudak et al., 2019; Huffcutt et al., 2011; Meyer et al., 2019; Petruzziello et al., 2021). Mock interviews seem to be a key influence factor, helping reduce anxiety disorders the more learners practice, even kids (Dean & East, 2019; Kaplan-Rakowski & Gruber, 2022; Hudak et al., 2019; Petruzziello et al., 2021; Sülter et al., 2022). Also, a mock interview preparatory period where learners are randomly paired with a partner or an immersive virtual reality simulated agent to ask each other interview questions is beneficial (Hansen et al., 2009).

Future research studies may be in the area of the interviewer's performance and demonstrating what techniques are evidence-based interventions to help reduce these anxiety disorders. A different research study by Hollandsworth et al. in 1977 investigates additional models of behaviorally based job interview skills. Instead of video-recorded interviews, use immersive virtual reality with a specialized curriculum designed for the simulation environment (Hollandsworth et al., 1977; Krijn et al., 2004). Design a phased approach to quantitative, qualitative (instant directed feedback), and semi-structured interviews for post-follow-up. Additional research might zero in on the cognitive and emotional aspects of learning in immersive virtual reality (Parong & Mayer, 2020).

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Appendix A
Proposed Topics of Inquiry

1. Immersive simulations and VR instruction make learners more confident.
2. Immersive simulations and VR instruction help learners overcome fear and anxiety.
3. Immersive virtual reality helps improve presentation skills.
4. Immersive simulations and VR instruction improve non-verbal and verbal cues while overcoming anxiety.
5. Empowering Public Speaking Performances through Immersive Virtual Reality Technologies.
6. Immersive Virtual Reality Technologies: Improving Human Performance in Public Speaking.
7. Immersive Virtual Reality Technologies: The Confidence Builder.

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Appendix B
Research Questions

Here are specific research questions that need to be addressed.

1. Do face-to-face interviews differ from Zoom virtual interviews?
2. Do face-to-face interviews differ from 360 Video-recorded interviews?
3. Do face-to-face interviews differ from Virtual reality immersive interviews?
4. Does gender differ in Virtual reality immersive simulation interviews?
5. Does Virtual reality immersive simulation improve job interviewing skills?
6. Does Virtual reality immersive simulation improve non-verbal and verbal cues?
7. Does Virtual reality immersive simulation improve eye contact?
8. Does Virtual reality immersive simulation improve self-confidence?
9. Does Virtual reality immersive simulation reduce anxiety disorders?

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Appendix C.

Survey Instrument

State and Trait Anxiety Inventory

(Spielberger, 1989)

SELF-EVALUATION QUESTIONNAIRE STAI Form Y-1
Please provide the following information:

Name_____Date_____S_____

Age_____ Gender (*Circle*) **M** **F** T_____

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right* now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm	1	2	3	4
2. I feel secure	1	2	3	4
3. I am tense	1	2	3	4
4. I feel strained	1	2	3	4
5. I feel at ease	1	2	3	4
6. I feel upset	1	2	3	4
7. I am presently worrying over possible misfortunes	1	2	3	4
8. I feel satisfied	1	2	3	4
9. I feel frightened	1	2	3	4
10. I feel comfortable	1	2	3	4
11. I feel self-confident	1	2	3	4
12. I feel nervous	1	2	3	4
13. I am jittery	1	2	3	4
14. I feel indecisive	1	2	3	4
15. I am relaxed	1	2	3	4
16. I feel content	1	2	3	4
17. I am worried	1	2	3	4
18. I feel confused	1	2	3	4
19. I feel steady	1	2	3	4
20. I feel pleasant	1	2	3	4

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State and Trait Anxiety Inventory (continued)

(Spielberger, 1989)

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-2

Name_____ Date_____

DIRECTIONS

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you *generally* feel.

	ALMOST NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS
21. I feel pleasant	1	2	3	4
22. I feel nervous and restless	1	2	3	4
23. I feel satisfied with myself	1	2	3	4
24. I wish I could be as happy as others seem to be	1	2	3	4
25. I feel like a failure	1	2	3	4
26. I feel rested	1	2	3	4
27. I am "calm, cool, and collected"	1	2	3	4
28. I feel that difficulties are piling up so that I cannot overcome them	1	2	3	4
29. I worry too much over something that really doesn't matter	1	2	3	4
30. I am happy	1	2	3	4
31. I have disturbing thoughts	1	2	3	4
32. I lack self-confidence	1	2	3	4
33. I feel secure	1	2	3	4
34. I make decisions easily	1	2	3	4
35. I feel inadequate	1	2	3	4
36. I am content	1	2	3	4
37. Some unimportant thought runs through my mind and bothers me	1	2	3	4
38. I take disappointments so keenly that I can't put them out of my mind	1	2	3	4
39. I am a steady person	1	2	3	4
40. I get in a state of tension or turmoil as I think over my recent concerns and interests	1	2	3	4

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Appendix D.
Introversion/Extroversion Scale
(Grove, 2016)

Directions: Respond by indicating the degree to which each statement agrees with the perception you have of yourself. Record numbers 0-5 on the lines provided below, based on the following scale:

5 = Almost Always	4 = Frequently	3 = Occasionally
2 = Rarely	1 = Almost Never	0 = Doesn't Apply

_____A. I show individuality and originality in written reports.
_____B. I dislike test questions in which the information tested is in a different form from that in which it was learned.
_____C. I avoid exaggeration when sharing personal experiences.
_____D. I lose control when I get angry.

_____A. I engage in reflective, philosophical thought.
_____B. I prefer to have a theory or principle explained rather than studying it out for myself.
_____C. I conceal disappointments.
_____D. I shed tears when I hear a sad story.

_____A. I spend leisure time reading poetry, stories, or plays.
_____B. I am uninterested in discussions of The Ideal Society.
_____C. When people displease me, I refrain from saying anything.
_____D. I get excited when I argue.

Scoring Instructions:

Add your points and record them below. Then check whichever one is higher (assuming no ties).

		Mysterium Membership Averages	
Total points for A statements: _____/15	___	11.7	SD 2.8
Total points for B statements: _____/15	___	7.8	SD 3.0
Total points for C statements: _____/15	___	10.9	SD 2.5
Total points for D statements: _____/15	___	8.2	SD 2.0
Total points for **A + C** statements: _____/30	___	22.5	SD 2.1
Total points for **B + D** statements: _____/30	___	16.0	SD 3.3
Total points for **A + D** statements: _____/30	_____	Predicted IQ Range (Table B)	

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Appendix E.
Demographics Survey

The demographics survey questions developed by Dr. Karen Johnson will consist of the following:

Table 4.

Demographics survey questions

Question	Description
Age	Participant's age
Gender	Male, Female, Transgender, or Other
Highest degree?	Highest degree held
Major?	College/university Major
Employment History?	The amount of experience with job interviews. Employment history?
What is the approximate number of interviews in the past?	The amount of experience with job interviews. The approximate number of interviews in the past.
Asked about usual practice techniques for public speaking/interviews?	The amount of experience with job interviews. Asked about standard practice techniques for public speaking/interviews?

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Appendix F.
Job Interview Protocol

The interview questions developed by Dr. Karen Johnson will consist of the following:

Table 5

Interview Protocol

Interview Questions
Tell me a little about yourself.
What are your strengths?
What are your weaknesses?
Where do you see yourself in five years?
What kind of work environment do you like best?
How do you think other people will describe you?
What can you offer us that someone else cannot?
What is an accomplishment you are most proud of?
Tell me how you handled a difficult situation.
Share a time you went above and beyond the expected requirements for a project.

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Appendix G.
Researcher Field Notes Schema
(Ravitch & Carl, 2019)

Summary

Date:

Site/location:

Activity (explain in detail):

Participants (list names):

Length of Observation:

Description and photograph (If applicable):

Questions / Things to follow up with and sketch

Reflections

Your Name and Date

Descriptive narrative

Date:

Site/location:

Activity (explain in detail):

Participants (list names):

Length of Observation:

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