Under the Umbrella: Gender Identity, Virtual Reality, Video Presentation, and Social Presence

Relationship Elements of Job Hiring

A thesis submitted in partial fulfillment of the requirements
For the degree of Master of Arts in Psychology,
Clinical Psychology

by

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August 2023
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Acknowledgments

Thank you to the Graduate Studies Department at CSUN for supporting the project. The grant of $1,000 enables us to acquire the necessary resources and additional participant recruitment. Without the aid, the success of this project would not be possible.

I want to express my deep appreciation to Dr. Stefanie Drew for her consistent and motivating support throughout this entire process. Her encouragement has been instrumental in driving me to persevere and successfully complete this project.

I am truly grateful to Heidi Schumacher for generously sharing her extensive knowledge of gender theory. Her insights have not only guided me in approaching this project with sensitivity but have also facilitated my meaningful engagement with the gender-diverse community.

I extend my sincere thanks to Dr. Sara Berzenski for her invaluable guidance in research methodology and statistics. Her expertise has given me the confidence to precisely design and execute my research, ensuring its thoughtfulness, depth, and validity.

I would also like to acknowledge the indispensable assistance of Dr. Elise Fenn. Her expertise in qualitative methods and interviewing has been pivotal in shaping the components of the questionnaire, allowing me to precisely measure and manipulate the intended variables.
Dedication

These two incredible souls have been my pillars of strength: To my beloved fiancé, Chris, your constant encouragement and belief in me have been my driving force, inspiring me to overcome challenges and propelling me forward with determination and purpose. And to my dearest mom, Jacque, your boundless love, faith, encouragement, and confidence in my abilities gave me the foundation to face any challenge headfirst.
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Abstract

Under the Umbrella: Gender Identity, Virtual Reality, Video Presentation, and Social Presence Relationship with Elements of Job Hiring

By

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Master of Arts in Psychology, Clinical Psychology

Within the workforce, many employees and applicants identify as a gender outside the gender binary, unrelated to their biological sex (male, female), falling under the umbrella of nonbinary (Dray et al., 2020). Depending on the position and the gender of the applicant, different qualifications may be expected of the applicant, affecting the selection criteria when applying for the same job. Gender-diverse individuals in the workforce may experience rejection and other overt and subtle mistreatment from their colleagues and supervisors (Dray et al., 2020). Previous literature indicates that male applicants receive more favorable ratings on the desire to hire than female applicants for the same job, and nonbinary applicants receive less favorable ratings compared to their cisgender counterparts (Dray et al., 2020; Juodvalkis et al., 2003). The current study examined the influence of gender pronouns and video presentations (i.e., stereoscopic and non-stereoscopic) influence on one’s presence in the environment, qualification ratings, motivation, and hiring preferences. We hypothesized that participants evaluating a job candidate's resumé with "they/them" pronouns would have less perceived candidate competency and less desire to hire, while participants viewing the stereoscopic video would report higher social and immersive presence and greater motivation to complete the task. We expected social presence to positively influence motivation and desire to hire. Consequently, we anticipated that
social presence would mediate the relationship between motivation and desire to hire. Findings indicated that pronoun presentations did not significantly influence qualifications ratings or desire to hire. Regarding perceived gender presentation, masculinity significantly predicted candidate competency but not the desire to hire. No significant differences between stereoscopic and non-stereoscopic conditions across various presence dimensions were found. Social presence and immersive presence did not significantly predict motivation. However, social presence significantly predicted the desire to hire, although it did not mediate the relationship between motivation and desire to hire. Evaluating the impact of perceived gender presentation, with the presence of pronouns, with the elements of job hiring in a stereoscopic 180-degree video vs. non-stereoscopic flat video, can decrease discrimination and intolerance in the workplace by providing educational insight to organizational leaders.
Attention toward the impacts of gender and identity within the hiring process is increasing as awareness of gender diversity continues to grow. Employees and prospective job applicants face the decision of whether they should share their preferred pronouns with their employer and the implications of the backlash they may endure. There is a growing community of individuals identifying with a gender unrelated to their assigned biological sex (male or female) given at birth (Dray et al., 2020; Lenning, 2009). When finding employment, transgender and gender nonconforming individuals experience significant barriers, partially due to bias and discrimination from potential employers (Suen et al., 2021). It is crucial to explore how gender identity impacts elements of job hiring, and immersive virtual reality offers a new way to explore with greater ecological validity yet consistent methods. In turn, this technology has the potential to be utilized for promoting inclusivity and equity in the workplace.

**Gender presentation**

*Gender* refers to the attitudes, feelings, and behaviors culturally expected associations with conventionally masculine or feminine social aspects (APA, 2012; Lindqvist et al., 2021). Commonly viewed by many, gender is defined as being in relation to one’s presumed biological sex, even by the scientific community and members of society, limiting the recognition and acceptance of a variety of gender expressions (APA, 2012; Lenning, 2009; Lindqvist et al., 2021). The assertion that one’s gender is reliant on the two classifications of sex (male and female) is not sufficient as there have been more than two biological sexes identified (i.e., intersex used as a blanket term to describe over 70 variations in biological sex; Lenning, 2009; Lindqvist et al., 2021). Feminist theory has illuminated rigid, binary conceptualizations of sex to characterize gender as a social construction rather than a biological fact in which sex describes a
genetic body and gender is defined by social aspects of actions (Lenning, 2009).

*Gender presentation* is the concept that one’s gender role often reflects certain cultural expectations of how one should dress and style oneself, and an individual’s *gender orientation* can differ from the gender others attribute to that person (Bruun & Farr, 2021; Lenning, 2009; Gower et al., 2018). To further clarify, gender presentation allows individuals to outwardly express their internal sense of gender identity through fashion and style preferences. Depending on the cultural context, behaviors perceived as incompatible with cultural expectations constitute gender appearances as conforming or nonconforming (APA, 2012; Dray et al., 2020). Primarily, the focus of gender presentation has been examined within the context of professional and school settings among adolescents and adults (Dray et al., 2020). As proposed by the gender schema theory, through observing societal norms, individuals learn, encode, and organize information to expect specific characteristics and behaviors from certain genders (Bem, 1981). Most people build their gender schemas based on the man/-woman dichotomy, and when individuals defy existing social norms and stereotypes by acting outside of other’s gender schemas, they may face backlash (Dray et al., 2020; Lindqvist et al., 2021). *Gender-diverse* individuals are those whose gender does not align with the assigned sex at birth, contingent on genitalia anatomical differences (Bates et al., 2020). Specifically, *nonbinary* identities may describe their gender as a combination of male and female, as in between, as neither, as an alternative gender, or as no gender. A wide variety of identities subsumed under the nonbinary umbrella identifying as *genderqueer, genderfluid, bigender, agender, two-spirit, third gender,* and *gender neutral* (Dray et al., 2020; Johnson et al., 2020). Increasingly, individuals identifying as nonbinary are described as being included under the umbrella label of *transgender and gender nonconforming* (TGNC; Bates et al., 2020; Johnson et al., 2020). Individuals identifying as nonbinary likely face
even worse mistreatment (i.e., major and everyday discrimination) as they frequently defy gender schemas placed on them, acting outside of the gender binary (Dray et al., 2020).

For adults, gender-based clothing norms are frequently influenced by dress codes in the workplace (explicit rules), with the addition of cultural forces in informing what explicit rules seem reasonable. In general, adults identifying in the LGBTQ community are more likely to present in a nonconforming manner than cisgender heterosexual adults (Bruun & Farr, 2021). Compared to their cisgender counterparts, youth identifying as transgender and gender diverse experience disproportionate rates of victimization and are at a higher risk of mistreatment by peers and emotional distress, significantly more for youth who dress and act in ways incongruently with societal expectations of their assigned sex (Bruun & Farr, 2021). Adverse social outcomes, such as bullying, social group exclusion, social rejection, or victimization, have been associated with individuals appearing more gender-conforming (Bruun & Farr, 2021). As recommended by the Williams Institute, gender should be assessed in two aspects: birth-assigned sex and current gender identity (Gower et al., 2018). Identity often seems to be applied in varying meanings, ranging from being a part of a social group as an established image of self and even sometimes about psychological identity (Freeman & Wohn, 2020). Gender and sexuality are two very different but related dimensions central to identity, inextricably interwoven from a theoretical perspective, as individuals desire for their gender orientation and gender presentation to be congruent (Freeman & Wohn, 2020; Lenning, 2009). Results report that individuals whose assigned sex is male and perceived as very/mostly feminine reported statistically significantly higher rates of bullying victimization and emotional distress than those perceived as very/mostly masculine (Gower et al., 2018). Adherence to gender roles is not necessarily protective, as boys may experience distress from their attempts to be perceived as appropriately “manly,” while girls
suffer from the influences of sexualization (Bruun & Farr, 2021).

**Self-presentation in the Workplace**

Depending on the particular job to which an applicant is applying and the gender of the applicant, different qualifications may be expected of the applicant; often, there is an uneven distribution of labor market chances in which certain groups are systematically disadvantaged during these moments of selection (Juodvalkis et al., 2003; Keere, 2021). Many different screening procedures are typically involved in the employee selection process, such as comparing personality tests, scanning curriculum vitaes’ (CVs), assessing years of experience, or checking skill credentials. Self-presentation is viewed as necessary by the human capital (i.e., skills and attributes accumulated and improved by training and education) view (Gary Becker, 1964) because it can be a way to signal competence, motivation, and organizational fit (Keere, 2021). As a form of self-presentation, candidates deploy different narratives of the self, or the evolving story constructed by an individual, to express how they came to be and where their life may be going (Keere, 2021; McAdams, 2011). In the United States (U.S.), job candidates deploy an alternative and popular narrative of the self that is placed on expressing passion, desire, and authentic personality (Keere, 2021). Companies rely on the overall impressions formed during the interviewee's interview to aid hiring decisions. Nonverbal behaviors exhibited by an applicant act as one of many components toward creating an accurate judgment of an applicant’s personality but are not limited to sociocultural influences that may limit their nonverbal behaviors or even how nervous the applicant may be during the interview. That said, nonverbal behaviors are not weighted as heavily in judgment creation because they are less prominent than verbal behaviors (e.g., direct communication), which is crucial in acquiring job-relevant information about the interviewee (Juodvalkis et al., 2003). Another factor influencing the
interviewer’s formation of an overall impression of the interviewee stems from the interviewer’s stereotypes about the applicant and the job; the applicant's educational status, personality traits, and job and gender stereotypes attached to a job affect interview ratings and decisions (Juodvalkis et al., 2003). On an organizational and interpersonal level, candidates engaging in similar exclusive sports, volunteering or managing the sports team, and other highbrow leisure activities as the hiring managers are viewed as a better fit (Keere, 2021).

**Workplace Gender Stereotypes and Discrimination**

Stereotypically, men are viewed as better-suited to work in most working environments, while women appear less qualified in many work settings, specifically in task-oriented environments, despite not mentioning any technical skills (Juodvalkis et al., 2003; Keere, 2021). In the workforce and higher education, there is a substantial underrepresentation of women, more even so in science, technology, engineering, and math (STEM) fields, as men are twice as frequently employed compared to women (Friedmann & Efrat-Treister, 2023; Rice & Barth, 2016). Women who stray from socio-emotional and nurturing gender stereotypes are often penalized for doing so. In contrast, those whose gender matches the stereotypical demands of a particular job are rated more favorably than when the stereotypes of the job and applicant do not match, referred to as the *Social Role Theory* (Eagly & Karau, 2002; Juodvalkis et al., 2003; Rice & Barth, 2016). Feminine-presenting women are generally viewed as less desirable and incompetent in the workplace, while masculine-presenting women are viewed to have traits associated with competence (Rice & Barth, 2016). More likely than not, men emerge more frequently in leadership positions (e.g., manager, director, principal, or dean) compared to women, potentially affecting beliefs on gender roles and leadership (Friedmann & Efrat-Treister, 2023; Offringa & Groeneveld, 2023). However, there is limited literature addressing
employment discrimination against gender-diverse individuals.

Many employees and applicants within the workforce identify as a gender outside of the gender binary, not related to their biological sex (male, female), falling under the umbrella of nonbinary (Dray et al., 2020). This community of individuals is struggling to access the labor market as their voices are not being heard, causing repercussions for both gender-diverse individuals and organizations of disengagement, withdrawal, and unemployment (Bates et al., 2020). With the growing increase in gender-diverse individuals in the workforce, many organizations are becoming more tolerant and inclusive; however, many nonbinary individuals continue to experience intolerance, rejection, and other overt and subtle mistreatment from their colleagues and supervisors (Dray et al., 2020). Especially in the workplace, nonbinary gender identities are often forced into a binary gender category as they are more likely to be called their incorrect pronoun (Dray et al., 2020). Previous literature supports nonbinary employee experience of workplace prejudice and discrimination in that assigned female at-birth nonbinary individuals show higher likeability than assigned male at-birth nonbinary individuals. Also, assigned male at-birth nonbinary individuals were liked less than transgender men and women and cisgender men and women, eliciting significantly worse job performance expectations through likeability (Dray et al., 2020). These unfavorable ratings of assigned male at-birth nonbinary individuals could be because they are perceived as moving toward femininity which is viewed as an undesirable trait in the workplace.

Job Recruitment Interviews

Job recruitment interviews are considered indispensable, serving as the most-used method in personal selection for evaluating the fit of potential applicants’ competencies and job requirements (Odeku, 2015; Wyssenbach et al., 2021). Employee recruitment, selection, and
assessment utilize the interview and CV/resumé as the most popular instruments (Mogridge, 2019). An essential aspect of enhancing the accuracy of the assessment relies on the interview format with two or more interviewers/observers, in which applicants are more likely to perceive the interview as more fair (Wyssenbach et al., 2021). Panelists involved in the job recruitment process are not asked to declare that they have any prejudices that may compromise or be a conflict of interest before the process begins; instead, it is assumed by the organization that the nominated members will conduct the recruitment fairly without prejudice or bias (Odeku, 2015). Interviews can be categorized broadly as standardized-structured interviews and unstandardized-unstructured interviews.

Unstandardized-unstructured interviews are typically more conversational with an open-ended design, building on the depth of the questions with the progression of the interview (Salazar, 1990). They are subject to a range of biases including, but not limited to, the sex of the applicant, race, and attractiveness; therefore, they are not a good technique for predicting workplace performance. However, due to the accessibility of simple administration, relatively low financial costs, and likeability reported from applicants, unstructured interviews maintain their popularity (Mogridge, 2019).

Standardized-structured interviews provide minimal opportunity of altering the interview content as they consist of predetermined wording of the questions and sequences (Salazar, 1990). Structured interviews have several advantages, such as reasonably consistent data from one respondent to another, and the interviewers do not require a high skill level to administer the interview (Odeku, 2015; Salazar, 1990). Evidence exists supporting the debate of the benefits for employers to utilize structured interviews as they have good criterion validity, thus giving way to predicting work performance (Huffcutt et al., 2001; Mogridge, 2019). Most organizations use a
standardized-structured interview to recruit and select their employees to assess whether the applicant is a good fit for the job; however, if the interview process is unfair, the information provided by the interviewee may not demonstrate the true competency (i.e., the applicant’s performance) of the candidate as a fit for the position (Latu et al., 2015; Odeku, 2015).

Previous literature examined interviewer ratings during employment interviews with audio-recorded interviews and digital avatars' attractiveness (Behrend et al., 2012; Juodvalkis et al., 2003). In a study conducted by Juodvalkis et al. (2003), the researchers investigated the interactions between gender stereotypes for jobs, gender stereotypes of applicants, and communication styles used by applicants. They used prepared voice recordings of job interviews of one male and one female actor playing the roles of submissive, neutral, and dominant communication styles. They hypothesized 1) a main effect for job stereotype will be found, 2) significant main effects for communication style with a dominant style being perceived more favorably than a submissive style, and 3) the highest ratings would occur when all three factors were complementary (likeability, hireability, and sociability). The results from the study supported their first hypothesis that a main effect of job stereotypes was found. It was concluded from their research that men with dominant communication styles were more likely to be hired over comparable female applicants (Juodvalkis et al., 2003). This study provides insight into potential stereotypes and discrimination during telephone pre-screening interviews but does not generalize to real-world applications of a face-to-face interview setting. However, using voice recordings with digital avatars instead of real people is limiting due to the lack of realism. In the study by Behrend et al. (2012), the researchers examined whether raters evaluating computer-mediated interviews would follow the same pattern (i.e., attractive job candidates are afforded an advantage in face-to-face interviews) when digital avatars represent the job candidate. They
hypothesized that 1) the avatar’s attractiveness would be positively related to rater perceptions of interview performance and subsequent screening decisions and 2) the positive effect of avatar attractiveness would be moderated by the gender of the candidate and the gender type of the job. Their results revealed that a multivariate main effect of attractiveness was significant as well as that neither job gender nor candidate gender had a significant moderating effect on the relationship between interview performance and screening decisions; thus, the first hypothesis was supported and not the second hypothesis (Behrend et al., 2012). Similarly to the study conducted by Juodvalkis et al. (2003), the study conducted by Behrend et al. (2012) provides insight and innovation into using a digital environment to research perceptions and discrimination of the interviewee during a job interview; however, the results lack a degree of ecological validity as digital avatars were used and thus do not accurately portray a real-world application. However, recent technological advancements make it possible to address this research limitation.

**Virtual Reality**

Virtual reality (VR) is a three-dimensional, computer-generated visual experience that simulates real-life immersive experiences through desktop displays, smart glasses, and head-mounted displays. Experiences that standard learning modalities cannot capture can be emulated in a real-world setting offering a comparable experience (Carnett et al., 2022). VR allows users to experience, engage, and immerse in virtual scenarios they would otherwise not be able to, expanding its use to numerous purposes (e.g., training, education, therapy, and entertainment; Zahabi & Abdul Razak, 2020). In relation to interview research, utilizing VR technology makes it possible to further examine hiring practices in a realistic yet carefully controlled environment, examining interviewer biases in a new dimension where the participant feels as though they are
physically present in the virtual space.

VR offers a new way of studying human perception and behavior through highly realistic content, including 360-degree and 180-degree videos, commonly known as spherical or stereoscopic videos (Wyssenbach et al., 2021). Any form of content generating depth perception through the convergence of two images classifies as stereoscopic, applying to both 360-degree and 180-degree videos. While 360-degree videos provide a full panoramic view, 180-degree videos offer a slightly narrower field of view. Immersive 180-degree video is suggested by Landau et al. (2020) to be regarded as a specific subset of immersive VR as it includes sensorimotor contingencies. One study by Wyssenbach et al. (2021) uses an immersive 360-degree video with VR cardboard and flat displays to examine an interviewer’s nonverbal behaviors in a recruitment interview with a job applicant (Wyssenbach et al., 2021). To our knowledge, no previous study has investigated the relationship between gender presentation and nonbinary job applicants in VR, which is a cutting-edge direction for this research.

**Virtual Reality Training**

With the rise of VR technology, new technology for training systems is continuously being adopted across different domains, with the most abundant training in VR found within the medical and surgical field (Abich et al., 2021). The immersion capabilities of the virtual environment enable individuals receiving training in the environment to acquire new knowledge and skills through learning (Zahabi & Abdul Razak, 2020). In the past, organizational inclusivity was not effectively enhanced by traditional diversity training and interventions as it activates bias, allowing for discrimination issues to be raised (Georgiadou, 2021). More recently, VR can potentially be used in workshops and trainings, focusing on diversity and inclusion to promote diversity, equality, and inclusion amongst employees when organizations adopt these training
solutions. Learning through a virtual environment in VR has been found to be associated with enhanced engagement, simulating empathy, and increased knowledge retention providing a vivid sense of presence in the environment and the illusion of owning one’s virtual body (Georgiadou, 2021; Nowak & Biocca, 2003; Shubert, 2003). Previous research has indicated that a high percentage of employees report that workshops implementing VR training as a component are more receptive to preceding with workshops and better understand the importance of promoting and safeguarding inclusion and diversity upon completion of the training (Georgiadou, 2021). Employees receive a simulated real-life experience of walking in someone else’s shoes creating an intimate experience of discrimination, harassment, potential sources of bias, bullying, and victims of abuse of power (Georgiadou, 2021).

Overall, training in VR for Diversity and Inclusion workshops benefits the organization and its employees though VR training has a drawback: the cost of requiring resources to create custom-made solutions. However, technological advancements, particularly stereoscopic video recordings, could solve the cost-related drawback by reducing and replacing the need to build a virtual environment using pre-recorded videos. Incorporating stereoscopic videos into VR training for Diversity and Inclusion Workshops can potentially reduce the need for organizations to rely on digital simulated solutions, ultimately a more accessible option, saving money spent on resources and reducing time to deploy the implementation of VR trainings. As virtual reality has been found to increase engagement, learning, empathy, and knowledge retention through realism (Georgiadou, 2021), similarly, stereoscopic videos have the potential to enhance one’s experience and presence in their environment.

**Presence in Environment, Social Presence, and Immersion**

When utilizing VR technology, several elements must be considered. The conscious,
subjective experience of presence emerges as we interact, play, and work within virtual environments (VEs) (Sanchez-Vives & Slater, 2005). Users’ awareness of the location of their body within the VEs is understood by the outcome of cognitive processes in which their body is contained within the space rather than viewing from the outside (Friedmann & Regenbrecht, 2001). The idea that a user’s subjective perception of presence in a social interaction, particularly in an online communication format, and the degree to which they perceive they are interacting with a natural person similar to the real world is known as social presence (Nowak, 2001; Nowak & Biocca, 2003).

VR head-mounted displays (HMDs) have an increased sensation of immersion, presence in environment, and social presence compared to a computer-based virtual environment, as non-immersive systems do not require the highest level of graphic resolution and performance (Friedmann & Regenbrecht, 2001; Zahabi & Abdul Razak, 2020). Social and immersive presence increase as video resolution increases (i.e., 4k; Lee et al., 2017). Increasing motivation enhances the level of immersion, as indicated by Shaw and colleagues (2017). Motivation is defined by Ryan and Deci (2000) as the activation of an individual’s energy toward a particular goal. The extent of an individual’s motivation to complete a task varies based on the nature of the task (Ryan & Deci, 2000). Additionally, presence in environment increases as the VE is more vivid, extensive, inclusive, and surrounding, relating similarly to the real world (Friedmann & Regenbrecht, 2001).

**Significance**

Evaluating the effects of gender job stereotypes and gender presentation of non-binary job applicants can decrease discrimination and intolerance in the workplace by providing education to organizational leaders (i.e., hiring managers or other individuals with a high level of
power in the organization). Thus, with an increased knowledge of interviewer bias during recruitment interviews, an organization can adopt and train organizational leaders and employees on diversity, equality, inclusion, and justice (DEIJ) policies, creating a safer workplace. In efforts to increase DEIJ policies, individuals who fall under the umbrella of gender-diverse identities and transgender will have increased chances of equal access to opportunities (e.g., jobs) that were previously experienced as barriers reducing workplace prejudice and discrimination. Unlike traditional methods, VR utilizing prerecorded 180-degree stereoscopic video is a medium allowing for a more ecologically valid avenue in which participants experience a realistic hiring environment. This medium has a significant potential to revolutionize recruitment and hiring practices, making the process more objective and efficient, reflecting natural workplace dynamics.

**The Current Study**

This proposed study advances the literature on workplace gender stereotypes and discrimination, adding to the limited empirical studies investigating nonbinary identities in workplace contexts. The majority of the previous literature has evaluated cisgender males and females and gender stereotypes in the workplace in relation to likeability, desire to hire, and job performance. However, studies previously investigated these effects through modalities such as vignettes of fictitious coworkers or job applicants in a non-immersive experience. Limited studies have evaluated these effects through immersive VR, except for a few studies using virtual reality simulated job interviews as training tools, examining digital avatar attractiveness in virtual reality job interviews, and recruitment video in 360-degree videos in VR-cardboard. This study examines the impact of gender presentation and video presentation on candidate competency, desire to hire, motivation, social presence, an immersive presence using captured
180-degree stereoscopic video viewed in virtual reality and a flat video viewed on a computer screen of a simulated job interview in order to address the holes in the above literature. Based on the previous literature, we hypothesized that:

**H1a:** Participants reviewing a “they/them” resumé would have less perceived candidate competency and less desire to hire than participants reviewing the “she/her” resumé, who in turn would have less perceived candidate competency and less desire to hire than participants reviewing a “he/him” resumé.

**H1b:** Ratings of masculinity will be lower for candidates with a “she/her” resumé compared to candidates in the “they/them” and “he/him” resumé.

**H2a:** Higher ratings of masculinity will be associated with higher ratings of competency and desire to hire.

**H2b:** Masculinity will mediate the associations between resumé pronouns, competency, and desire to hire.

**H3a:** Participants viewing the 180-degree stereoscopic video will report higher social presence and greater immersive presence than participants viewing the flat video.

**H3b:** Participants in the stereoscopic condition will report greater motivation to perform the assigned task than participants in the non-stereoscopic condition.

**H4a:** Participants who report greater social presence would have greater motivation to perform the assigned task and would express a greater desire to hire the candidate.

**H4b:** Social presence would mediate the relationship between video presentation and motivation and desire to hire the candidate.
CHAPTER II: METHODOLOGY

Design

The study is a between-subjects design manipulating gender identity expression and video presentation format. The measured variables are the desire to hire the candidate, the perceived candidate competency, social presence, immersive presence, and VR presence. Participants were randomly assigned into one of four conditions, each corresponding to a different résumé variation of pronoun inclusion: no pronouns, “they/them” pronouns, “she/her” pronouns, or “he/him.” Participants were randomly assigned to watch the recorded interview in VR or on a computer screen; thus, a total of eight conditions, with each participant only viewing one video from the conditions.

Participants

Thirty-one undergraduate students were recruited through California State University, Northridge (CSUN) Psychology Pool (SONA Systems). Thirty participants \((n = 30)\) provided their ages, ranging from 18 to 33 \((M = 20.23, SD = 2.94)\). Thirty-one participants \((n = 31)\) provided their gender \((Men = 11, Women = 20)\).

In order to be eligible to participate in this study, participants were required to (1) be 18 years of age or older, (2) have normal or corrected hearing and must be able to wear hearing aids or cochlear implants, (3) have normal or corrected to normal vision with the ability to wear contacts, and (4) be an undergraduate student from CSUN enrolled in an introductory or biological psychology course (PSY 150 or PSY 250). Participants were considered ineligible to participate in the study if (1) they were blind, as the study requires vision, and (2) they were deaf without any corrective hearing devices, as the study requires hearing. All participants provided informed consent prior to the commencement of participation in the study and were compensated
with 4 SONA credits toward their total credit course requirement for completing the survey. No identifiable information was collected. This study was conducted in accordance with the Institutional Review Board (IRB), strictly following an approved protocol.

**Materials**

A Sony Alpha 7 III was used to record the simulated job interviews viewed through the application DeoVR on an Oculus Quest 2 VR headset, edited with Adobe Premiere Pro as a stereoscopic 180-degree video. The same videos were edited with Adobe Premiere Pro as non-stereoscopic videos viewed on a Lenovo ThinkPad. A total of 5 actors living within the Los Angeles region, identifying under the umbrella of nonbinary, played the role of the interviewee and were compensated with a $125 gift card for their time and participation in the project. Of the five videos recorded, only four were used, as one was discovered to be out of focus during post-recording processing, rendering it unusable. While we recognize that genderqueer identities are diverse and subjective, and that this population does not represent the entire community of diverse representations in the genderqueer community, we recruited actors representing various racial/ethnic backgrounds ($White = 2, Asian = 2$) and gender presentations. They were instructed to dress and style themselves for a job interview in their style of preference.

One of the actors presented themselves wearing a camo green and pink patterned button-up short-sleeve top (showcasing their visible tattoos on their arm) with a pair of black skinny jeans. Their nails were short and natural, and they wore their hair up, showcasing their shaved side cut. Another actor presented in a dark button-up half-sleeve top paired with black skinny jeans and sneakers. As for accessories, they wore a watch, multiple rings on both hands, stud earrings, glasses, natural short nails, and a black beanie over their short hair. The third actor wore a navy blue top, covered by a form-fitting black full-sleeve blazer, paired with black skinny jeans.
and red combat boots. They styled their mid-length hair in a half-up half-down hairstyle, wearing glasses, one ring, and short natural nails. The fourth actor presented in a black top, a multicolored relaxed blazer rolled up to the elbows, paired with black pants and black combat boots. Their hair was cut in a two-toned neutral color mullet, and they wore multiple silver hoop earrings, eyebrow jewelry, a simple belt for accessories, and short natural nails. All actors identified as college students, presenting in a similar age range.

Participants were given a chance to watch any of the four videos of the actors, as the videos were randomly assigned within pronoun conditions to increase the diversity of individuals identifying with different pronouns and presentations. The two individuals questioning the interviewee (White = 2; Hispanic, Latinx, or Spanish origin = 1) were played by research assistants from the Visual Information Sciences and Neuroscience (V.I.S.N) Lab, functioning as interview panel members. Both interviewers wore business casual and presented as being in the same age range as the interviewees. On the other hand, the participant played the role of an observer during the interview panel without actively asking questions (see Figure 1.).

**Figure 1.**

*Interview panelists and interviewee.*

*Note: The two individuals on the left side of the image portray the interview panelists, while the*
individual on the right-most side of the image portrays the interviewee. The interview questions and the interviewee’s resumé are the papers before the interviewers.

The first step in setting up the stereoscopic condition viewed in VRHMD is the floor boundary for the playable area must be identified as a stationary boundary where the participant will be sitting. After setting up the boundary, the app DeoVR (DeoVR, 2003) was used to play the videos from the local files on the device. Each video was set as a 180-degree Fisheye Lens view, and the volume was set to the maximum volume allowed on the device. The videos in the stereoscopic condition were viewed on a Lenovo Thinkbook 15” laptop. The videos were set to view in 1080p, played at maximum volume on the device.

Participants were randomly assigned to either stereoscopic or non-stereoscopic and in a condition with one of three possible pronouns or without pronouns. The resumé included a statement that CSUN is an equal opportunity employer, applicant information as part of their application, and the name used on the application is Chris Davidson (see Appendix B). Along with the resumé, participants were provided with a job announcement and description for a lab manager (see Appendix C). One script follows a structured interview for the interviewers and interviewees with eight questions pertaining to qualifications, educational background, and experience working with others in a research laboratory (see Appendix D).

For the current analysis, six measures were utilized, focusing on candidate competency, applicant hireability, perceived masculinity/femininity, social presence, presence in environment, and motivation. Participants were also asked to identify their demographic characteristics and personality traits but are reserved for analysis in future studies. These measures were administered as a questionnaire for participants to complete on Qualtrics (Qualtrics, 2023), an online survey company via a laptop (see Appendix E for all the items from Qualtrics).
Desire to Hire

Applicant hireability was assessed using a 5-point Likert scale ranging from *extremely unlikely* to *extremely likely* with three questions: “How much would you like to personally interview the applicant?”; “How likely would you be to hire the applicant?”; and “How likely is it that the applicant will get the job?” with a Cronbach’s alpha reliability of $\alpha = .93$ (Moss-Racusin et al., 2010).

Candidate Competency

Interviewer’s Evaluation of Applicant’s Performance from Latu and colleagues (2015) evaluates the applicant’s performance in the interview. We operationalized performance as candidate competency, rated on a 7-point Likert scale ranging from *strongly disagree* to *strongly agree* for five items. Sample items from this scale are “Based on our interaction, the applicant is competent for the job” and “The applicant performed well during this interview.” The sixth item, “Overall, how would you rate the applicant's strength as an applicant during the job interview?” was rated on a 7-point Likert scale ranging from *not at all strong* to *extremely strong*. The scale across the responses from the six items has a Cronbach’s alpha reliability of $\alpha = .95$ (Latu et al., 2015).

Perceived Masculinity/Femininity

The Personal Attributes Questionnaire-8 (PAQ-8) from Tibubos and colleagues (2022) assesses feminine and masculine gender expression as a shortened version of the full 24-question version. Participants were asked to answer the questions inquiring about what kind of person they think the applicant is based on their interaction in the interview. Traits are classified into two subscales: Feminine and Masculine. Feminine traits are emotional, feelings of others, understanding, and warm. Masculine traits compose of not giving up, confident, superior, and
standing well under pressure. The PAQ-8 demonstrates acceptable internal consistency with Cronbach’s alpha reliability of $\alpha = .79$ for the masculinity scale and $\alpha = .71$ for the femininity scale and the test-retest reliability of $(r = .44; \text{Tibubos et al., 2022}).$

**Social Presence**

The Social Presence scale is a subset of a larger scale from Nowak and Biocca (2003) in which this subset composes of 3-items assessing the extent to which subjects felt closest to their meeting partner in their most recent video meeting session. An example item from this measure is “To what extent did you feel able to assess your partner’s reactions to what you said?” with responses ranging from 0 to 100 (where 0 is *not able to assess reactions* and 100 is *able to assess reactions*) with Cronbach’s alpha reliability of $\alpha = .82$ (Nowak & Biocca, 2003).

**Presence in Environment**

Participants perceived presence in the VE was measured with Schubert’s (2003) Igroup Presence Questionnaire (IPQ). This measure consists of 14 items rated on a 7-point Likert scale. These items are categorized into four distinct loadings: *General Presence*, *Spatial Presence*, *Involvement*, and *Experienced Realism*. Each loading represents a specific aspect of participants’ immersion and engagement within the virtual environment. Sample items from this measure are: “How real did the virtual world seem to you,” “I was not aware of my real environment,” and “I felt like I was just perceiving pictures” (Schubert, 2003).

**Motivation**

The participant’s motivation to perform the task was assessed with two questions rated on a 5-point Likert scale: “How motivated are you to hire” with responses ranging from *extremely unmotivated* to *extremely motivated* and “How much effort did you put into your responses” with responses ranging from *far below average* to *far above average.*
Procedure

Participants were recruited through SONA and voluntarily signed up for an experimental session to meet the experimenter at the provided designated time. They saw the following study description: “Participants are asked to watch a simulated job interview in virtual reality and fill out a questionnaire.” Before the participants arrived, they were randomly assigned to a condition based on a sequential allocation method determined by the preceding participant. They were assigned to one of 8 treatment groups: 1) no pronoun stereoscopic video, 2) no pronoun non-stereoscopic video, 3) "they/them" stereoscopic video, 4) "they/them" non-stereoscopic video, 5) "she/her" stereoscopic video, 6) "she/her" non-stereoscopic video, 7) "he/him" stereoscopic video, 8) "he/him" non-stereoscopic video.

The following procedures took place. Participants met an experimenter in the room specified on the SONA site (SH 363 or SH 367B). After greeting the participant, the experimenter gave them a consent form to read and sign after they consented to continue participating in the study. Following written approved consent by the participant, participants were given one resumé/application of an individual with a unisex name, Chris Davidson, and depending on the condition the participant was assigned to, the resumé included pronouns, or it included “they/them,” “he/him,” or “she/her” pronouns above the resumé as part of the applicant’s information for the application. Along with the resumé/application, participants were handed a job description/announcement of an on-campus lab manager for a research laboratory. Participants were instructed to read the resumé and job description/announcement and alert the researcher once they finished reviewing the materials.

If assigned to the stereoscopic condition, researchers explained to the participants that they would watch a job interview through the Oculus Quest 2 headset in which they would act as
the third interviewer panelist along with two others interviewing one interviewee. The simulated job interview displayed as a 180-degree video was viewed through the application DeoVR (DeoVR, 2003) on the Oculus Quest 2. For each participant, the researcher adjusted the headset and then played the video once the headset was adjusted comfortably on their head. If assigned to the non-stereoscopic condition, the researcher instructed the participant that they would watch a job interview on a laptop screen.

After viewing the interview (approximately 4 to 5 minutes in length), participants completed a questionnaire presented via Qualtrics (Qualtrics, 2023), on the provided laptop (approximately 12 minutes to complete). This survey was presented in the following sequential order; each measure had its own section. As the first question of the demographic section, the participant was asked to provide their SONA ID as verification. Once they answer the first question, the participant can see all the questions about demographic information (including job experience). Following, they are asked questions pertaining to desire to hire, applicant perceived gender identity, applicant competency, motivation to complete the task, personality, perceived gender nonconformity, social presence, and presence in the environment. Between each section, participants are prompted to continue to the next page by an arrow at the bottom without section headings not to inform the participant of the following questions. Lastly, the researchers debriefed and awarded the participants 4 SONA credits for their time and participation in the experiment.

**Data Analysis**

The hypotheses were analyzed with SPSS as an Analysis of Variances (ANOVAs), t-tests, regression analysis, and mediation models—separate ANOVAs with pronouns as the independent variable and competency and desire to hire as the dependent variables. Composite
scores were calculated for the desire to hire, competency, femininity, masculinity, nonconformity, social presence, IPQ loadings, and motivation to be used in the analysis. The video presentation was dummy coded as stereoscopic (0) and non-stereoscopic (1).

We also used the software R to evaluate our data further and determine whether a mediation effect exists. By employing the mediation package in R, we executed code to explore social presence mediating the relationship between motivation and the desire to hire with video presentation as a covariate.
CHAPTER III: RESULTS

Pronoun Presentation

A one-way ANOVA revealed there was no significant effect of pronoun presentation on candidate competency \((F(3, 27) = .634, p = .6, \eta^2 = .066; \text{see Appendix A, Table 1 for descriptive statistics})\). Another separate one-way ANOVA revealed no significant difference between pronoun presentations and desire to hire \((F(3, 27) = 2.141, p = .118, \eta^2 = .192; \text{see Appendix A, Table 2 for descriptive statistics})\).

A factorial ANOVA was performed to investigate the effects of the presented video actor and pronoun presentation on masculinity. The assumption of homogeneity of variances was violated, as assessed by Levene's test for equality of variances, \(p = .032\). There was no significant interaction between the video actor and pronoun presentation for masculinity \((F(7, 17) = .136, p = .994, \text{partial } \eta^2 = .053; \text{see Table 3 for descriptive statistics})\). An analysis of the main effect of video of actor revealed there was no significant main effect of video actor \((F(3, 17) = 2.887, p = .066, \text{partial } \eta^2 = .338)\) or pronoun presentation \((F(3,17) = .459, p = .714, \text{partial } \eta^2 = .075)\) on masculinity.

Perceived Gender Presentation

A linear regression was conducted to predict candidate competency from masculinity (see Appendix A, Table 4; \(F(1, 29) = 7.27, R^2 = .2\)). Masculinity significantly predicted candidate competency \((B = .818, \beta = .448; p = .012)\).

Another linear regression predicting desire to hire from masculinity \((B = .230, \beta = .132)\) revealed these variables do not significantly predict desire to hire \((F(1, 29) = .249, p = .479, R^2 = .017; \text{see Appendix A, Table 5})\). As the relationship between perceived gender presentation, competency, and desire to hire was not significant, a mediation analysis was not performed.
Video Presentation, Social Presence, and Immersive Presence

Two independent sample t-tests analyzed video formats in social presence and video formats presence in environment. No significant difference was found in social presence between the stereoscopic condition ($M = 73.44, SD = 20.46$) and the non-stereoscopic condition ($M = 76.11, SD = 20.14$), $t(29) = -.366, p = .717$). Additionally, there was no significant difference in immersive presence between the stereoscopic condition ($M = .352, SD = .499$) and the non-stereoscopic condition ($M = -.010, SD = .693$), $t(29) = 1.678, p = .104$.

We conducted an additional independent sample t-test for the loadings of IPQ to investigate potential differences between the stereoscopic and non-stereoscopic conditions. Levene’s Test for Equality of Variances was conducted to assess the assumption of equal variances. For the General Presence loading, as assessed by Levene's test for equality of variances, variances were homogeneous ($p = .330$). Immersive presence was similar for the stereoscopic ($M = .31, SD = 1.621$) and non-stereoscopic ($M = .4, SD = 1.046$) conditions, without significant difference, $t(29) = -.177, p = .861$. For the Realism loading, Levene’s test revealed that variances were homogeneous ($p = .297$). The stereoscopic ($M = .375, SD = .592$) and non-stereoscopic ($M = -.05, SD = .917$) conditions were not significantly different, $t(29) = 1.543, p = .134$. For the Involvement loading, Levene’s test revealed that variances were homogeneous ($p = .864$). The stereoscopic ($M = .531, SD = .806$) and non-stereoscopic ($M = -.017, SD = .826$) conditions were not significantly different, $t(29) = 1.869, p = .072$.

Lastly, for the Spatial Presence loading, Levene’s test revealed variances were homogeneous ($p = .344$) stereoscopic ($M = .209, SD = .597$) and non-stereoscopic ($M = -.053, SD = .812$), $t(29) = 1.031, p = .344$.

An independent sample t-test was performed to determine if there were differences in
motivation to do the task between video formats. No significant difference was found in motivation between the stereoscopic condition ($M = 4.38$, $SD = .53$) and the non-stereoscopic condition ($M = 4.58$, $SD = .37$), $t(29) = -1.155$, $p = .258$).

A multiple regression predicting motivation from social presence ($B = .008, \beta = .348; p = .057$) and immersive presence ($B = -.118, \beta = -.157; p = .377$) revealed that these variables did not significantly predict motivation to do the task ($F(2, 28) = 2.322, p = .117, R^2 = .142$; see Appendix A, Table 6). Social presence demonstrates a trend toward significantly predicting motivation with an approaching significance ($B = .008, \beta = .348; p = .057$).

Another multiple regression was conducted to predict the desire to hire from social presence and immersive presence. These variables significantly predict the desire to hire ($F(2, 28) = 3.555, p = .042, R^2 = .203$; see Appendix A, Table 7). Social presence significantly predicts the desire to hire ($B = .017, \beta = .447; p = .013$). A multiple regression predicting social presence from video presentation ($B = -5.558, \beta = -.141$), motivation ($B = 11.801, \beta = .272$), and desire to hire ($B = 11.462, \beta = .431$) revealed that motivation and desire to hire have significant positive associations, social presence ($F(3, 27) = 3.425, p = .031, R^2 = .276$; see Appendix A, Table 8). The non-stereoscopic video presentation was associated with decreased social presence compared to the stereoscopic video presentation ($t = -.798, p = .432$). Higher levels of motivation were associated with higher social presence ($t = 1.611, p = .119$). Greater desire to hire was associated with increased social presence ($t = 2.428, p = .022$). Social presence partially mediates the relationship between video presentation, motivation, and desire to hire.

A causal mediation was performed in R to analyze the partial mediation further, investigating the role of social presence as a mediator in the relationship between video presentation, motivation, and desire to hire. Analysis of the indirect effects revealed that social
presence does not significantly mediate the relationship between video presentation, motivation, and desire to hire ($ACME = 0; ADE = -.05$, CI 95% = 15.155 to 15).
CHAP TE IV: DISCUSSION

In this study, we investigated the influence of gender pronouns, video presentation, and social presence on ratings of qualifications and desire to hire. The impact of these factors was explored using two different mediums: 180-degree stereoscopic video in VR and a flat video via computer screen, both portraying a simulated job interview of gender-diverse interviewees. It is important to note that the study sample is underpowered; therefore, the interpretations of the implications of the results should be considered with caution. Despite the underpowered sample, the results provide valuable insight into trends.

H1a: Participants reviewing a “they/them” resumé would have less perceived candidate competency and less desire to hire than participants reviewing the “she/her” resumé, who in turn would have less perceived candidate competency and less desire to hire than participants reviewing a “he/him” resumé

Results indicated that ratings of qualifications and desire to hire did not significantly differ based on pronoun presentations. In other words, the pronouns used in the resumés (i.e., “they/them,” “she/her,” “he/him,” or no pronouns) did not have a significant impact on participants' perceptions of candidate competency or their level of desire to hire the candidates, at least in this particular hiring simulation.

Dray and colleagues (2020) note that as many individuals identifying under the umbrella of nonbinary/nonconforming are entering the workforce, more organizations are becoming more tolerant and inclusive with their hiring practices. This idea could explain why there were no differences between pronoun presentation (i.e., none, “she/her,” “he/him,” and "they/them") as greater acceptance may be found in these environments. As more organizations, corporations, academia, and other places of work continue working towards incorporating and implementing
DEIJ policies, gender-diverse individuals can find a sense of safety in applying for jobs sharing their preferred pronouns, and expressing themselves freely without facing repercussions (e.g., violence, prejudice, discrimination, and rejection).

There could have been several alternative explanations for these findings. Firstly, a possible explanation for the lack of significant differences could be the placement of the pronouns on the resumé not being as prominent compared to the candidate’s qualifications, experience, and interview performance. The candidates' other related factors (i.e., educational background, job experience, related experience, and skills) listed on the resumé might have outweighed the impact of pronoun inclusion; consequently, participants may not have perceived gender pronouns as a relevant factor in evaluating the candidate’s qualifications for the position.

**H1b: Ratings of masculinity will be lower for candidates with a “she/her” resumé compared to candidates in the “they/them” and “he/him” resumé.**

Our results revealed that the interaction between video actor and pronoun presentation on masculinity was not significantly significant, suggesting that the combination of video actor and pronoun presentation did not significantly affect participants’ perceptions of masculinity. Participants’ perceptions of masculinity were not influenced by the actor’s gender presentation, or their chosen pronoun use provided on the resumé.

These results indicate relative stability of participants' perceptions of masculinity as participants may have primarily relied on other cues (i.e., verbal and nonverbal behaviors) rather than being influenced by the interviewee’s appearance or pronouns. Participants might have been more open-minded and accepting when evaluating the candidate's qualification, regardless of gender pronouns, as there is a societal shift towards more social and culturally inclusive practices. Existing literature on gender stereotypes shaping perceptions in a hiring and
employment context supports participants’ inability to discern distinct shifts in masculinity perceptions (Juodvalkis et al., 2003; Keere, 2021). Moreover, the presence of nonbinary individuals within the workforce presents an additional layer of complexity.

**H2a:** Higher ratings of masculinity will be associated with higher ratings of competency and desire to hire.

**H2b:** Masculinity will mediate the associations between resumé pronouns and competency and desire to hire.

Data partially supported our second hypothesis. Results indicated that masculinity significantly predicted candidate competency. However, results revealed that masculinity did not significantly predict the desire to hire, suggesting that perceived masculinity did not substantially impact the participant’s desire to hire the candidate.

Given that the relationship between perceived gender presentation, candidate competency, and the desire to hire did not yield statistical significance, it implies there was no mediating effect of gender presentation in the relationship between candidate competency and the desire to hire. The implications of these findings raise awareness regarding potential gender biases skewed toward masculine-presenting individuals compared to feminine-presenting and nonconforming presenting individuals. The present study's findings contribute to the existing literature on gender presentation and hiring perceptions. Previous literature conducted by Juodvalkis and colleagues (2003) found that nonbinary-identifying individuals with a feminine presentation are viewed as less desirable than those viewed as masculine. The un-favorableness of feminine presenting nonbinary individuals could be because these individuals are viewed as moving toward femininity which is perceived as an undesirable trait in the workplace. In the current study, the interviewees portrayed varying style preferences, potentially influencing
participants’ perception of particular interviewees presenting as more masculine than other interviewees.

An alternative explanation attributing to the significant prediction of candidate competency on masculinity and the lack of significant prediction in the desire to hire on masculinity could be due to the range of variations in the actors presented in the videos. The variations in gender presentation and race/ethnicity (White = 2, Asian = 2) across the actors may not have been extensive enough to elicit participants' perceptions and shifts in participants’ hiring preferences.

**H3: Participants viewing the 180-degree stereoscopic video will report higher social presence and greater immersive presence than participants viewing the flat video**

**H3b: Participants in the stereoscopic condition will report greater motivation to perform the assigned task than participants in the non-stereoscopic condition.**

Contrary to our expectation, there was no significant difference in social presence and immersive presence between participants viewing the stereoscopic video and the non-stereoscopic video. Results revealed that participants in both the stereoscopic and the non-stereoscopic condition report similar levels of social presence and immersive presence. For this reason, the anticipated outcome of higher social presence and immersive presence while viewing the stereoscopic video cannot be supported. Additionally, there is no statistical significance in motivation to complete the task for stereoscopic and non-stereoscopic conditions. These results suggest that the stereoscopic video did not enhance or diminish engagement, experience, learning, or motivation in VE compared to the non-stereoscopic video; further implying that both video presentations can effectively elicit presence and motivation in a VE.

While the current study did not find significant differences in social and immersive
presence between stereoscopic and non-stereoscopic video presentations, it contributes to the existing literature on interviewing and virtual reality applications. Zahabi and Abdul Razak (2020) discuss the usefulness of VR for numerous purposes (e.g., training, education, therapy, and entertainment), allowing users to experience, engage, and immerse in virtual scenarios they would otherwise not be able to in a real-world application. Although the current findings did not find a significant difference in social and immersive presence between stereoscopic and non-stereoscopic mediums, our research adds to previous literature on interviewing as the technology mentioned earlier (VR and computer) allowed us to examine differently, hiring practices and interviewer biases in a realistic, controlled environment.

A possible alternative explanation accounting for these unexpected results is that the participants may have become equally immersed in the simulation regardless of the video presentation. It is possible that the immersive design of the VE, including the participant within the simulation, as well as the high-resolution of the videos (Lee et al., 2017), affected any potential differences between the stereoscopic and non-stereoscopic conditions.

**H4a: Participants who report greater social presence would have greater motivation to perform the assigned task and express a greater desire to hire the candidate.**

**H4b: Social presence would mediate the relationship between video presentation and motivation and desire to hire the candidate**

We did not find a significant relationship between social and immersive presence predicting motivation, thus, not supporting H4a. Although social presence significantly predicted the desire to hire, participants who reported greater social presence were more inclined to express a greater desire to hire, highlighting the relevance of creating immersive VEs. Furthermore, we found that motivation and desire to hire had significant positive associations.
with social presence. Interestingly, non-stereoscopic video presentation was associated with decreased social presence compared to stereoscopic video presentation. Higher motivation and greater desire to hire were associated with higher social presence. These findings imply that social presence is a partial mediator in the relationship between video presentation, motivation, and the desire to hire, partially supporting H4b. The significant associations between social presence and the desire to hire propose that creating immersive and socially engaging VEs could enhance participants’ inclination to hire candidates.

These findings resemble previous literature highlighting the importance of social presence’s impact on the subjective perception of presence in social interaction, and connectedness within VE can significantly impact the participant’s decision-making (Nowak, 2001; Nowak & Biocca, 2003). Moreover, research by Ryan and Deci (2000) emphasizes the role of motivation in shaping a user’s perceived engagement in a task, with motivation varying based on the nature of the task, and an increase in motivation enhances the level of immersion (Ryan & Deci, 2000; Shaw et al., 2017). Similar to this perspective, our results showed that greater levels of motivation were associated with higher reported social presence and, subsequently, with a stronger desire to hire the candidate. Additionally, the literature suggests that motivational factors can impact participants' behavior in tasks performed in VE or simulations (Choi et al., 2017; Miller et al., 1988; Ryan & Deci, 2000; Shaw et al., 2017). Our study further contributes to previous knowledge demonstrating how motivation intersects with social presence, ultimately influencing hiring decisions.

The sample size of the study could alternatively explain the limited statistical power. A larger sample size could potentially reveal a mediating relationship between the variables. Another alternative explanation could be that the measure for motivation did not have enough
questions specifically focusing on additional factors relating to motivation.

Limitations

The present study has several limitations that should be addressed. Initially, the study intended to collect data from a target sample of 432 participants; however, despite our efforts to collect additional participants, at the time of analysis, we could only collect 31 participants, substantially compromising the power of the sample when interpreting the results. Further, an additional limitation is that we utilized the SONA system, which restricts recruitment to only undergraduate students enrolled in Psychology (PSY) 150 and 250 courses. While this recruitment approach provided access to a specific population of students interested in psychology, it introduced a potential limitation to the generalizability of our findings, limiting our scope of implications. There is a possibility of selection bias with the current sample not fully representing the intended population (e.g., hiring managers and human resource staff), potentially limiting the study's external validity. Efforts for future data collection should focus on modifying the recruitment strategy, expanding the participant pool beyond PSY 150 and 250 students, extending to include any adult students, staff, or faculty, as well as non-university-affiliated adults. Expanding the recruitment pool will increase the diversity and representativeness of the sample, given that the population collected for this study significantly compromised of students with less knowledge of hiring practices.

Additionally, regarding the current sample, the limited sample size is an uneven distribution of demographic characteristics, impacting the findings' representativeness and generalizability. An alternative explanation for the results could be related to the sample's demographic characteristics, specifically, the age range (18 to 33, $M = 20.23$) and a higher proportion of females than males. Results regarding the desire to hire and candidate competency
for gender-diverse individuals and pronoun usage could be influenced by these factors. In light of the existing literature that does not perfectly align with the population of this study, it is worth noting that this current population has shed light on a potentially hopeful trend where the biases observed in the current literature might not carry over to the next generation. Notably, our findings indicate that in instances where job seekers and recruiters share the same age group, particularly among younger individuals, job seekers could effectively leverage their age to garner support from recruiters and navigate sensitive situations with greater ease (Previtali et al., 2023). This finding implies a promising shift in dynamics that could positively affect future workplace interactions and outcomes. Future research should focus on using a sample of older adults above 30 years old with experience with hiring and interview practices, as they may hold different perspectives and attitudes toward gender diversity and pronoun usage. Additionally, the population should expand outside of the Los Angeles region to other populations to increase the generalizability of the results, as Los Angeles may not accurately represent the entire intended population. Further empirical research is necessary to confirm or refute the influence of age and gender composition on the observed results to enhance the findings' external validity and real-world applicability.

Secondly, data collection relied solely on subjective self-report measures, leading to social desirability bias (Grimm, 2010) and recall bias (Tarrant et al., 1993). Despite taking steps to ensure anonymity and confidentially of the responses by not obtaining any identifiable information, a possibility still exists that participants may have provided socially desirable responses or even experienced difficulties accurately recalling information from the video watched. Future research employing objective measures (e.g., VRHMDs with eye-tracking capabilities) could provide a comprehensive and reliable assessment of the perception of gender
presentation in which areas the participant spends more of their gaze. Furthermore, our methodological approach applied a quantitative method of data collection, which could alternatively explain our results as a larger sample is required to analyze a quantitative data set. A mixed methods approach using quantitative and qualitative research methods to gain a more complete picture through an observational setting or focus group could provide richer detail to drawable conclusions.

Thirdly, there was a survey design flaw in the demographic questions about the gender identity of the participant. Specifically, our demographic survey featured a binary selection of options, encompassing only “male,” “female,” “transgender,” “nonbinary/third gender,” and “prefer not to say” without an option for “other” with a free response to elaborate. This oversight in the survey structure omitted potential demographic categories beyond the traditional gender identities, potentially limiting the inclusivity and accuracy of participant self-identification. Individuals who may identify outside of the provided options may have found themselves inaccurately representing their gender identity, alternatively explaining the lack of gender diversity in our participant population. This underrepresentation highlights the importance of future research to increase the range of gender identity options to ensure a more inclusive and diverse approach to collecting participant demographics. In addition to survey design flaws, it is essential to address the absence of manipulation checks asking participants what the pronoun was at the conclusion of the survey. By not including this type of manipulation checks in the survey, we face a certain degree of uncertainty when drawing conclusions about participants’ accurate perceptions of pronoun presentation and gender presentation associated with other variables. The absence of manipulation checks in our study drives a need for future research to consider incorporating manipulation checks throughout the survey to enhance the reliability of
Fourthly, the scale utilized in this study to assess perceived gender presentation did not assess for nonconformity or uniqueness amongst the interviewees. While our study aimed to explore various dimensions of gender-diverse individuals, including the variables of nonconformity or uniqueness, the scale employed to measure perceived gender presentation may not have adequately captured the uniqueness of diverse presentations. As a result, participants may have experienced difficulty expressing their perceptions of the interviewee’s distinct characteristics. For future research, researchers should select better scales encompassing the intricacies of an individual’s uniqueness/nonconformity and separate it from their gender presentation.

Fifthly, an inability to control for outside factors (e.g., intermittent loud noises from ongoing nearby lectures and students talking in the halls) could have influenced the results. These uncontrollable noises could have disrupted the participants’ concentration, attention, immersion, and social presence in the task, potentially impacting their responses and overall experience. Unfortunately, we could not moderate this external interference, which may have introduced some variability amongst the responses and confounding effects into the data. Moreover, participants viewing the simulated job interview on a laptop were not provided with headphones, presenting another limitation to the study. The difference in audio between those in the stereoscopic condition and the non-stereoscopic condition without the additive of headphones may have led to variations in the immersive experience, further introducing bias and variability to the findings. Researchers planning on replicating the study should ensure that participants in the non-stereoscopic condition are provided with headphones, preferably noise canceling, or conduct the experiment in a controlled environment to moderate external interference.
Lastly, due to the immersivity of the VR HMDs, they can cause issues such as visual stress, fatigue, headaches, dizziness, motion sickness, and nausea when used for prolonged times (Chang et al., 2020; Zahabi & Abdul Razak, 2020). While some users may experience mild to no discomfort, others may report some of the more adverse effects ultimately affecting their overall experience in the VE. To address this issue in sequential research, researchers should implement a pretest-posttest design to investigate virtual reality sickness (Kim et al., 2018) with prolonged use of stereoscopic videos and develop solutions for creating more comfortable and accessible VR HMDs.

**Future Directions**

Future research in this area should investigate the efficacy of using simulated VR environments as a tool for diversity and inclusion training in the workplace. As the current study focused on the impact of gender pronoun inclusion on a job application for the employer to review, future research could examine the degree of empathy and understanding of the interviewer toward the interviewee. VR simulations as training tools can enhance organizational diversity and inclusion (Georgiadou, 2021). Another potential direction for future research can explore the knowledge retention learned from a VR training tool and employees' attitudes and behaviors toward gender inclusivity in the workplace.

**Conclusion**

In conclusion, this study examined the influence of gender pronouns, video presentation, immersive presence, and social presence on qualification ratings and the desire to hire a potential job candidate. The results revealed that pronoun presentation did not significantly impact participants' perceptions of candidate competency or their desire to hire the candidates, indicating a fostering of inclusivity and safe spaces for gender-diverse individuals to share their
preferred pronouns during a hiring process without reducing the possibility of facing negative consequences. Moreover, masculinity significantly influenced candidate competency but did not significantly impact the participants’ desire to hire, suggesting potential gender biases favoring masculine-presenting individuals compared to feminine-presenting and nonconforming individuals. By considering the broader implications of these findings, organizations can work towards creating more equitable and inclusive environments that empower all individuals, regardless of their gender presentation, to thrive in their careers. Surprisingly, no significant differences were found impacting social and immersive presence between participants viewing the stereoscopic video in VR versus the non-stereoscopic video via computer, implying both video presentations equally effectively evoke presence in a VE, desire to hire, and motivation.

These findings to the existing literature on gender presentations and their implications for hiring perceptions, bringing awareness to potential biases in candidate evaluation. However, it is important to highlight the several limitations present in the study, including limited and restricted sample size affecting the generalizability of the results, potential biases introduced by self-report measures, external factors (e.g., uncontrollable noise and differences in audio presentation), and potentially virtual reality sickness not measured.

To enhance the generalizability of the study, future investigation is warranted to expand on the recruitment pool, objective measures, and efficacy of VR simulations as training tools in DEIJ practices in the workplace to add to the current literature. Overall, this research provides valuable insights into the complexities of perceived gender presentation and gender pronouns’ impact on hiring elements with the potential of VR technology in exploring hiring practices in a controlled environment. As we continue to explore gender diversity and representation in the workplace, the findings of this study can help foster more inclusive and equitable hiring practices.
REFERENCES


Carnett, A., Neely, L., Gardiner, S., & Kirpatrick, M. (n.d.). *Behavior analytic based virtual reality interventions to teach adaptive and functional skills for individuals diagnosed with autism: A systematic review.* https://doi.org/10.21203/rs.3.rs-1255943/v1


https://doi.org/10.1177/17499755211032527


https://doi.org/10.1006/ceps.1999.1020


https://doi.org/10.1177/216507999003801203


https://doi.org/10.1145/3014812.3014823


### Table 1.
**ANOVA Descriptive Statistics: Candidate Competency Predicting Factors**

<table>
<thead>
<tr>
<th>Pronoun</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>5.333</td>
<td>1.112</td>
</tr>
<tr>
<td>She/her</td>
<td>5.7</td>
<td>.566</td>
</tr>
<tr>
<td>He/him</td>
<td>5.542</td>
<td>.946</td>
</tr>
<tr>
<td>They/them</td>
<td>5.881</td>
<td>.209</td>
</tr>
</tbody>
</table>

### Table 2.
**ANOVA Descriptive Statistics: Desire to Hire Predicting Factors**

<table>
<thead>
<tr>
<th>Pronoun</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>3.625</td>
<td>1.119</td>
</tr>
<tr>
<td>She/her</td>
<td>4.5</td>
<td>.436</td>
</tr>
<tr>
<td>He/him</td>
<td>3.958</td>
<td>.628</td>
</tr>
<tr>
<td>They/them</td>
<td>4.191</td>
<td>.378</td>
</tr>
</tbody>
</table>
### Table 3.
**Factorial ANOVA Descriptive Statistics: Masculinity Predicting Factors**

<table>
<thead>
<tr>
<th>Video Actor</th>
<th>Pronoun</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
<td>2.333</td>
<td>.289</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>She/her</td>
<td>2.361</td>
<td>.127</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>He/him</td>
<td>2.333</td>
<td>.723</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>They/them</td>
<td>2.750</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2.383</td>
<td>.393</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>None</td>
<td>2.125</td>
<td>.177</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>She/her</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>He/him</td>
<td>1.750</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>They/them</td>
<td>2.167</td>
<td>.804</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2.083</td>
<td>.540</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>None</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>She/her</td>
<td>2</td>
<td>.354</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>He/him</td>
<td>2.083</td>
<td>.382</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>They/them</td>
<td>2.375</td>
<td>.177</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2.143</td>
<td>.318</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>None</td>
<td>2.667</td>
<td>.289</td>
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<tr>
<td></td>
<td>She/her</td>
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<td>3</td>
</tr>
<tr>
<td></td>
<td>He/him</td>
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<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>They/them</td>
<td>2.75</td>
<td></td>
<td>1</td>
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<tr>
<td></td>
<td>Total</td>
<td>2.719</td>
<td>.209</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
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<td>2.406</td>
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<td>8</td>
</tr>
<tr>
<td></td>
<td>She/her</td>
<td>2.417</td>
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</tr>
<tr>
<td></td>
<td>He/him</td>
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<td>.525</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>They/them</td>
<td>2.393</td>
<td>.537</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2.358</td>
<td>.432</td>
<td>31</td>
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</tbody>
</table>
Table 4.
Regression Table: Competency Predicting Factors

<table>
<thead>
<tr>
<th>Gender Presentation</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masculinity</td>
<td>.818</td>
<td>.303</td>
<td>.448</td>
<td>2.696</td>
<td>.012</td>
</tr>
</tbody>
</table>

Table 5.
Regression Table: Desire to Hire Predicting Factors

<table>
<thead>
<tr>
<th>Gender Presentation</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masculinity</td>
<td>.230</td>
<td>.321</td>
<td>.132</td>
<td>.717</td>
<td>.479</td>
</tr>
</tbody>
</table>

Table 6.
Regression Table: Motivation Predicting Factors

<table>
<thead>
<tr>
<th>Motivation</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Presence</td>
<td>.008</td>
<td>.004</td>
<td>.348</td>
<td>1.989</td>
<td>.057</td>
</tr>
<tr>
<td>Immersive Presence</td>
<td>-.118</td>
<td>.131</td>
<td>-.157</td>
<td>-.898</td>
<td>.377</td>
</tr>
</tbody>
</table>

Table 7.
Regression Table: Desire to Hire Predicting Factors

<table>
<thead>
<tr>
<th>Desire to Hire</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Presence</td>
<td>.017</td>
<td>.006</td>
<td>.447</td>
<td>2.644</td>
<td>.013</td>
</tr>
<tr>
<td>Immersive Presence</td>
<td>-.089</td>
<td>.205</td>
<td>-.073</td>
<td>-.433</td>
<td>.668</td>
</tr>
</tbody>
</table>

Table 8.
Regression Table: Social Presence Predicting Factors

<table>
<thead>
<tr>
<th>Social Presence</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video Presentation</td>
<td>-5.558</td>
<td>6.962</td>
<td>-.141</td>
<td>-.793</td>
<td>.432</td>
</tr>
<tr>
<td>Motivation</td>
<td>11.801</td>
<td>7.325</td>
<td>.274</td>
<td>1.611</td>
<td>.119</td>
</tr>
<tr>
<td>Desire to hire</td>
<td>11.462</td>
<td>4.721</td>
<td>.431</td>
<td>2.428</td>
<td>.022</td>
</tr>
</tbody>
</table>
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**Applicant Information**

**Applicant full name:** Chris Davidson  
**Home Address:** 1234 School Street  
**City/State/Zip:** Northridge, CA 91324  
**Primary Phone number:** (555) 123-7890  
**E-mail address:** chris.davidson@gmail.org

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Productivity: Microsoft Office, Google Drive Pages, Numbers

Honors

National Honor Society (2016 to present)
Lab Manager  
California State University, Northridge  
Northridge, CA 91330

Full Job Description

We are looking for a highly organized lab manager to manage the lab's day-to-day operations and ensure everything runs smoothly by communicating, organizing, training, and monitoring lab assistants.

Responsibilities:

- Scheduling meetings
- Communicating effectively with lab assistants through multiple platforms
- Maintaining lab equipment
- Training new lab assistants
- Handling secure documents

Requirements and Skills:

- A minimum of 2 years of experience working in a laboratory
- Ability to multitask
- Strong leadership skills
- Preferred: degree in a related field of psychology, sociology, or other social behavioral sciences
APPENDIX D: INTERVIEW SCRIPT

Chris Davidson

(knocking at the door)

I1 Please enter. We are ready for you.

INT. CHRIS ENTERS MEDIUM SIZE WELL-LIT ROOM WITH A PANEL OF THREE INTERVIEWERS.

I1 Hello, are you Chris?

CD Yes, I am.

I2 Please feel welcome to take a seat. I am one of the three interviewers for this interview today, and we are all lab members. I1 and I will be asking the questions, and I3 will be here as an observer but will be helping with the hiring decision.

CD Nice to meet you all. I would like to introduce myself formally; my name is Chris. I appreciate this opportunity to be interviewed by lab members for this position.

I1 I will start us off with the first question. What education or training have you had that makes you fit for this position?

CD I have an expansive knowledge of research methodology relating to psychology. Additionally, I have a proficient knowledge of advanced statistics and analysis and the formation of journal articles. As for training, I began as a research assistant and have now taken on more of a leadership role, transitioning to a researcher in charge of leading research projects and research assistant.

I2 Do you have experience training research assistants on laboratory procedures?

CD I do have experience training research assistants on laboratory procedures. I ensure assistants understand the protocol for current and active projects and clarify anything unclear.

I1 Describe your experience working with and organizing statistical data.

CD I have taken multiple advanced statistics courses and worked with large data sets in my labs throughout my education. I use SPSS to organize, clean, create composites, and run statistical analyses. I further analyze the data in R depending on what is being tested.

I2 What most excites you about the role of a lab manager?
CD That’s a great question. What excites me most about the role is applying my knowledge and skills to ensure research assistants follow lab protocols and stay on top of all the ongoing projects in the lab.

I1 Tell me about a time you took the lead in a team project. What was the project outcome?

CD I am in charge of the literature review, organizing a team of research assistants to work together on the project, creating the protocol, organizing schedules, and training them to understand the procedure. I have maintained a collaborative environment where everyone can communicate comfortably. We collected data, and our results resembled what we expected.

I2 Did you ever postpone making a decision? Why?

CD Yes, I have postponed a decision before. I didn’t have all the necessary information to make an informed decision. I waited a week to get all the information before deciding. I believe the outcome wouldn't have been as successful if I had decided based on my emotions.

I1 How well do you perform under pressure?

CD I have done some of my best work under pressure throughout my educational career. There was a time I had a 15-page essay due in two days. Although I knew I had limited time with the deadline approaching, I didn’t let the stress affect me. Instead, I devised an outline and schedule to complete it accurately and on time before the deadline.

I2 What is your proudest professional accomplishment and why?

CD My proudest professional accomplishment is transitioning from research assistant to lead researcher because I have developed and grown my leadership and organizational skills, learning to manage a team.

I1 Thank you for your time interviewing for this position. We will be working as a team to come to a decision, and you should hear from us within a week by email.

CD Thank you again. I look forward to hearing from you.

EXT. CHRIS STANDS UP, TURNS AROUND, AND EXITS THE ROOM.

THE END
APPENDIX E: MEASURES

Start of Block: Demographics

What is your SONA ID?


Page Break

Age What is your age?


Gender What gender do you identify as?

- Male
- Female
- Transgender
- Non-binary / third gender
- Prefer not to say
What race/ethnicity do you identify as?

- White
- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or Pacific Islander
- Other, specify please __________________________________________________

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Are you of Hispanic, Latinx, or Spanish origin?

- Yes
- No

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What is your year at the university?

- Freshman
- Sophomore
- Junior
- Transfer Junior
- Senior
- Transfer Senior
- Other __________________________________________________

What is your current employment status?

- Employed full
- Employed part time
- Unemployed looking for work
- Unemployed not looking for work
- Retired
- Student
- Disabled
What is your household income?

- Less than $10,000
- $10,000 - $19,999
- $20,000 - $29,999
- $30,000 - $39,999
- $40,000 - $49,999
- $50,000 - $59,999
- $60,000 - $69,999
- $70,000 - $79,999
- $80,000 - $89,999
- $90,000 - $99,999
- $100,000 - $149,999
- More than $150,000

How many jobs have you had?

_____________________________________________________________________

How many job interviews have you experienced?

_____________________________________________________________________

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What is your current job occupation? (If not currently employed, fill in N/A)

________________________________________________________________

Do you have experience working in a research lab as a research assistant?

☐ Yes

☐ No

Do you have experience hiring job candidates?

☐ Yes

☐ No

Do you have experience hiring research assistants?

☐ Yes

☐ No

End of Block: Demographics
How much would you like to personally interview the applicant?

- Extremely unlikely
- Somewhat unlikely
- Neither likely nor unlikely
- Somewhat likely
- Extremely likely

How likely would you be to hire the applicant?

- Extremely unlikely
- Somewhat unlikely
- Neither likely nor unlikely
- Somewhat likely
- Extremely likely

How likely is it that the applicant will get the job?

- Extremely unlikely
- Somewhat unlikely
- Neither likely nor unlikely
- Somewhat likely
- Extremely likely
The items below inquire about what kind of person you think the applicant is.

Choose a letter which described where the applicant falls on the scale.

- Not at all emotional (A)
- (B)
- (C)
- (D)
- Very Emotional (E)

Choose a letter which described where the applicant falls on the scale.

- Not at all aware of feelings of others (A)
- (B)
- (C)
- (D)
- Very aware of feelings of others (E)
Choose a letter which described where the applicant falls on the scale.

- Never gives up easily (A)
- (B)
- (C)
- (D)
- Gives up very easily (E)

Choose a letter which described where the applicant falls on the scale.

- Not at all self-confident (A)
- (B)
- (C)
- (D)
- Very self-confident (E)
Choose a letter which described where the applicant falls on the scale.

- Feels superior (A)
- (B)
- (C)
- (D)
- Feels very inferior (E)

Choose a letter which described where the applicant falls on the scale.

- Not at all understanding of others (A)
- (B)
- (C)
- (D)
- Very understanding of others (E)

Choose a letter which described where the applicant falls on the scale.

- Very warm in relations with others (A)
- (B)
- (C)
- (D)
- Very cold in relations with others (E)
Choose a letter which described where the applicant falls on the scale.

- Goes to pieces under pressure (A)
- (B)
- (C)
- (D)
- Stands up well under pressure (E)

End of Block: Personal Attributes Questionnaire - 8 (Tibubos et al., 2022)
In my opinion, the applicant is qualified for this job.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Based on our interaction, the applicant is competent for the job.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree
I believe that the applicant would be able to complete all the duties of the job.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

The applicant performed well during this interview.

- Strongly
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree
Based on this job interview, I believe that the applicant should be hired for the job.

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Somewhat disagree
- [ ] Neither agree nor disagree
- [ ] Somewhat agree
- [ ] Agree
- [ ] Strongly agree

Overall, how would you rate the applicant’s strength as an applicant during the job interview?

- [ ] Not at all strong (1)
- [ ] (2)
- [ ] (3)
- [ ] Moderate (4)
- [ ] (5)
- [ ] (6)
- [ ] Extremely strong (7)

End of Block: Applicant Performance (Latu et al., 2015)
How motivated are you to hire?

- Extremely unmotivated
- Somewhat unmotivated
- Neither motivated nor unmotivated
- Somewhat motivated
- Extremely

How much effort did you put into your responses?

- Far below average
- Somewhat below average
- Average
- Somewhat above average
- Far above average
How well do the following statements describe your personality?

I see myself as someone who is reserved

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

I see myself as someone who is generally trusting

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree
I see myself as someone who tends to be lazy

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

I see myself as someone who is relaxed, handles stress well

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

I see myself as someone who has few artistic interests

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree
I see myself as someone who is outgoing, sociable

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

I see myself as someone who tends to find fault with others

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

I see myself as someone who does a thorough job

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree
I see myself as someone who gets nervous easily

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

I see myself as someone who has an active imagination

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

End of Block: Big Five Inventory - 10 (Rammstedt & John, 2007)
A person’s appearance, style, or dress may affect the way people think of them. How would you describe the applicant's appearance, style, and dress?

- Very feminine
- Mostly feminine
- Somewhat feminine
- Equally feminine and masculine
- Somewhat masculine
- Mostly masculine
- Very masculine

A person’s mannerisms (such as the way they walk or talk) may affect the way people think of them. How would you describe the applicant's mannerisms?

- Very feminine
- Mostly feminine
- Somewhat feminine
- Equally feminine and masculine
- Somewhat masculine
- Mostly masculine
- Very masculine
To what extent did you feel able to assess your partner’s reactions to what you said?

- Not able to assess reactions (0)
- 25
- 50
- 75
- Able to assess reactions (100)

To what extent was this like a face-to-face meeting?

- Not like face to face at all (0)
- 25
- 50
- 75
- A lot like face to face (100)

To what extent was this like you were in the same room with your partner?

- Not like being in the same room at all (0)
- 25
- 50
- 75
- A lot like being in the same room (100)
### IGroup Presence Questionnaire (Schubert, 2003)

How aware were you of the real world surrounding while navigating in the virtual world? (i.e. sounds, room temperature, other people, etc.)?

- NOT AWARE AT ALL (-3)
- (-2)
- (-1)
- (0)
- (1)
- (2)
- EXTREMELY AWARE (3)

How real did the virtual world seem to you?

- NOT REAL AT ALL (-3)
- (-2)
- (-1)
- (0)
- (1)
- (2)
- COMPLETELY REAL (3)
I had a sense of acting in the virtual space, rather than operating something from outside.

- Fully disagree (-3)
- (-2)
- (-1)
- (0)
- (1)
- (2)
- Fully agree (3)

How much did your experience in the virtual environment seem consistent with your real world experience?

- Not consistent (-3)
- (-2)
- (-1)
- (0)
- (1)
- (2)
- Very consistent (3)
How real did the virtual world seem to you?

- About as real as an imagined world (-3)
- (-2)
- (-1)
- (0)
- (1)
- (2)
- Indistinguishable from the real world (3)

I did not feel present in the virtual space.

- Felt present (-3)
- (-2)
- (-1)
- (0)
- (1)
- (2)
- Not feel present (3)
I was not aware of my real environment.

- Fully disagree (-3)
- (-2)
- (-1)
- (0)
- (1)
- (2)
- Fully agree (3)

In the computer generated world, I had a sense of "being there".

- Fully disagree (-3)
- (-2)
- (-1)
- (0)
- (1)
- (2)
- Fully agree (3)
Somehow I felt that the virtual world surrounded me.

- Fully disagree (-3)
- (-2)
- (-1)
- (0)
- (1)
- (2)
- Fully agree (3)

I felt present in the virtual space.

- Fully disagree (-3)
- (-2)
- (-1)
- (0)
- (1)
- (2)
- Fully agree (3)
I still paid attention to the real environment.

- Fully disagree (-3)
- (-2)
- (-1)
- (0)
- (1)
- (2)
- Fully agree (3)

The virtual world seemed more realistic than the real world.

- Fully disagree (-3)
- (-2)
- (-1)
- (0)
- (1)
- (2)
- Fully agree (3)
I felt like I was just perceiving pictures.

- Fully disagree (-3)
- (-2)
- (-1)
- (0)
- (1)
- (2)
- Fully agree (3)

I was completely captivated by the virtual world.

- Fully disagree (-3)
- (-2)
- (-1)
- (0)
- (1)
- (2)
- Fully agree (3)

End of Block: IGroup Presence Questionnaire (Schubert, 2003)