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Social comparison: Dimensional influences on academic and occupational choice

by

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A thesis submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Psychology

Program of Study Committee:
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Iowa State University

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ABSTRACT

Vocational theorists have long recognized the important role of social surroundings for a career decision-maker. social comparison theory would suggest that the career decision maker identify and compare themselves with other people (targets of comparison) on relevant dimensions in order to gain more information about themselves. Social comparison is particularly prevalent in situations of ambiguity or uncertainty such as that which is inherent in occupational choice. Given the minimal research conducted in combining these areas within the literature, a primary purpose of this study was exploring an appropriate methodology for addressing the questions of how social comparison operates in academic and occupational choice. Another purpose was to explore the salient factors and dimension in this process. A clear difference emerged in primed versus unprimed methodology, in which participants were explicitly asked about their own social comparison behaviors and preferences in occupational decision making either before or after rating fictional career speakers, which served as comparison targets. This finding supported the first hypothesis in this study. Differences also emerged regarding the method in which participant preferences were indicated via rating or ranking of comparison targets. In general, upward targets were chosen or evaluated more highly as comparison targets, providing support for the second hypothesis. Also, as the third hypothesis predicted, various participant variables, such as vocational interests, sex, career aspirations, and gender self-concept influenced their evaluation and selection of some comparison targets.

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CHAPTER 1

INTRODUCTION

> "Social comparison is a ubiquitous social phenomenon. Virtually everyone does it from time to time, mostly because it can fulfill functions that are fundamental, such as providing useful information about where one stands in one's social world, feeling better about oneself, and learning how to adapt to challenging situations"
>
> (Buunk and Gibbons, 2007, p. 16)

In understanding where an individual stands in their social world, sociologists Hauser and Warren (2008) best sum up the importance of one's occupation "job-holding is the most important social and economic role held by most adults outside their immediate family or household" (p. 179). This statement is exemplified in everyday interaction. When it comes to formal introductions, the question of 'What's your name?' is almost assuredly followed by 'What do you do?'—a reasonable question given an occupation is a necessary and familiar role in daily life (Simon, 1971). According to a Work and Education poll by Gallup in August 2014, the average American works 46.7 hours per week (Saad, 2014). Not only do individuals spend a significant portion of their day at work, but several years are spent in formal education and training preparing for a career, which sustains the concept of occupation as something by which people largely define themselves.

In their model of identity adaptation to sociocultural context, Baumeister and Muraven (1996) advance the idea of career as a means of establishing self-concept and self-presentation, highlighting that people work for the sake of identity building through "advancement and recognition that validate the good qualities of the self" (p. 411). In the process of developing one's presentation of themselves to the world, there is much uncertainty about which career to pursue, from knowing which careers exists to which one(s) would be good fits based on qualities

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of the self. Individuals can navigate the uncertainty in finding a desirable career by learning about the world of work from other people, determining how they fit—or compare—to these other individuals who are pursuing occupations they are considering. These personal analyses, or comparisons with others, provide information about whether or not one is capable of, will like, or fit into a variety of occupations.

Vocational theorists have long recognized the important role of the career decision-maker's social surroundings. Mark Savickas has developed a theory that assesses the influence of social context on career development (2013). Similarly, Gottfredson (1996) suggests that individuals gain social information about sex-type and prestige of careers as well as how their individual interests, gender, and social status match up with these careers to identify their potential career options. The career decision-maker develops 'images of occupations' on the dimensions of sex-type, prestige, and interests, which are influenced and developed according to societal values and expectations according to Gottfredson's (1996) theory of circumscription and compromise (p. 190). However, the mechanism for understanding the societal influence on the individual is not addressed.

Consistent with other domains in which social comparison theory has been studied, social comparison theory would suggest that the career decision maker would identify and compare themselves with other people to navigate the uncertainty and facilitate occupational choice. The theory of social comparison, originated by Festinger (1954), explains that people identify with or contrast themselves with others on relevant dimensions, using these targets of comparison to gain more information about themselves, particularly in situations of ambiguity or uncertainty. While uncertainty about a future career path is inherent—we are not born knowing what occupation we

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will pursue for the rest of our lives—social comparison theory would suggest that we can become less uncertain if we look to others in relation to ourselves.

In understanding the impact on occupational choice, it would be important to note the relevant dimensions for selection of a comparison target, as well as the impact these comparison targets can have on the individual's occupational choice. For example, Gottfredson's (1996) theory notes the importance of gender, occupational prestige, and interests as dimensions of occupations and self, which the career decision maker will take into consideration when determining occupational fit. These important dimensions of occupational choice are supported by her fellow vocational psychologists as well as sociologists, which suggests these characteristics may be the dimensions along which social comparisons are made during the career choice process.

The present study will serve to facilitate a better understanding of social comparison's impact on academic and occupational choice. While the literature bridging social comparison theory and theories of career development and decision making remains relatively unexplored, previous research in social comparison, specifically within the context of educational and organizational psychology, will serve as a guideline for the development of the research questions and methodology examined in this study. The purpose of this study will be to inform future research in vocational psychology and social comparison by exploring appropriate methodology for assessing social comparison's impact on academic and occupational choice, examining the salient dimensions of social comparison, and assessing the differential preferences for these salient dimensions among individuals making academic and occupational choices.

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CHAPTER 2

REVIEW OF THE LITERATURE

Overview

The following literature review will highlight the important constructs on which the hypotheses of this paper are based and will be tested. The discussion will begin with a review of theoretical underpinnings of career decision-making and development, specifically highlighting the social influences on this process. There are widespread implications and assumptions made in career theory and assessment of people's use of and comparison to others in their social surroundings to gain an understanding of occupations. However, research exploring social comparison operating as a psychological mechanism in occupational choice has received minimal attention. The literature review will discuss the prevalence of social comparison in people's assessment of other aspects of their education and career as well as the relevant dimensions people use to make these comparisons. Discussion of individual differences in social comparison and methodology utilized to measure social comparison will follow. It is proposed in this study that social comparison's relationship with occupational choice may be measured explicitly by asking participants to disclose their social comparison behaviors and motivations in the occupational decision making process. It is predicted that participants will endorse social comparison behaviors on dimensions of gender, vocational interests, comparison target level, and occupational prestige, with the expectation that there will be individual differences among participants on the basis of sex, gender self-concept, vocational interests, career aspirations, and vocational identity.

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The importance of social influences on career development

A number of vocational psychologists have examined the process of individual career decision making and development, highlighting a variety of influences. One of the most notable theories of vocational interests is that of John Holland (1959, 1966), who developed a model of career decision making that highlighted six different 'personality,' or interest, types—Realistic, Investigative, Artistic, Social, Enterprising, Conventional (RIASEC). Holland (1966) describes the Realistic personality type as selecting "goals, values, and tasks that entail the objective, concrete valuation and manipulation of things, tools, animals, and machines" with a preference for "agricultural, technical, skilled trade, and engineering vocations" (p. 19). The Investigative type enjoys the "manipulation of ideas, words, and symbols," is "analytical," and "prefers scientific vocations" (p. 22-23). Individuals with Artistic interests use "feelings, emotions, intuitions, and imagination to create art forms" and "prefers musical, artistic, literary, and dramatic vocations" (p. 33-34). Social types work "with an interest in other persons in order to train or change their behavior" and "prefer educational, therapeutic, or religious vocations" (p. 25-26). The Enterprising personality type expresses "adventurous, dominant, enthusiastic, energetic, and impulsive qualities" and "prefers sales, supervisory, or leadership vocations" (p. 30-31). The individual with Conventional interests holds "values that are sanctioned by custom and society" and "prefers clerical and computational tasks" (p. 28). The RIASEC model is arranged in a hexagon according to the inter-relations of interest types (Holland, 1973).

While the findings of several researchers support this hexagonal model of interest (e.g., Rounds & Tracey, 1993), Prediger (1982), notes the potential for these interests arranged in a hexagon to exist on bipolar dimensions. Even Holland's description of each vocational personality include descriptions of unfavorable activities for each personality type that are

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preferred activities of its opposite personality type on the hexagonal RIASEC model. Social types, for example, avoid "masculine roles that require motor skills, uses of tools and machines, or physical danger," which are characteristic of Realistic types (Holland, 1966). This innate bipolarity in Holland's (1973) model therefore supports Prediger's (1982) argument that the hexagon can be divided into two bipolar, orthogonal dimensions—data-ideas and things-people.

According to Prediger (1981), the 'data' dimension involves interest in "impersonal tasks involving facts, records, files, numbers, and systematic procedures for assisting goods/services consumption by people" (p. 22). At the other end of the spectrum, the 'ideas' dimension involves interest in "intrapersonal tasks involving abstractions, theories, knowledge, insights, and new ways of expressing something (Prediger, 1981, p. 22). Examining the polarity of things-people, interest in 'things' involves work with "machines, materials, tools, biological mechanisms" as opposed to interest in direct contact with people, which aligns directly with Realistic interests in the RIASEC model (Prediger, 1981, p. 22). The 'people' dimension includes interest in 'interpersonal tasks such as caring for, persuading, entertaining, or directing others," which aligns directly with Social interests on Holland's hexagon (Prediger, 1981, p. 22). The orthogonality of these bipolar dimensions have been consistently supported in research conducted on vocational interests (e.g., Prediger & Vansickle, 1992; Tracey & Rounds, 1996).

According to Prediger (1981, 1982) and Holland (1966), each person and each occupation is described as having some combination of vocational interests, with some more prominent than others, to provide guidance about which occupations are good fits for people. Holland (1966) notes that these interests develop as a result of interaction between biological, environmental, and social influences. For example, understanding the significance of other people on an individual's occupational pursuits, Holland (1966) highlights notable people who

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may serve as suitable role models based on similarity of vocational interest. Suggestions for role models include Charles Darwin for Investigative types and Winston Churchill for Enterprising types, supporting the idea that individuals will see themselves as similar to these role models and aspire to similar occupational pursuits (Holland, 1966). Krumboltz's Social Learning Theory (Juntunen, Ali, & Pietrantonio, 2013) also identifies environmental situations and events among a variety of influences on an individual's career development and decision-making. Linda Gottfredson (1996) further explores how individuals may be influenced by certain aspects of their social identity, specifically gender and social status, in determination of a career that matches their perceived gender-fit and social status-fit as well as their interests.

According to Gottfredson's (1996) theory of circumscription and compromise, an individual develops a range of acceptable careers based on what they learn about power differentials, sex roles, and social value of careers as they get older. They learn this information from their social environment, such as their family and friends, or on a more global level by factoring in societal evaluations. In the shaping of their vocational identity, therefore, Gottfredson's (1996) theory suggests that an individual must consider social roles, reputation, values, and their own potential when deciding on a career and that this individual will select a career that best fits with their self-concept regarding their gender, social status (prestige), and interests, with priority to these three characteristics given in descending order. In fact, Gottfredson (1996) notes, "Occupational preferences are so tightly linked with self-concept because individuals are very concerned about their place in social life, and occupations are a major signal and constraint in the presentation of self to society" (p. 190). The message is clear that individuals' perceptions of the world of work, and their potential place in it, are heavily influenced by the perception of others.

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Acknowledging that individuals are influenced by other individuals and society at large, Juntunen et al (2013) argue that the integration of sociological perspectives into career development theories can provide a more dynamic understanding of occupational attainment. In fact, highlighting the importance of economic and sociological factors in the assessment of his own theory, Holland (1966) notes that a more complete vocational theory would examine these concerns. In line with this assessment, Bosley, Arnold, and Cohen (2009) contend that other people are influential in the career decisions people make by influencing their self-concept, worldview, and other factors that weigh on the career choice process. In developing a more full understanding of how society may impact occupational choice, it is helpful to examine societal perceptions of occupations.

With a goal of examining the dimensions of occupations that are most meaningful and salient in occupational choice, Coxon (1971) asked participants to provide their perceptions on eight occupations using a questionnaire. Each occupation was evaluated independently on 25 characteristics, utilizing two-dimensional scales, including well paid to poorly paid, masculine to feminine, great to little social use, much to little people contact, and boring to exciting. The results yielded a more full understanding of the various dimensions under which occupations can be categorized and understood by society (Coxon, 1971). In further examination of occupational stereotypes, O'Connor (1982) asked undergraduates to rate 58 occupations on dimensions of prestige, power, complexity, gentleness, strength, mores, and reality. While such studies have examined a variety of occupational characteristics, two have emerged as the most salient in societal evaluations of occupations—sex-type and prestige. Along with a person's interests, Gottfredson's (1996) vocational theory of circumscription and compromise highlights these as the two most important dimensions individuals utilize to develop an understanding of

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occupations and how they as individuals fit with occupations according expectations of gender and social status.

Tracey and Rounds (1996) make an argument for adding occupational prestige as a vocational interest dimension orthogonal to Prediger's (1982) data-ideas and things-people dimensions. The authors' explanation highlights the many ways that occupational prestige has been defined (i.e., socioeconomic status, occupational level, level of training), all indicating some level of social perception of occupations. The addition of another orthogonal dimension high prestige-low prestige, creating a spherical model of interests, has been supported by subsequent research (e.g., Deng, Armstrong, & Rounds, 2007). Given that occupations can be rated on this high prestige-low prestige dimension, there have been attempts to capture this construct on vocational inventories (e.g., Personal Globe Inventory (PGI), Tracey, 2002).

Looking specifically at the dimension of occupational prestige, the most frequently studied occupational dimension in the sociology literature, Bernd Wegener (1992) describes four theories of prestige, with foundation in either charisma, achievement, honor, or esteem. Occupations can also be categorized by "social status" or "prestige" utilizing a commonly applied socioeconomic index (SEI)—a formula consisting of educational attainment and income—was first introduced by Duncan (1961) for a survey performed by the National Opinion Research Center (NORC) at the University of Chicago. Other measures of occupational prestige or status include the Index of Job Desirability (IJD), and Treiman's Standard International Occupational Prestige Scale (SIOPS) (Hauser & Warren, 2008). The IJD pertains to individual jobs as opposed to occupational classes, has high reliability, and in comparison to the SEI, better reflects differences in gender or experience; however, it is still a relatively new instrument (Hauser & Warren, 2008). While such attempts at developing new measures highlight the

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difficulty of quantifying occupational prestige—a construct based on social perceptions—the SEI continues to be utilized as a measure for social stratification of occupations by NORC, and remains the most reliable, easily quantifiable measure for classifying occupational prestige.

Given the social evaluation of occupational characteristics, such as prestige, interests, and gender, stereotypes of occupations have emerged. In fact, Holland (1966) notes the psychological and sociological implications of vocational stereotypes, which can provide individuals with knowledge about occupations, and may serve as the basis for their career choices. These social images of occupations can evolve as society evolves, leading numerous researchers, such as Oswald (2003) to scientifically examine the development of occupational stereotypes in relation to the sex-type and prestige ratings of occupations. Other researchers have examined some of these dimensions more specifically. For example, Couch and Sigler (2001) and Shinar (1975), among others, have gathered data about the societal perceptions of gendering occupations. Hauser and Warren (2008) examined the concept of occupational prestige as it has been studied and quantified for decades in the sociology literature.

From this perspective, the message from sociologists and vocational psychologists is clear—occupations have social valence and social information is likely taken into account when an individual is making a career decision. Based on this implication of social messages received as early as age 3 in regards to what careers are appropriate for one's gender or social status (Gottfredson, 1996), an individual is assumed to make comparison between their self-concept and their perception of others who they see as fulfilling the roles of certain careers. In other words, the career decision making process is fundamentally tied to making social comparisons.

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Measuring social impact on occupational choice

In addition to the social influences noted in vocational and sociological theory, the expectation of societal influences on occupational choice is also clear in a one of the most well-known and frequently utilized assessment tools utilized in career counseling—the Strong Interest Inventory (SII). The SII, which was first developed in 1927 by Stanford professor E. K. Strong (Hansen, 2013), implies that people make social comparisons with people who are currently employed. The results of the SII provide normative comparisons of a test taker's self-reported interests made with the interests of satisfactorily employed working adults, with the implication that this information may facilitate career decision making. Additionally, the Occupational Scales reveals occupations that may be of interest to the test taker on the basis of the similarity of their interests and the interests of individuals of their sex who are satisfactorily employed in a variety of career fields (Hansen, 2013). The implication in providing this comparative information on the basis of interests as well as how the test taker compares specifically to individuals of the same sex is that they will make social comparison with other people on a relevant dimension to occupations, and therefore, gain insight into careers that are potential matches.

In the development of the My Vocational Situation Scale (MVS), Holland, Gottfredson, and Powers (1980) sought to facilitate career counseling by including an item that assesses individuals' need information on the "kinds of people" entering different occupations (p. 1192). This item's presence in the Occupational Information subscale of the MVS implies that people gain more information about occupations by knowing more about *who* enters those occupations (Holland et al, 1980). Again, the assumption is that the career decision maker will gain

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information about themselves pursuing these occupations by comparing themselves to those people entering occupations.

Noting that capturing test taker interests may not be enough, Tracey (2002) developed the Personal Globe Inventory (PGI) to incorporate three dimensions of occupational preferences identified in the literature—data-ideas, things-people, and prestige (e.g., Prediger, 1982; Tracey & Rounds, 1996; Deng et al, 2007). In the PGI, vocational interests are analyzed as high prestige (i.e., social sciences, influence, business systems, financial analysis, and science) or low prestige (i.e., quality control, manual work, personal service, construction/repair, and basic service), and there are certain occupations which align with such interests, such that a career decision-maker has an understanding of the prestige level of various occupations. The PGI was developed as a more standard way of factoring in prestige, understanding that the social status level of occupations influences individuals' occupational decision making.

With the decades of existence of helpful tools like the MVS (Holland et al, 1980), PGI (Tracey, 2002), and SII (Hansen, 2013), it seems almost second nature for vocational psychologists to understand that information about people who are pursuing various occupations and how an individual's interests align with social evaluations of those interests is helpful to someone seeking better understanding of how they fit in the world of work. However, there has been minimal exploration into the psychological mechanism that makes these comparisons with others helpful to the individual making the comparison. More specifically, the use of social comparison theory to examine the feedback process during career assessments may provide opportunities to enhance the effectiveness of career-related interventions by improving the perceived match between the individual and information provided during the intervention process.

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Applying the theory of social comparison to occupational choice

According to social comparison theory, understanding the social evaluations of occupations and sharing information about incumbent career professionals would be helpful to career decision makers because they gain a better understanding of the world of work and how they may fit in it by identifying salient dimensions of social comparisons in career choice. The assumption is that people working in careers that fit with the individual career decision maker on the salient dimension may serve to inspire this individual to pursue a similar occupational path. On the SII, similarity of interests is identified as a dimension for comparison with people who are satisfied in the world of work. Given that vocational theorists such as Gottfredson (1996) and Holland (1959, 1966) have identified interests as an important aspects of occupational decision-making, it would appear relevant to understand how one's interests fit into the world of work by understanding how the interests of incumbent career professionals compare to theirs.

More generally, social comparison theory, which was first introduced by Leon Festinger in 1954, states that people are driven to gain more knowledge of themselves by comparing themselves with other people, particularly when there is uncertainty about where one stands as in the absence of more 'objective' information. The person or group selected for comparison is aptly named the comparison target. When the comparer views themselves as similar to the comparison target on an important dimension and desires to be in the comparison target's position, the comparer strives to become more like the comparison target. Likewise, when comparison targets are judged to be dissimilar by the comparer on relevant dimensions of a divergence in ability, opinion, or action, the tendency to compare oneself and desire to become like that comparison target is reduced (Festinger, 1954).

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The basic tenets of this theory have been confirmed and expanded in countless studies (e.g., Suls & Wheeler, 2000), which led Buunk and Gibbons (2007) to note the evolution of social comparison theory into an entire field of study. Over the decades, social comparison theory has been examined in a variety of domains, such as assessment of coping with cancer (e.g., Van der Zee, K., Oldersma, F., Buunk, B. P., and Bos, D., 1998), academic success (e.g., Blanton, Buunk, Gibbons, & Kuyper, 1999), and job satisfaction (e.g., Buunk, Schaufeli, & Ybema, 1994). Researchers have periodically summarized the findings and identified future directions for social comparison research, indicating the growth and importance in continued exploration of this evolving field (e.g., Wood, 1989; Buunk & Mussweiler, 2001; Buunk & Gibbons, 2007).

In exploration of what motivates people to make social comparisons, who they choose as referents for social comparison, and the outcomes of these comparisons, the breadth of literature on social comparison has consistently identified three most common motives for making social comparisons—self-evaluation, self-improvement, and self-enhancement (Wood, 1989; Helgeson & Mickelson, 1995; Gibbons & Buunk, 1999). For observers who desire knowing if they have the ability to complete a task, they may identify others who have or have not completed the task and compare and contrast themselves with these targets to make an evaluation of their own potential (i.e., self-evaluation). These individuals who serve as targets of the comparisons are typically similar in the case of a lateral comparison or slightly better off in the case of an upward comparison. (Festinger, 1954; Goethals & Darley, 1977; Wood, 1989). With upward comparison, there is a standard or goal to which the observer may aspire if they have a motivation for self-improvement. Self-enhancement motives are typically made by comparing to

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someone worse off as in the case of downward comparison, in which the observer may not identify with the comparison target, and therefore, sees themselves as different and better off.

Understanding that there are a variety of circumstances under which social comparisons occur and ways in which the comparisons can impact the person making the comparison, Wheeler and Miyake (1992) examined the social comparisons that people make in everyday life by asking participants to record daily instances of social comparison for two weeks. A primary goal of this study was to measure social comparison by explicitly asking participants about circumstances and dimensions of comparison, the relationship and similarity to the comparison target, and the affective consequences of the comparison. Such methodology recognizes the pervasiveness of social comparison as well as the level of awareness that one is making social comparisons by gathering social information to gain more knowledge of oneself. While some researchers note the reluctance to acknowledge that one is engaging in social comparison (e.g., Wood, 1996), other researchers (e.g., Gibbons & Buunk, 1999) note that clearly defining and normalizing social comparison yields 'honest' feedback about this "ubiquitous social phenomenon" (Buunk & Gibbons, 2007, p. 16).

Additionally, researchers have explored the selection and impact of upward comparison targets on career development. In the identification of career referents, or those individuals with whom one identifies as influencing their career decision, Gibson and Lawrence (2010) found that participants exhibited upward social comparison when naming career referents. Lockwood (2006) notes that identification, or greater perceived similarity, with an outstanding career role model, who serves as an upward comparison target, can lead individuals to "become inspired to pursue similar achievements" (p. 36). Gibson (2004) highlights the impact of upward comparison

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targets, who can provide an individual with more information about a career, inspire the comparer, and have a better understanding of their own self-concept.

Social comparison theory and career development

Given the ubiquity of social comparison research, it is somewhat surprising that its impact on occupational choice has received marginal attention in the social comparison literature; however, there are clear implications and assumptions that social comparison is operating in the career-decision making and development process as outlined by career theories and assessments described previously. With such a potential for a significant impact, it would be useful to explore the relationship of social comparison theory to occupational choice.

In over 60 years since social comparison theory was first introduced, Li, Hou, and Jia (2015) were the first to identify the void in its application to career decision-making in an article published in the *Journal of Vocational Behavior*. Li et al (2015) aimed to explore the impact of social comparison on the career choice certainty and vocational identity of undergraduate and graduate student participants, who were asked to imagine a friend had made a different occupational choice and subsequently were asked to assess their level of regret with their personal choice. Since this study was just the first of its kind to examine career decision-making and social comparison together, there remains much room for exploration. Given that social comparison is a fundamental "human process that pervades all aspects of our lives" (Goodman, 2007, p. 1) and "occupations represent a way of life" (Holland, 1966, p. 4), it would be worthwhile to continue to explore the social comparison's operation as a psychological mechanism in occupational choice. While the research in this specific area is in its infancy, some exploration has been done on the impact of social comparisons in workplace organizations, which reveals the prevalence of this concept.

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In one of the earlier studies of workplace social comparisons, Oldham and colleagues (1982) sought to understand how 130 employees assessed the complexity of their jobs at a Midwestern manufacturing company. Participants were told that people tend to compare job characteristics, and when explicitly asked about the comparisons they make in assessing the complexity of their own occupations, 38 percent of respondents acknowledged they looked to other employees when determining the complexity of their job (Oldham, Nottenburg, Kassner, Ferris, Fedor, & Masters, 1982). These other employees, serving as targets for comparison, tended to share similar education level, job seniority, skill level and gender as the employee making the comparison. Subsequent impact of these social comparisons was evaluated examining employees' satisfaction, motivation, and productivity. In a similar vein, Heslin (2003) used an open-ended questionnaire to examine the criteria 71 part-time MBA students used to evaluate their career success. Almost 70 percent of the participants acknowledged referring to others when making an evaluation of their own career success, providing further support to the idea that careers are evaluated in a social context.

While the frequency of comparison has been acknowledged, Steil and Hay (1997) examined the experiences of 60 mixed-sex couples in predominantly male-dominated prestigious careers with a goal of shedding more light specifically on dimensions of social comparison in the workplace. The authors directly assessed the dimensions of comparison (level and sex) by explicitly asking participants how they evaluated various aspects of their jobs by comparing themselves with people of "higher," "lower," or "comparable" positions and if these comparison targets tended to be of "same sex, other sex, equally both sexes" (Steil & Hay, 1997, p. 433). This direct approach to gathering information about social comparison behaviors by explicitly asking participants about their comparison behaviors operates under the assumption that "social

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comparison is a central feature of human social life" (Buunk & Gibbons, 2007, p. 3) and that these people are aware they making comparisons with others on multiple levels regarding career concerns.

Similar to these studies, researchers have examined social comparisons in the assessment of workplace attitudes across a wide array of disciplines, measuring social comparison by explicitly asking participants about the frequency with which they make comparisons. For example, in an analysis of French protective officers (one sample of 72 customs officers and one sample of 100 police officers), Michinov (2005) asked participants to respond about 11 different aspects of their jobs on a 5-point Likert scale assessing the frequency with which they compared themselves to "worse-off" or "better-off" employees (p. 104). In assessing the relationship between occupational burnout and social comparison behaviors, Michinov (2005) found that social comparisons were positively correlated with job satisfaction and perceived control and negatively correlated with emotional exhaustion for both populations. By explicitly asking about these protective officers' comparison behaviors, Michinov (2005) was able to directly assess the impact on their occupational experiences.

In a more extensive analysis, Brown, Heller, Ferris, and Keeping (2007) examined the dimensions and impact of social comparison behaviors of 991 employees in various occupations, including managers, salespeople, teachers, and social workers. The researchers assessed the social comparison target level (upward or downward) by explicitly asking participants to indicate how frequently they compared themselves to others who were better/worse on eight different dimensions of their jobs, such as performance, career progression, and prestige. They also assessed participant job satisfaction, affective commitment, core self-evaluations, role ambiguity,

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task autonomy, and job search behaviors to determine how social comparisons can mediate the relationship between workplace characteristics and employee attitudes and behaviors.

Likewise, Buunk, Ybema, Gibbons, & Ipenburg (2001a) aimed to explore affective consequences and comparison direction's impact on a sample of 103 Dutch sociotherapists who were asked about burnout, using the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1986) and their social comparison orientation, utilizing the Iowa-Netherlands Comparison Orientation Measure (INCOM; Gibbons & Buunk, 1999). Understanding that these participants are differentially impacted by, or engage in, social comparison in assessing their burnout (i.e., emotional exhaustion, depersonalization, and reduced personal accomplishment) and affective consequences to comparison direction, the INCOM measures the 'typical' social comparison behaviors for each individual. The researchers subsequently manipulated the direction of comparison and assessed its affective impact on participants by presenting a fictitious interview fragment of a sociotherapist, who was described as successful (upward comparison) or mediocre (downward comparison) at their work in the same clinic. Adapting a methodology by Ybema and Buunk (1995), the researchers subsequently asked about the degree to which the participants identified with the person in the fictional interview, and then conducted manipulation checks to ensure the direction of the comparison (i.e., upward vs. downward) was clearly perceived by the participants, finding interactions of comparison direction, affect, and orientation. This study revealed the unique interplay between individual characteristics, comparison target selection, and social comparison impact. Buunk et al (2001a) found that upward comparisons generally yielded more positive affect in relation to downward comparisons, but this was moderated by increasing levels of burnout. Individuals high in social comparison orientation consistently identified with

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the upward comparison target. For individuals lower in social comparison orientation and higher burnout, there was significantly greater identification with the downward comparison target.

From this literature on occupational and organizational dynamics, it is clear that social comparisons influence career judgements, job evaluations, and professional outcomes. Since work plays such a pivotal role in daily life and there are numerous social evaluations and observations made of occupations (e.g., Coxon, 1971), *Organizational Behavior and Human Decision Process* published a special issue on social comparison within the context of work organizations in 2007. If individuals are clearly making these social comparisons once they have finally achieved a career, it would seem reasonable to believe that these individuals likely made such comparisons about career status prior to entering their current occupations. However, researchers (e.g., Grote & Hall, 2013; Li et al, 2015) note the continued dearth of literature examining social comparison as a psychological mechanism operating in occupational decision-making. Even before one enters the world of work, an individual encounters much uncertainty along their career development path and strives for understanding of how they fit in this professional world—uncertainty that could be mitigated by making social comparisons with other individuals on relevant dimensions of occupational choice. While limited exploration has been performed on function of social comparison in career decision-making and development, the educational psychology literature has highlighted the prevalence of social comparison among students during critical years of preparation for careers.

Social comparison theory explored in education

Educational psychologists have noted that social comparisons with peers are made as early as preschool age (Chafel, 1984) and that self-evaluations on the basis of social comparisons with peers becomes more frequent with age (e.g., Veroff, 1969; Keil et al, 1990; Frey & Ruble,

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1985). When students look to gain more information about where they stand on academic achievement, they tend to identify comparison targets on the basis of gender (e.g., Blanton et al, 1999; Meisel & Blumberg, 1990), race (e.g., Bing & Morris, 1985; Meisel & Blumberg, 1990), and/or socioeconomic status (Régner and Monteil, 2007; Regner, Huguet, & Monteil, 2002). These characteristics are salient markers of one's social identity and social roles, and subsequently serve as indicators of social information, such as expectations for their achievements, or lack thereof, in a variety of domains. Educational psychologists note the impact of social comparisons, such as enhanced academic performance (Light et al, 1994), increased performance on motor tasks (Foot & Lee, 1970), increased extrinsic motivation and scholastic anxiety (Harter, Whitesell, & Kowalski, 1992), as well as effects on self-efficacy, attention to task, and task perseverance (Santrock & Ross, 1975).

Educational psychologists' findings that social comparisons made by students who are pre-school age through graduate school are prevalent and impactful. This comes as no surprise, particularly since people spend so much of their life in formal education, and sociologists and social psychologists have long acknowledged that individuals are products of their social world. In assessing the relationship between social comparison behaviors and academic performance in 920 Dutch ninth graders, Blanton et al (1999) asked participants to rate their performance in seven academic areas "compared to most of your classmates" (p. 423). The authors also asked participants to identify their preferred target of comparison, or to leave this response blank if they did not engage in academic comparisons. An overwhelming majority (81 percent) of participants indicated a comparison target, providing further support that there is innate human drive to evaluate one's self by making comparisons to other people.

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Wood (1996) notes that people encounter social information almost constantly and may automatically compare themselves to others, and subsequently, argues that social comparison has occurred when the "process of thinking about social information in relation to the self has occurred" (p. 523). Given the prevalence of social comparisons in a variety of domains, specifically in work and educational environment, which is where a majority of individuals spend their lives, it would reason that evaluations of one's own educational and occupational achievements, decisions, goals, and expectations can be supported by identifying and evaluating comparison targets on relevant dimensions. According to Berger (1977), the observation of a similar other is particularly useful information for someone trying to determine whether a certain career path would be a good fit for them based on their capabilities, actions, and expectations for outcomes. As such, it would be particularly important to understand the relevant dimensions on which career decision-makers make comparisons.

Sex as a dimension of social comparison

The examination of social comparison theory over the decades reveals that individuals prefer to compare themselves with individuals perceived as similar to them (e.g., Wood, 1989). Career theorists (e.g., Gottfredson, 1996) have argued that occupational choice is connected to an individual's self-concept, and there is a drive to identify people with whom one sees as sharing aspects of their self-concept that are important. In developing a vocational identity, the career decision maker would therefore identify the characteristics perceived as important to the occupations being evaluated, and identify targets for comparison on the basis of these characteristics in relation to the self.

In their examination of the related attributes hypothesis of social comparison theory, Zanna, Goethals, and Hill (1975) identified sex and interests as particularly important 'related'

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dimensions of the comparison target. Participants were give ambiguous results after taking a test, so they were given the option to learn about how other people had performed on the test to provide greater clarity about where they stood in comparison, with the groups of other test takers categorized according to sex and major. The results indicated that participants preferred to learn about students of the same sex first and academic major second. The implication therefore is that participants were choosing reference groups on dimensions perceived as relevant to themselves (i.e., sex and academic major) when making comparisons about test performance. Suls, Gaes, and Gastorf (1979) replicated Zanna et al's (1975) study, adding a no-sex comparison condition, and again found that participants chose comparison targets of the same sex and same major when determining how their performance stacks up in relation to others. Given that gender is typically a highly salient piece of an individual's identity, these results support identity being utilized as a means of comparing oneself to others in one's social surroundings (Schmitt, Branscombe, Silvia, Garcia, & Spears, 2006).

With a goal of examining the preference for same-sex role models more thoroughly, Lockwood (2006) presented 87 undergraduates (48 female) with a fictional description of a high-achieving other in a news article. The fictional individual was described as a recent graduate of the same university who had just won an alumni award for their career success. The descriptions were manipulated to be tailored to align with the same academic and career path that participants had indicated an interest in pursuing at the beginning of the study. After reading the description, participants were asked to assess their perception of the fictional individual by rating them on 40 adjectives and exploring their level of identification with the fictional individual. The participants were asked to make self-evaluations by rating themselves on the same 40 adjectives. The results indicate that the level of identification with the target correlated with the positivity of

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the participants' ratings of themselves, and that women were more likely to respond positively to a female target than a male target. Men's level of identification with the target was unaffected by the sex of the role model.

Lockwood (2006) suggested that the differential impact of sex of upward comparison target on women and men participants could be an indicator that women are more greatly influenced by same-sex models due to seeing themselves as minorities or disadvantaged, making it useful to learn of a comparison target who has overcome similar barriers. This idea rings true in the exploration of female role models in science, technology, engineering, and mathematics (STEM) disciplines and leadership positions in organizations that have traditionally been dominated by men (e.g., Cheryan et al, 2011; Downing, Crosby, & Blake-Beard, 2005; Sonnert, Fox, & Adkins, 2007). For women who are considering occupations in these traditionally male-dominated fields, the gender of comparison target may be most relevant and impactful to the individual making the comparison.

Given the salience of gender in society, particularly in recognition of the gendering of occupations (e.g., Shinar, 1975; Glick, Wilk, & Perreault, 1995), the sex or gender of professional role models, who are viewed as upward comparison targets, has been the most frequently studied dimension. However, the social comparison literature indicates that other dimensions of similarity may be identified based on their relevance to an individual making social comparison. In the realm of occupational choice, prestige has been a consistently studied dimension of occupational evaluation by society (e.g., Coxon, 1971; O'Connor, 1982; Hauser & Warren, 2008).

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Occupational prestige as a dimension of social comparison

Given that prestige is a salient dimension of occupational evaluation by society and that it has been suggested as an additional dimension of vocational interests (e.g., Tracey & Rounds, 1996), it would be an important consideration in social comparison made in occupational choice. Studies of Gottfredson's vocational theory of circumscription and compromise have examined the interplay of gender and prestige of occupations. For example, Dodson and Borders (2006) note in a student of male elementary school teachers, that participants were willing to sacrifice sex type of the occupation for a position of higher prestige. Such studies indicate occupational prestige as a salient dimension in the identification and selection of suitable occupations, even more so than gender.

Further support for the importance of occupational prestige is found by Lee and Rojewski's (2009) examination of adolescents' occupational goals in a longitudinal study. Studies like this continue to provide support to the concept of social status of careers as an important factor to consider in occupational choice. Furthermore, since researchers note that individuals have a deeply rooted desire to achieve a subjective sense of high social status (e.g., Buunk & Ybema, 1997) and that they prefer comparison targets of high socioeconomic class (e.g., Regner, Huguet, & Monteil, 2002), these concepts must be considered in the evaluation of impact of social comparison on occupational choice.

Consistent with the social comparison literature and Gottfredson's theory that people determine appropriate career paths based on occupational prestige levels that 'match' their self-concept, one must first have an understanding of their own 'prestige' level. In previous examinations of impact on occupational choice, correlations between occupational prestige and individual social status has typically been quantified using household income and parental

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education and occupation (e.g., Hannah & Kahn, 1989). Understanding that the individual who is making social comparisons bases their comparisons on perceptions of themselves and perception of others, it is important to consider one's evaluation of their own social status in relation to their evaluation of others. Relative to occupational choice, an individual's career aspirations can be indicative of the level of occupational prestige they desire, and these aspirations are molded by social standing, or socioeconomic class (Gottfredson, 1996).

In an examination of occupational aspirations, Gray and O'Brien (2007) highlight that individuals' aspirations for advancement in their respective careers typically prompts them to pursue additional training and education. Higher career aspirations are also correlated with the pursuit of leadership positions, promotions, and training of fellow employees (Gray & O'Brien, 2007). These individual aspirations for education, leadership, and career advancement align with occupational prestige. The SEI, which is the most standard form of measuring occupational prestige (Hauser & Warren, 2008), is derived partially from education or training level required for the occupation, and another aspect of occupational prestige—income—is closely tied to education level. According to the U.S. Bureau of Labor Statistics (2015), high school graduates earn $664 per week on average compared to $1,224 per week for the average bachelor's degree holder. This relationship between education and income provides a clear indication of how heightened educational and career aspirations are correlated with heightened occupational prestige.

Gottfredson (1996) argued an individual will limit their potential career paths, or career aspirations, to careers with appropriate levels of prestige given their current social standing. In essence, what an individual deems an achievable level of occupational prestige is a product of their own perceived social status, which impacts educational and career aspirations. By making

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comparisons with other individuals, a person can assess where they stand in relation to others on this social status/prestige dimension of occupational choice as well as aspire to pursue occupations in which they see people who are similar to them on this dimension.

Further support for the influence of social status, or prestige, was found by Gibson and Lawrence (2010), whose examination of employed individuals revealed that career expectations and aspirations were more highly influenced by the career level of their career referent (i.e., lower, similar, or higher) than gender composition of career referents. The importance of occupational prestige was also highlighted in a study of 339 Canadian 12th grade students by Hannah and Kahn (1989). The researchers examined the prestige and gender composition of the occupational choices of participants in relationship to their socioeconomic status (SES) and gender. They found that overall, women were just as likely to choose male-dominated occupations as they were female-dominated occupations; however, males predominantly chose male-dominated occupations, regardless of SES. While this may be indicative of personal characteristics within the participants, Gottfredson (1978) notes the lack of dispersion of prestige among female-dominated occupations with a particular lack of female-dominated occupations whose prestige levels are commensurate with male-dominated occupations.

Therefore, in examination of selection and impact of an occupational comparison target, another important consideration is how an individual's career aspirations may relate to their preferences for a social comparison target. Differences or similarities between comparison target and comparer on occupational aspirations or prestige would provide insight into careers that may or may not be a good fit depending on the level of occupational prestige believed to be achievable or acceptable for the comparer.

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Interests as a dimension of social comparison

While gender and occupational prestige are important aspects of an occupation that must necessarily be factored into occupational selection and social comparison target selection, Gottfredson's (1996) theory of circumscription and compromise also highlights the importance of fit of interests. How one determines which interests of theirs may fit with occupations may be assisted with tools like the Strong Interest Inventory (Hansen, 2013), which is based on Holland's (1959, 1966) theory of vocational 'personality,' or interest, types. On this popular career assessment, the implication of the normative comparison of a test taker's interests with the interests of incumbent career professionals is that the test taker will make a self-evaluation about their capability for certain careers based on their similarity or dissimilarity with the incumbent career professionals' interests. According to Holland et al (1980), individuals with a lower vocational identity and less insight into their own vocational situation, will have a greater informational needs. According to social comparison theory (e.g., Festinger, 1954), greater insight into one's own occupational situation can thus be gained in making comparisons with others on the dimension of similar interests. Based on their similarity of interests, these incumbents could simultaneously motivate the test taker to take the steps necessary to be successful in a particular career, subsequently fulfilling two primary motives of social comparison according to researchers (e.g., Wood, 1989; Helgeson & Mickelson, 1995; Gibbons & Buunk, 1999).

Additionally, Zanna et al (1975) revealed that a significant majority of the college undergraduate participants (87 percent) in their study requested information about the academic performance of individuals who had the same major and/or occupational plan. While obtaining information from similar others on the basis of their major and/or occupational plan would be

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useful during the career-decision making process, an individual does not necessarily know which academic major or career path will best match their interests. This uncertainty and lack of information about occupational paths would be a primary motivating factor to engage in social comparison (Festinger, 1954).

In utilizing interests as a dimension of social comparison, it would therefore be useful to have an understanding of interests—in addition to academic and occupational plans—that are similar or different from a comparison target. Numerous researchers have examined Holland's (1959, 1966) RIASEC interest dimensions in relation to occupations, providing support for its structure, but also arguing for the existence of bipolar, orthogonal dimensions of data-ideas, people-things, and high prestige-low prestige exist (e.g., Prediger, 1982; Tracey & Rounds, 1996; Deng et al, 2007). Each occupations can be captured on some level on each of these bipolar interest dimensions (Deng et al, 2007). The fit of interests with specific occupations is particular useful for vocational interest inventories like the Strong Interest Inventory (Hansen, 2013), which implies test takers may consider various occupational paths depending on social comparisons made on the basis of interests with working adults.

It is clear from the vocational research that interests, along with occupational prestige and gender, are important aspects of career decision making. Information about careers on these components are gained from our social environment and reference groups, but Gottfredson (1996) notes "Why individuals choose some reference groups rather than others is beyond the scope" of her theory of circumscription and compromise (p. 202). Social comparison theory's application to occupational choice would bridge that gap; however, it is important to recognize that social comparison does not operate equally for every individual.

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Individual differences in social comparison

While it seems clear that all people engage in social comparison at one time or another, Gibbons and Buunk (1999) note that the social comparison research reveals individuals may be affected differently by social comparison, may choose different targets for social comparison, and so on. For example, Buunk and van der Laan's (2002) examined the different reactions to comparison targets depending on participants' subjective social status, defined as an individual's self-assessment in relation to others, utilizing the Social Comparison Scale (Allan & Gilbert, 1995) that explicitly asks about feelings of competence, attractiveness, social rank, and other personal qualities in relation to others. By explicitly asking participants about their view of their social status and the extent to which they compared themselves with the comparison target, identified with the comparison target, and envisioned themselves becoming like the comparison target, they were able to assess differences in social comparison relative to gender and subjective social status, which is defined as how they few themselves in relationship to other people. Their study sample of all female participants revealed that those participants with high view of their own subjective status, versus low subjective status, identified more strongly with, saw their potential future in, and experienced more positive affect from reading about more successful comparison targets, regardless of gender (Buunk & van der Laan, 2002).

However, in Buunk and van der Laan's (2002) comparison of male versus female comparison targets, those participants with high subjective status saw their potential future in the female targets more so than participants with low subjective status. There was no significant difference between participants of low and high subjective status in degree of potential future perception of oneself in comparison with a male target. While identifying the differential

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relevance of comparison targets on the basis of social status, their study also highlights how gender as a dimension of comparison target may affect identification with the target.

While research on the dimension of gender many times generalizes results for men and women, Miller (1984) aimed to examine the influence of participants' gender self-schema on their differential preferences for social comparison. Miller (1984) took a similar methodological approach as Zanna et al (1975) and Suls et al (1979) in the selection of comparison targets on a sex-related ability, exploring the moderating effects of gender self-schema. Schematic subjects were identified as males who described themselves with stereotypically masculine traits and females who described themselves with stereotypically feminine traits. The results indicate that 69 percent of schematic males and 49 percent of schematic females preferred a same-sex comparison target regardless of the relation of sex with performance ability, highlighting that gender self-concept cannot be judged to impact male and female participants equally. Overall, those participants who were considered aschematic—or not describing themselves with stereotypically feminine (if female) or masculine (if male) traits—chose same-sex comparison targets more frequently when sex was related to performance as opposed to when sex was not linked to performance. These results indicate that differences in comparer self-concept and gender as well as relevance of the comparison dimensions impact the selection of comparison targets.

In this same vein, the recognition that individual differences in social comparison behaviors have been noted among individuals who vary in personality traits (e.g., van der Zee, Buunk, Sanderman, Botke, & van den Bergh, 1999) and levels of self-esteem (e.g., Wheeler & Miyake, 1992) among other personal characteristics, led to the development of the Iowa-Netherlands Comparison Orientation Measure (INCOM) with a goal of measuring the social

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comparison orientation of individuals (Gibbons & Buunk, 1999). Although a pervasive psychological phenomenon, Gibbons and Buunk (1999) note that individuals do not engage in, nor are they impacted by, social comparison in the same way. Thus, they found participants who were higher in social comparison orientation compared themselves more frequently to the comparison target and more frequently perceived the comparison target as a likely future for themselves.

A variety of researchers have since examined the relationship of social comparison orientation in impact and frequency of social comparisons in which individuals engage. Educational psychologists (e.g., Bounoua, Cury, Regner, Huguet, Barron, & Elliot, 2012; Regner, Escribe, Dupeyrat, 2007) for example, have noted, that these differences in junior high school and college students' social comparison orientation are positively correlated with students' mastery and performance goals in math. This research points to the importance of how social comparison orientation is related to an individual's aspirations. It would therefore reason that not all individuals are equally impacted by career role model programs, or that the comparisons made to working professionals in the Strong Interest Inventory are equally valuable to all test takers, specifically if these comparison targets' career aspirations are not within the zone of acceptable occupations (Gottfredson, 1996)

Measuring the process of social comparison

As social comparison has evolved from a theory to a field—a noteworthy observation made by Buunk and Gibbons (2007)—the methods by which researchers have studied social comparison seem to yield measure comparisons directly and implicitly. While there exist numerous well-established methods of examining social comparison in other domains, the limited exploration on social comparison's influence on career choice leaves questions about the

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most appropriate methodology for understanding this process. In Li et al's (2015) study on the impact of social comparison on career decision making, several holes emerged in the methodology that leave questions about a suitable methodology to facilitate further exploration in this evolving field.

Some researchers have examined social comparisons implicitly, asking participants to imagine themselves in a certain scenario (e.g., Li et al, 2015; Helgeson & Mickelson, 1995) and subsequently, collect data about their feelings, motivations, and/or level of identification with the comparison target afterwards. The assumption made by such researchers is that the participants' feelings, motivations, etc. are a reflection of the participants' engagement in social comparison. Other researchers have instead provided fictional information about potential comparison targets (e.g., Van der Zee, Oldersma, Buunk, & Bos, 1998; Major & Forcey, 1985; Zanna et al, 1975, Lockwood, 2006), and subsequently, the researchers evaluated the motivations and/or impact on the participants to learn more about a comparison target(s). Again, in such studies, researchers evaluated participant reactions as evidence of social comparison without explicitly indicating to the participants that the focus of their work was to examine comparison information. Interpretation of the results in these studies implicates social comparison as the psychological mechanism that motivates participants' reactions to the imagined scenario or fictional information.

One alternative approach is to explicitly ask participants questions about whom they compare themselves (e.g., Blanton, Buunk, Gibbons, & Kuyper, 1999) and how frequently they compare themselves to others (e.g., Buunk, Zurriaga, Peiro, Nauta, & Gosalvez, 2005). Recognizing that social comparisons are made in a variety of domains and with great regularity, Wheeler and Miyake (1992) asked participants to make note of the social comparisons they made

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throughout the day for two weeks. Additionally, Buunk and van der Laan (2002) used the Social Comparison Scale originally developed by Allan & Gilbert (1995), which explicitly asks participants to assess their perceptions of social rank, relative attractiveness, and group in comparison to others.

In line with the methodology which approaches social comparison more implicitly, Buunk and van der Laan (2002) also provided participants with fictitious interview fragment of unsuccessful/successful male/female comparison targets. They followed up by more explicitly asking questions about the extent to which the participant compared and contrasted themselves with, related to, and identified with the comparison target in the interview. The researchers also collected data on the impact of making comparisons to the target in the fictional interview, a method which seemingly captured the construct of social comparison in a way that directly addressed their research questions (Buunk & van der Laan, 2002). Subsequently, researchers have continued to utilize fictional interview fragments or vignettes to assess the impact of social comparison on the participant readers (e.g., Buunk et al, 2007; Lockwood, 2006)

While the argument can be made that explicitly asking participants about the social comparisons they make may yield more 'objective' feedback about their behavior, according to Wood (1996), there are several obstacles that may hinder an individual from disclosing that they are using social comparison themselves—lack of awareness they are making a comparison, reluctance to admit they are making a social comparison due to social desirability or self-deception, and problems in selectivity and recall. Additionally, it has long been recognized that individuals cannot always accurately report on the factors that influence their behaviors (Nisbett & Wilson, 1977). Making occupational choices is something that individuals consciously do, and they likely have awareness of the influences on that choice since it is such a significant one.

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As humans—who are innately social beings—make decisions about what they will be doing for the remainder of their lives, it is therefore somewhat surprising that there has been minimal examination of the impact of the social comparison on occupational choice. With the emergence of popular methods of examining social comparison in other domains, it would therefore seem useful to explore the mechanism of social comparison on occupational choice utilizing a combination of explicit and implicit measures.

It is also important to note that there are a number of contributing factors to determining the social comparison target that have been identified in the social comparison literature. Organizational literature has typically explored the comparisons individuals make with their co-workers with regard to job performance, pay, and other job characteristics (e.g., Oldham et al, 1982; Steil & Hay, 1997). Educational literature has also examined the comparisons participants make with fellow classmates on academic performance (Dijkstra, Kuyper, van der Werf, Buunk, & van der Zee, 2008). Students' peers as comparison targets would be examples of lateral comparisons, which likely are motivated by a desire for self-evaluation, which is what Festinger (1954) originally suggested. However, the research in social comparisons has identified self-improvement as a consistent motivation for upward social comparisons, particularly with regard to the identification of career role models (Gibson & Lawrence, 2010; Lockwood, 2006). Ultimately, individuals will choose comparison targets who are relevant and thus can provide information that allows them to better define themselves and gain more knowledge of where they stand in their social world. In the career choice process, the choice of individuals for making social comparisons has implications beyond the simple choice of an occupation, as an individual's career serves as the primary means of interacting with and defining oneself in the social world.

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Present Study

Given the important role one's occupation plays in their daily life, it is not uncommon for one to struggle in the career decision making process. Career decision making requires an awareness of one's own interests, abilities, skills, values and other personal characteristics and how these fit with various occupations. As one navigates the academic and occupational choices available to them, there is potential to glean more information about how one fits within the world of work by purposefully examining their social surroundings. Career counselors and vocational psychologists note the importance of the social setting and that other individuals, such as people who are in the workforce, can influence one's occupational decision. Additionally, educational psychologists have studied the prevalence of social comparisons with peers in the assessment of one's academic achievement. Consistent with other domains of occupational and educational research in which social comparison has been examined, it would reason that social comparison is a psychological mechanism operating in occupational choice.

Social comparison methodology

With the limited examination of social comparison's relationship with occupational choice thus far, one of the primary concerns is the establishment of an appropriate research methodology for examining social comparison in occupational choice. Therefore, the first research hypothesis to be examined in this study will apply adaptations of the two methodologies which have emerged in the social comparison literature. In one approach, social comparison is implicated as the mechanism that induces participant social comparison behavior based on the analysis of participants' reports and behavior. Social comparison is not explicitly mentioned to

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the participants. On the other hand, the second method takes a more direct approach by explicitly labeling and asking participants about their social comparison behaviors in order to assess the frequency, impact, and domains of social comparison. Given the potential for purposeful decision making in academic and occupational choice, individuals would likely respond accurately to direct inquiries regarding the influences on their decision making in reflecting on what is important to them in selection or evaluation of a comparison. In reflecting on their own social comparison behaviors and motivations, they would likely provide more accurate indicator of their preferences for social comparison when evaluating comparison targets. Thus, it is hypothesized that a comparison of two conditions—one in which participants are primed to think about their social comparison behaviors and preferences and another condition in which they are unprimed to make these self-reflections will yield differences in comparison target evaluations. The null hypothesis would dictate that there are no differences in comparison target evaluations between the two conditions. In this study, it is predicted that a primed methodology in comparison to an unprimed methodology will yield a significant difference in comparison target evaluations, with greater variance attributed to social comparison on salient dimensions in academic and occupational choice.

As social comparison has developed from a theory into a field (Buunk & Gibbons, 2007), numerous researchers have explicitly asked participants about their social comparison behaviors, such as to whom they compare themselves and how frequently they make these comparisons (e.g., Wheeler & Miyake, 1992; Steil & Hay, 1997; Blanton et al, 1999; Brown et al, 2007). This explicit approach to measuring social comparison has been particularly useful in the assessment of one's own academic and job performance in relation to others, occupational prestige, and other important aspects of career development.

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The other popular methodological approach measures social comparison more implicitly and typically involves providing participants with fictional information about a person or group of people (e.g., Miller, 1984; Buunk & van der Laan, 2002) or to imagine themselves in a certain scenario (e.g., Li et al, 2015; Helgeson & Mickelson, 1995). Participant reactions and evaluations of the individual in the fictional description or imagined scenario are implied to be the consequence of social comparisons participants make with individuals in this false or imagined scenario. This approach has been popular among researchers who recognized that people make social comparisons even when they are not aware of it or that they may not being willing to admit to it (Wood, 1996; Nisbett & Wilson, 1977). The difficulty with these methods is that the concept of social comparison is not specifically defined or explicitly addressed with participants and subsequently, the researchers implicate social comparison as the mechanism explaining the results.

In occupational choice, social comparison is implicated in career theories and assessments, which have integrated social comparison without specifically addressing its psychological impact. Further understanding of appropriate ways to measure social comparison in occupational choice would thus serve as a basis for further understanding and future research. Since there is great potential for individuals to have conscious awareness of the influences on their decision-making, such as identifying people who have been influential in shaping their career development (Bosley et al, 2009), it would be useful to label and define this construct of social comparison explicitly to gain a more full understanding of its impact on participants' occupational choices. Individuals engaging in the process of career exploration and decision-making would need to be mindful of the factors influencing this process, which is a process that can be facilitated in career counseling. Having conscious awareness of the academic and

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occupational decision-making process and influences, participants would likely respond genuinely about the social comparisons they make when explicitly asked about their social comparison behavior, especially if it was framed as a typical human behavior.

In their approach to assessing social comparison orientation, Gibbons and Buunk (1999) found that when they clearly defined social comparison and introduced as a normal behavior, practically all of the 1192 participants indicated engaging in social comparison at one point. Such results are consistent with the research over the past 60 years that indicate social comparison is a fundamental human process. Therefore, social comparison likely manifests throughout the career and academic decision making process and could be explicitly indicated by participants who are aware of the normality of such behavior. While social comparison is likely to be something that participants acknowledge is affecting their occupational choice, it is possible that they are not aware that they are engaging in social comparison nor that they are willing to acknowledge their comparison behaviors. For this reason, both a methodology that implies social comparison and a methodology which explicitly addresses social comparison will be examined in this study. For the purpose of making equivalent comparisons and analyses, all participants will be presented with both methods. However, the order in which these methods appear to participants will differ, yielding a primed condition and unprimed condition. The results will subsequently inform future research methodology in social comparison research applied to career decision making, providing greater clarity in measuring participant preferences for social comparison targets in the domain of academic and occupational choice.

Level of social comparison

The second research hypothesis to be examined in this study will be assessing the preference of lateral comparisons with peers or upward comparisons with employed individuals

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when making occupational decisions. Consistent with previous research in social comparison, people's motivations for seeking social comparison targets determines whether they make comparisons with others who are above, at, or below the level of the comparer (e.g., Buunk & Gibbons, 2007; Wood, 1989). Subsequently, comparison targets at varying levels of comparison (i.e., upward, lateral, downward) will yield different evaluations by participants. It is hypothesized that participants will show a greater preference for an upward comparison target who is successfully employed.

The motivation for self-improvement yields comparison with those who are above one's level, referred to as upward comparison, with the comparison target serving as a source of inspiration. Motivation for self-evaluation yields comparisons with targets who are either at or slightly above one's own level—referred to as lateral comparison or upward comparison, respectively, to know where one stands in relation to others. The development of professional role model programs has perpetuated the idea that career decision makers are motivated, or inspired, by upward comparisons to individuals they view as relevant and similar to themselves. The Strong Interest Inventory also implies that career decision makers will be inspired by career incumbents, who are similar in vocational interests and gender (Hansen, 2013). However, the majority of research on career role model programs has been focused on gender as the defining similarity between the role model and the person making comparisons. While career theories and assessments assume social comparison is operating in career decision making, the limited understanding of individuals' motivations for making comparison leaves the preferred level of comparison and its impact on occupational choice unknown.

Social comparison research (e.g., Gibbons & Buunk, 2007; Wood, 1989) would indicate that in the assessment of one's own occupational choices, motivation for self-improvement

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would yield upward comparisons, which is clearly implicated by measures like the SII and professional role model programs. A social comparison motivation for self-evaluation would indicate a tendency toward lateral and upward comparisons, and would also be relevant to career decision making as individuals determine if they are pursuing an appropriate career path. Motivation for self-enhancement would yield downward comparisons and involves comparing one's self to targets who are perceived at a lower level, or are performing less effectively in a task, to facilitate the feelings that the individual engaged is comparison is 'better-off' than their comparison target (Wood, 1989). In translating these motivations to academic and occupational choice, it is likely that individuals in search of an occupation, a process involving much uncertainty, self-reflection and purposeful exploration, would make both lateral and upward comparisons for self-evaluative and self-improvement purposes.

While the development of professional role model programs implies that individuals make upward comparisons, likely with motivations of self-improvement, the educational research has focused primarily on the impact of social comparisons laterally with student peers (e.g., Dijkstra et al, 2008), revealing that academic performance evaluations in lateral comparison to peers is quite common. Since academic and occupational choice comparisons with peers has received minimal attention in the literature, the preference for peers versus employed individuals is uncertain. Other organizational research on social comparison has highlighted the lateral and upward social comparisons that individuals make with work colleagues and superiors, respectively. Therefore, individuals' preference for comparison target level (i.e., lateral or upward) in occupational choice will be examined in this study. In line with professional role model programs, it is hypothesized that upward comparison targets will be more preferred by participants.

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Individual differences in social comparison

While it is understood that social comparison is an inherent psychological mechanism operating in all people for the purposes of gaining self-knowledge in a variety of domains (e.g., Festinger, 1954), it has been noted that there are individual differences which may affect comparison target selection, frequency of comparison, and consequences of comparisons (e.g, Gibbons & Buunk, 1999). Therefore, the third research hypothesis will examine the influence of participants' individual difference on comparison target preferences. It is predicted that participant gender, gender self-concept, career aspirations, vocational interests, and vocational identity will impact comparison target preferences.

Gibbons and Buunk (1999) developed the INCOM to measure social comparison orientation (SCO), which captures the differential impacts, target selection, and so forth, in social comparison from person to person. Consistent with other domains in which social comparison has been studied, there are likely individual differences in social comparison operating on academic and occupational choice. Social comparisons occur when the dimensions of comparison are relevant and salient to the individual making the comparisons (Festinger, 1954). Given the importance Gottfredson (1996) places on the self-concept in relationship to occupational selection, it is likely that individual differences in the salience of certain aspects of oneself will yield preferences for different comparison targets on the respective dimensions.

Some of the salient dimensions of occupations and individual career development that have been highlighted are gender, prestige/aspirations, and interests, and subsequently, the salience of the respective dimensions for each participant can influence their social comparison behavior. Also, individuals engage in social comparison when there is greater uncertainty about

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where they stand (Festinger, 1954), and an individual's certainty about their occupational path, or vocational identity, would likely influence social comparison preferences. It is hypothesized that participant characteristics (i.e., sex, gender self-concept, career aspirations, vocational interests, and vocational identity) will impact their social comparison preferences by contributing to the prediction of social comparison target evaluations. Such analyses of individual participant characteristics would be useful to inform future research examining the salient dimensions of social comparisons made in academic and occupational choice.

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CHAPTER 3

METHODS

Participants

The sample for this study was drawn from the undergraduate student population at Iowa State University after gaining approval from the Institutional Review Board (see Appendix K). Participants were enrolled in one or more courses in the Department of Psychology and Communication Studies and were recruited utilizing the SONA system, which allows for the awarding of course credit in exchange for study participation. There were 313 total participants in this study. Participants who did not complete all parts of the study and outliers were removed, leaving a total of 256 participants upon which the participant descriptions and statistical analyses are based.

Of the 256 participants who completed all parts of the study, 160 identified as female and 96 identified as male. The age of participants ranged from 18 to 48 years (M = 19.5, SD = 2.43). Participants consisted of mostly freshmen and sophomores in college, representing 41% and 35%, respectively of the sample. College juniors made up 14% and college seniors made up 10% of the sample. Twenty percent of the sample identified as first-generation college students. The majority of participants (87%) reported being somewhat satisfied or satisfied in their current major.

The majority of participants (72%) identified as white/European American, 15% as Asian/Asian American/Pacific Islander, 4% as African American, 4% as Hispanic/Latino American, and 5% as multiethnic. Eighty-one percent of participants identified as mostly or exclusively heterosexual, 15% mostly or exclusively homosexual, 2% bisexual/pansexual, and

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1% asexual. Forty-six percent of participants identified as middle class, 39% as upper middle class, 8% as lower middle class, 3% as upper class, and 2% as lower class.

Measures

Vocational interests

Participants' vocational interests were conceptualized according to Prediger's (1981) interest dimensions of data-ideas and things-people, which are two bipolar, orthogonal dimensions of Holland's (1966) RIASEC types. Participants' interests were measured utilizing the Alternate Forms Public Domain RIASEC Markers, which was developed to provide researchers with a tool unencumbered by cost and copyright concerns of traditional RIASEC measures (Armstrong, Allison, & Rounds, 2008). The AFPD RIASEC Markers consist of 48 items describing work activities associated with Holland's (1966) RIASEC types—Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. There are six scales representing these RIASEC types, each with eight items. Participants were asked to indicate the degree to which they would like to perform each activity, rating each item on a 5-point Likert scale (1 [*strongly dislike*] to 5 [*strongly like*]) (Armstrong et al, 2008).

In previous research, the AFPD RIASEC Markers has shown evidence of convergent validity, correlating with the Strong Interest Inventory's General Occupational Themes in a range from .56 to .67 and correlations with occupation-based interest ratings range from .72 to .87 (Armstrong et al, 2008). The items are presented in Appendix B.

Vocational identity

Participants were asked to complete the My Vocational Situation questionnaire (MVS; Holland, Gottfredson, & Power, 1980), which has been utilized in career counseling and throughout the career literature since their initial publication (e.g., Li et al, 2015). The MVS is

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divided into three subscales—Vocational Identity (VI), Occupational Information (OI), and Barriers (B). Holland et al (1980) define vocational identity (VI) "the possession of a clear and stable picture of one's goals, interests, and talents," (p. 1191) which is something that would be expected to take shape throughout one's process of occupational development. Scores on the VI scale are computed by adding up all the items in which participants responded "false" yielding a possible range of 0 to 18, with higher scores indicating a better, or more stable, vocational identity. The OI scale highlights the importance of seeking information about occupations to better understand if they are practical options, and includes the desire to seek information about people who are entering careers. The B scale highlights the signs of actual or perceived barriers to occupational decision-making (Holland et al, 1980). For the purposes of this study, the VI scale, which has shown high internal consistency with Cronbach alpha of .86 for high school students, .88 for male college students, and .89 for female college students, was used to assess vocational identity among participants.

Construct validity analyses revealed that scores on the VI scale increased with age, education/training, and degree of specialization as predicted. While areas identified as concern on the OI and B scales are useful in identification of areas of concern in the career development and decision making process, factor analyses indicates that they function more as a checklist as opposed to a homogenous scale (Holland et al, 1980), and these subscales of the MVS will not be analyzed in this study. The MVS items are presented in Appendix C.

Career aspirations

Participant career aspirations, or desired occupational achievement and prestige, were evaluated using the Career Aspirations Scale (CAS; O'Brien, 1996). The CAS was developed with the goal of assessing the degree to which individuals value their careers, specifically

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examining a desire for leadership positions in their careers, aspirations to train or manage others, and interest in pursuing further education (O'Brien, 1996; Gray & O'Brien, 2007). The CAS asks participants to indicate how accurately each of 10 statements applies to them using a 5-point Likert scale (1[*Not at all true of me*] to 5 [*Very true of me*]). Four items were reverse scored and all item scores summed, with higher scores indicating a desire for higher occupational achievements.

In an initial validation of the CAS on 282 female high school seniors, O'Brien (1996) found the items of the CAS to be internally consistent with a Cronbach alpha of .74. The CAS shows convergent validity with significant ($p < .01$) positive correlations with measures of career salience ($r = .47$) and career self-efficacy ($r = .53$). The items for the CAS are presented in Appendix D.

Gender self-concept

Participants' gender self-concept in the current study is evaluated using the Bem Sex Role Inventory (BSRI; Bem, 1974). The BSRI asks respondents to rate themselves on 60 personality characteristics on a 7-point Likert scale (1 [*Never or almost never true*] to 7 (*Always or almost always true*]). There are three subscales: 1) Masculinity, 2) Femininity, and 3) Social Desirability, each with 20 items. The Masculinity subscale includes adjectives typically associated with men, while the Femininity subscale includes items typically associated with women. The Social Desirability scale consists of adjectives that are socially desirable, but associated with neither gender. Scores are calculated for each subscale as well as a score for Androgyny, which Bem (1974) described as the presence of both masculine and feminine traits.

In the development of this scale, Bem (1974) collected data from 917 undergraduate students from two colleges. Reliability analyses yielded Cronbach alphas of .86 and .86 for the

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two samples on the Masculinity scale, .80 and .82 for the Femininity scale, and .75 and .70 for the Social Desirability scale. The Androgyny score was calculated measuring the difference between the Masculinity and Femininity scale scores—the Cronbach alpha of this scale was .85 and .86, respectively. Test-retest reliability analyses were also conducted with a small subset of the original sample (28 male and 28 female participants), and each subscale yielded high reliability: Masculinity (r = .90); Femininity (r = .90); Androgyny (r = .93); and, Social Desirability (r = .89). Items for the BSRI are presented in Appendix E.

Social comparison experiment

This portion of the study had four conditions. Similar to an approach taken by Buunk et al (2001a) in their analysis of occupational burnout, in which participants completed the INCOM, read a fictional interview about a peer, and were asked questions about their level of identification with the peer and mood, the participants in this study read fictional descriptions about potential career speakers at a high school. Participants were given information about social comparison and asked to answer questions regarding their own social comparison behavior in occupational decision-making (i.e., social comparison motivations; social comparison target preferences). In two conditions, a primed methodology was used in which participants were asked to make social comparisons with regard to the evaluation and ranking of career speakers for their former high school. These primed participants answered the questions about their own social comparison behavior *before* evaluating the career speakers, with the implication that these participants would be thinking more about social comparison and their own preferences in making social comparison. In the two unprimed conditions, participants were asked to answer these same questions about their own social comparison behavior, but they did so *after* evaluating and rank the speakers for their former high school. The implication in the unprimed

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conditions is that participants would make social comparisons as they were making evaluations. Within the primed and unprimed conditions, participants were exposed to eight social comparison targets. There are two groups of eight comparison targets/career speakers, which are described in detail below.

Primed condition

Participants who were randomly assigned to the explicit social comparison condition were given information about social comparisons and how they may be useful in career decision-making. Participants were informed that comparison with others (i.e., social comparison) is a behavior students engage in to gain more information about their own academic and occupational pursuits by understanding how people 'like them' are doing in their own academic and occupational pursuits. Social comparison was labeled as a typical student behavior to normalize it for participants as it has been in previous literature (e.g., Gibbons and Buunk, 1999). Once comparison behavior and identification of others as helpful in career development had been explained and normalized, participants were asked to provide information about their own social comparison behaviors, such as with whom they make comparisons and their motivations for making comparisons with others in their academic and occupational choices. Questions addressing social comparison motives and social comparison preferences are described later in this section. Such information and questions about the participants' social comparison behavior served to help 'prime' them to make social comparisons in the next part of the study.

Participants were then informed that their former high school was planning a career exploration day for its students. The participants were asked to read eight descriptions about individuals who may serve as career speakers, and then evaluate each of them on their fit as career speakers at their former high school. Participants were asked to envision themselves as

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needing occupational information, like they would have when they attended that high school. The participants were asked to evaluate and rank the eight potential career speakers based on their influence on the career-decision making process, keeping their own social comparison motivations and desires in mind when evaluating each potential speaker. The questions for rating and ranking comparison target are in Appendix G.

Unprimed condition

Participants who were randomly assigned to the unprimed social comparison condition were informed that their former high school is planning a career exploration day for the students. The participants were told that their input as someone who is more advanced in their educational and occupational pursuits would be valuable to their former high school. Participants were asked to read eight descriptions about individuals who may serve as career speakers, and then evaluate each of them on their fit as career speakers at the local high school. Participants evaluated and ranked each speaker using the comparison target questions in the Appendix G.

Afterwards, like those participants in the primed condition, the participants in the unprimed condition were presented with the same information about social comparisons and asked to provide information about their own social comparison behaviors and preferences in occupational decision-making (i.e., social comparison motives, social comparison preferences). Since participants received this information and answered questions about social comparison after reading the vignettes and rating the prospective career speakers, the implication, as in previous research applying the use of fictional descriptions (e.g., Buunk et al, 2007; Lockwood, 2006), is that participants are making social comparisons in their ratings and rankings of career speakers.

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Career speaker descriptions and evaluation

For both conditions, participants were presented with eight descriptions of fictional individuals being evaluated for their former high school's career exploration day. Participants were asked to read eight description of potential career speakers of certain vocational interests (i.e., data, ideas, people, or things), gender (i.e., male or female) and target comparison level (i.e., lateral—undergraduate peer or upward—employed worker). Each speaker was rated on various adjectives and participants' perceived applicability of this speaker for the career exploration day. All participants were asked to rate career speakers on how well each of six adjectives described the career speaker using a 9-point Likert scale (1 [*not at all*] to 9 [*very*]) and to respond to four questions evaluating their fit as career speakers on a 9-point Likert scale (1 [*strongly disagree*] to 9 [*strongly agree*]). The questions used to evaluate the speakers were adapted from previous research asking participants to evaluate professional role models (e.g. Lockwood & Kunda, 1997; Lockwood, 2006). Since it is possible that participants could provide little variation in their ratings of all speakers, participants were also asked to rank the eight individuals from most helpful to least helpful as career speakers for their former high school with the purpose of identifying the participants' first choice, indicating with whom they would most likely compare themselves.

The descriptions of career speakers were manipulated in the following ways: 1) Gender using names that were most popular for males and females in 1995 since most participants will have been born around this time and names will be familiar to them (http://www.babycenter.com/popularBabyNames.htm?year=1995); 2) Comparison direction using an undergraduate peer (lateral) versus an employed individual (upward); and, 3) Occupational interests according to the Data-Ideas and Peoples-Things dimensions of

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occupations (e.g., Prediger, 1982). The descriptions were balanced so that of the eight descriptions participants were asked to evaluate, four were upward and four were lateral targets, four were male and four were female targets, and two targets represented each of the vocational interests of data, ideas, people, and things. There were two groups of eight career speakers that participants could be exposed to so as to counterbalance the gender and level of the comparison target in the description. Each group of eight speakers included a female with a vocational interest in things, male with a vocational interest in things, female with a vocational interest in people, male with a vocational interest in people, female with a vocational interest in data, male with a vocational interest in data, female with a vocational interest in ideas, and male with a vocational interest in ideas. In each condition, half the career speakers were upward comparison targets and half of the speakers were lateral comparison targets. The comparison target level was counterbalanced across the two groups of career speakers. Each group of career speakers appeared in the primed and unprimed condition, yielding four possible conditions for participants. Thus, the career speaker descriptions in one group would vary by two genders by four vocational interest types by two comparison target levels. The career speaker descriptions (group 1 & group 2) are provided in Appendix H.

Social comparison motives

As part of the questions used to assess participant social comparison behaviors, participants were asked about their motives for making social comparisons in their occupational decision making. These comparison motives were adapted from a survey of social comparison motives by Helgeson and Mickelson (1995), which is described below, and is presented in Appendix F. In the initial development of the social comparison motives survey, Helgeson and Mickelson (1995) asked 20 graduate and undergraduate students to imagine they had either been

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diagnosed with cancer or heart disease or that they had failed an exam. Participants were asked why they or anyone would compare themselves with, seek information from, or choose to interact with others after this imagined scenario. This resulted in the development of 31 statements, or social comparison motives, in the survey. This survey was administered to 231 undergraduate students who were asked to imagine they had been diagnosed with cancer or that they had just received a poor grade on an exam and that they subsequently compared themselves with better-off others, worse-off others, and similar others. These participants were then asked to rate the likelihood that they would use the 31 statements to explain the motive for engaging in comparisons with others. In factor analyses of the 31 statements, Helgeson and Mickelson (1995) removed seven statements that loaded inconsistently.

In a final factor analysis of the remaining 24 statements, the researchers identified six factors consisting of three to five statements which loaded .54 or more on their respective factor. These six factors accounted for the following percentage of variance 1) self-improvement, 22.8 percent; 2) common bond, 12.5 percent; 3) altruism, 10.3 percent; 4) self-enhancement, 6.9 percent; 5) self-destruction, 6 percent; and 6) self-evaluation, 4.3 percent. Statements from the self-improvement, common bond, self-enhancement, and self-evaluation factors are most consistent with motives for career decision-making and thus, were adapted for the purposes of this study. Four statements represent each motive, which are provided in Appendix F.

Social comparison preferences

To further assess participants' explicit social comparison behaviors, participants were asked to provide information about the people with whom they compare themselves. Questions were adapted from those used by researchers seeking to assess the frequency of comparisons with targets at varying levels (e.g., Buunk et al, 2001a; Buunk et al, 2003) and importance of

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characteristics of professional role models (e.g., Lockwood, 2006). Participants were asked to rate the level of importance of each characteristic from on a 7-point Likert scale (1 [*not at all important*] to 7 [*very important*]). The questions address participant preferences for characteristics of comparison targets and are presented in Appendix F.

For exploratory purposes, participants were also asked to rate the level of importance of knowing certain information about people entering or employed in the world of work (e.g., average income, gender demographics) using a 5-point Likert scale (1 [*not at all important*] to 5 [*very important*]). These questions are presented in Appendix F.

Procedure

This study was divided into two parts, with the second part being divided into four conditions. Participants signed up for a timeslot on the Department of Psychology's web-based SONA System and accessed a link to complete the first part of the study. All participants were asked to complete the first part of the study via an online Qualtrics survey and consented to participate (see Appendix I) in the study before continuing to the first part of the study, which included a demographic questionnaire, My Vocational Situation (MVS), Alternate Forms Public Domain (AFPD) RIASEC Markers, Career Aspirations Scale (CAS), and Bem Sex Role Inventory (BSRI), which are described in the 'Measures' section of this paper. Upon completion of the first part of the study, participants were randomly assigned to one of four conditions for the Social Comparison Experiment portion study—group 1 speakers primed, group 2 speakers primed, group 1 speakers unprimed, and group 2 speakers unprimed—which are described in the 'Measures' section of this paper.

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Within one week of completing the first part of the study, participants were emailed a link to the second part of the study, which included questions about social comparison preferences, social comparison motivations, descriptions of career speakers, and evaluative questions of these career speakers to be completed online. Afterwards, participants were debriefed (see Appendix J) and thanked for their participation.

Data analytic approach

Data collected through Qualtrics was downloaded and combined for all conditions and parts of the study. All data analyses were conducted using IBM Statistical Package for the Social Sciences 23 (SPSS). Means and standard deviations were calculated for all variables in this study. Means for participant variables in addition to demographic variables included responses to social comparison motivations, vocational interests, vocational identity, career aspirations, and gender self-concept. Means for comparison target preferences, measured as the rating of potential career speakers, were calculated for each condition. Comparison target preference was also indicated by how career speakers were ranked by participants. Multiple regression and ordinal regression served as the primary statistical analyses in testing the research questions.

Multiple regression

Multiple regression is a statistical technique used to understand the relationship between a dependent variable and two or more independent variables, or predictor variables. Multiple regression analyses yields an R^2 value, known as the coefficient of determination, which represents the shared variance between the independent variables and the dependent variable in the multiple regression model (Cohen, Swerdlik, & Sturman, 2013).

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For the purposes of this study, nine predictor variables representing a combination of experimental manipulation and participant variables were entered into the hierarchical multiple regression equation to examine the strength of the relationship between each of these predictors and the mean for each career speaker/comparison target rating (e.g., female with things vocational interest). Specifically, the research questions aimed to explore differences between primed and unprimed conditions (hypothesis 1), upward versus lateral comparison targets (hypothesis 2), and the impact of certain participant variables such as sex, vocational interests, gender self-concept, career aspirations, and vocational identity (hypothesis 3) on each career speaker rating, which served as the dependent variable. A hierarchical multiple regression equation in which each of the various predictor variables are entered into the model aids in understand the explanatory power of each respective independent variable on the dependent variable (Heppner, Wampold, & Kivlighan, 2008)

A hierarchical multiple regression analysis was conducted for each career speaker rating. Higher variance accounted for by participant characteristics and/or experimental condition indicated greater reliability as a predictor variable of career speaker/comparison target ratings. Since each career speaker, or comparison target, remained constant as a description of a career speaker of a certain sex and with certain vocational interests, participant vocational interests and sex were entered into the first model for each analyses. The experimental manipulation explored the influences of primed or unprimed social comparison and comparison target level (upward or lateral) and thus these variables were entered into the second regression model. Additionally, in exploring the impact of other potential participant variables as described in addressing the third hypothesis of this study, the added variances of participant vocational identity, career aspirations,

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and gender self-concept were examined to determine their impact as an independent predictor of the career speaker/comparison target ratings in the third model.

Ordinal regression

Given the ordinal nature of the rankings of each target, the target rankings served as the dependent variables in a series of ordinal regression analyses. Ordinal regression provides a means of predicting the dependent variable given the relationship between it and one or more independent, or predictor, variables (O'Connell, 2006). The ordinal regression analyses using the data in this study thus can inform the probability of achieving each level of a target's ranking, which in this case, there were eight possible levels as each target could have been ranked first through eighth. The variables entered into the ordinal regression model include the same variables examined in the multiple regression analyses of the comparison target ratings so as to have a means of comparison of these two methods of analyzing both target evaluation and choice. The main effects of each all predictor variables and their interactions can be examined in ordinal regression, and this study specifically examined the main effects of the independent variables (i.e., priming, comparison target level, comparison target rating, and participant sex, vocational interests, gender self-concept, career aspirations, and vocational identity). Through this analysis, it was possible to derive the maximum likelihood estimates of the intercept and predictive variable regression weights (O'Connell, 2006).

In examining the fit of each predictive model, the model fitting information, Nagelkerke pseudo- R^2, and the individual relationships of the various predictor variables were noted. The model fitting information is a means of examining the difference between the given model and the null hypothesis, or intercept, in the ability to predict the target ranking. The Nagelkerke pseudo- R^2 was selected as the best indicator of the model's ability to predict ranking as an

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improvement beyond the null hypothesis because it provides a useful interpretation of this model with multiple predictors, including categorical and continuous variables, such as those examined in this study. Unlike the Cox and Snell pseudo-R^2 it also allows for all possible values up to one, which indicates a perfectly fitting model (O'Connell, 2006). Additionally, the test of parallel lines was used to determine if the odds of predicting each category/ranking of each target was proportional for the respective target.

The main effects of each all variables were examined. In testing each model's ability to predict a specific target's ranking, consistent with the first and second research questions in this study, the target's position as an upward or lateral variable and the prime condition variable were entered as fixed factors given their categorical nature. Additionally, in alignment with the third research question regarding the influence of participant characteristics, it was expected that participant characteristics of sex and vocational interests would be predictive of comparison targets of a similar/different sex and vocational interests. Thus, the participant sex was entered as a fixed factor and vocational interests as a covariate into the model given the continuous nature of the vocational interest variables. To align with the multiple regression analyses and third research question, additional participant variables were entered as predictors (i.e., career aspirations, gender self-concept, and vocational identity) of each target ranking. Additionally, given that each participant also provided a mean rating prior to ranking each target, the same target's mean was entered into each series of ordinal regression analyses.

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CHAPTER 4
RESULTS

Descriptive Statistics

Vocational interests

Means and standard deviations were calculated for each of the RIASEC vocational interests subscales on the Alternate Forms Public Domain (AFPD) RIASEC Markers (Armstrong et al, 2008). The average Realistic score was 2.02 (*SD* = .844), Investigative scores averaged 2.91 (*SD* = .927), the average Artistic score was 2.52 (*SD* = .857), Social scores averaged 3.38 (*SD* = .747), Enterprising scores averaged 2.64 (*SD* = .821), and Conventional scores averaged 2.44 (*SD* = .875). These subscale means were subsequently utilized to calculate two scores for each the data-ideas vocational interest dimension and things-people vocational interest dimension, with higher scores on the data-ideas dimension indicating greater interest in data and higher scores on the things-people dimension indicating greater interest in things. The average score on the data-ideas interest dimension was -.613 (*SD* = 2.98), and mean score on the things-people interest dimension was -2.52 (*SD* = 3.03). Internal consistency reliability of the AFPD scale in the current study is good, with a Cronbach alpha of .91.

Vocational identity

The mean and standard deviation of scores on the vocational identity (VI) scale of My Vocational Situation (Holland et al, 1980) were calculated. Participant average vocational identity score was 9.88 (*SD* = 5.29). In the current study, the VI scale showed adequate reliability with a Cronbach alpha of .90.

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Gender self-concept

Means and standard deviations were calculated for the Masculine and Feminine subscales of the Bem Sex Role Inventory (BSRI; Bem, 1974). The mean on the Masculine scale was 4.89 (*SD* = .728), and the mean score on the Feminine scale was 4.88 (*SD* = .706). Using the sample in the current study, the BSRI showed adequate reliability with a Cronbach alpha of .85 for the Masculinity Scale and .84 for the Femininity Scale.

Career aspirations

The mean and standard deviation of scores were calculated for the Career Aspirations Scale (O'Brien, 1996). The average score was 3.79 (*SD* = .632). In the current study, the CAS displays adequate internal consistency with a Cronbach alpha of .74.

Social comparison motives

Participant social comparison motivations were calculated utilizing an adaptation of the Social Comparison Motives checklist (Helgeson & Mickelson, 1995), serving as a means for priming participants to consider social comparison in their own occupational decision making. The average number of items endorsed by participants was 8.97 (*SD* = 3.29). The items most frequently endorsed by participants as a reason why they would compare themselves to other people in navigating their own academic and occupational decision making were "to give you a goal," "to share experiences," "to provide insight into your own situation," and "because they serve as role models" receiving endorsement by 89%, 73%, 72%, and 68% of participants, respectively. These items displayed adequate internal consistency with a Cronbach alpha of .72.

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Table 1: Participant Variable Means (n = 256)

Participant Variable	Mean	Standard Deviation
Things-People Interests	-2.52	3.03
Data-Ideas Interests	-.618	2.98
Masculinity (α = .85)	4.89	.728
Femininity (α = .84)	4.88	.706
Career Aspirations (α = .74)	3.79	.632
Vocational Identity (α = .90)	9.88	5.29
Social Comparison Motives (α = .72)	8.97	3.29

Social comparison preferences

Means and standard deviations were calculated for each comparison target characteristics participants were asked to consider about their preferences in academic and occupational decision making, which served as a means of priming participants in this study.

The average score for target occupation importance was 5.54 (*SD* = 1.42). The average score comparison target education level was 5.43 (*SD* = 1.33). The average score for target academic major importance was 5.35 (*SD* = 1.35). The average score for comparison target income importance was 4.60 (*SD* = 1.82). The average score for comparison target age importance was 4.18 (*SD* = 1.67). The average score comparison target social class importance was 3.66 (*SD* = 1.76). The average score for comparison target gender importance was 2.98 (*SD* = 1.87). The average score for comparison target race/ethnicity importance was 2.41 (*SD* = 1.69). The average score for comparison target sexual orientation was 2.25 (*SD* = 1.67). These items displayed adequate internal consistency with a Cronbach alpha of .72.

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Table 2: Pearson Correlation of Participant Variables

(*N* = 256)	TP	DI	MASC	FEM	CAS	VI	SC
TP	1	.000	.038	**-.419****	-.091	.104	**-.151***
DI	.000	1	-.060	**-.138***	**-.170****	-.062	-.077
MASC	.038	-.060	1	.093	**.331*****	**.216*****	.118
FEM	**-.419****	**-.138***	.093	1	.018	-.118	**.154***
CAS	-.091	**-.170****	**.331*****	.018	1	**.190****	**.162****
VI	.104	-.062	**.216*****	-.118	**.190****	1	.006
SC	**-.151***	-.077	.118	**.154***	**.162****	.006	1

Note: T=things, P=people, D=data, I=ideas, Masc=masculinity, Fem= femininity, CAS= career aspirations, VI=vocational identity, SC=social comparison motives. Significant Pearson correlations are noted in **bold**, with * for $p < .05$, ** for $p < .01$, and *** for $p < .001$.

Relationship between participant variables

In further understanding how the participant variables and preference relate to one another, a correlation matrix was created to determine the relationships between participant gender self-concept, vocational interests, vocational identity, career aspirations, and social comparison motives. The correlations are displayed in Table 2.

The results indicate significant correlations of data-ideas interest dimension with career aspirations $r(256) = -.170$, $p = .006$ and femininity $r(256) = -.138$, $p = .028$, meaning higher vocational interest in ideas is related to higher career aspirations and that higher femininity is related to lower career aspirations. The things-people vocational interests dimension correlated with social comparison motives $r(256) = -.151$, $p = .016$ and femininity $r(256) = -.419$, $p = .002$, indicating that a greater interest in things is related to lower social comparison and lower femininity. Further examination of career aspirations yielded a significant correlation with

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vocational identity ($r(256) = .190$, $p = .002$), social comparison ($r(256) = .162$, $p = .010$), and masculinity ($r(256) = .331$, $p < .001$). This indicates that higher career aspirations are associated with higher vocational identity, higher social comparison behaviors, and higher masculinity. Social comparison also demonstrated a correlation with femininity ($r(256) = .154$, $p = .013$), signifying higher femininity is related to higher social comparison. Vocational identity demonstrated a correlation with masculinity ($r(256) = .216$, $p < .001$), indicating that greater vocational stability and identity is related to higher masculinity.

Career speaker/comparison target means

Means and standard deviations using the 10 evaluative questions were calculated for each of the comparison target. Since some participants were primed to make social comparison before rating the speakers and other participants rated the speakers prior to answering questions about their own social comparison behaviors, means and standard deviations for each of the respective group of participants were calculated separately. The results are displayed in Table 3.

Table 3: Comparison Target Mean Ratings

Comparison Target	Priming Condition			Level of Comparison		
	Primed (n = 123)	Unprimed (n = 133)	Difference $t(254)$	Upward (n = 128)	Lateral (n = 128)	Difference $t(254)$
Female-Things (α = .82)	6.47 (1.07)	7.32 (1.04)	6.44***	7.04 (1.16)	6.79 (1.10)	1.77
Male-Things (α = .82)	6.42 (1.03)	7.26 (1.10)	6.29***	7.05 (1.13)	6.65 (1.13)	2.83**
Female-People (α = .86)	6.63 (1.20)	7.11 (1.14)	3.28**	6.94 (1.18)	6.82 (1.20)	.807
Male-People (α = .86)	6.58 (1.21)	7.04 (1.15)	3.11**	6.99 (1.17)	6.64 (1.21)	2.35*
Female-Data (α = .85)	6.72 (1.16)	7.24 (1.09)	3.70***	7.15 (1.14)	6.84 (1.14)	2.26*
Male-Data (α = .83)	6.62 (1.08)	7.20 (1.10)	4.25***	7.12 (1.05)	6.72 (1.16)	2.89**
Female-Ideas (α = .85)	6.71 (1.17)	7.22 (1.13)	3.54***	7.22 (1.13)	6.72 (1.17)	3.48***
Male-Ideas (α = .83)	6.63 (1.11)	7.38 (1.06)	5.53***	7.17 (1.16)	6.87 (1.12)	2.10*

Note: Standard deviations appear in parentheses after means. Significant difference between means indicated by * for p < .05, ** for p < .01, and *** for p < .001.

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Female-things comparison target

For all participants, the female speaker with vocational interests in things (female-things) had an average rating of 6.92 (*SD* = 1.14). For primed participants only, the female-things mean score was 6.47 (*SD* = 1.07), and for unprimed participants the mean score was 7.32 (*SD* = 1.04). Participants were also exposed to either a female-things target who was satisfactorily employed (upward comparison target) or a female-things target who was a successful college student peer (lateral comparison target). The mean for lateral comparison targets 6.79 (*SD* = 1.10). The mean for upward comparison targets was 7.04 (*SD* = 1.16). The responses to these questions showed internal consistency with a Cronbach alpha of .82.

Male-things comparison target

For all participants, the male speaker with vocational interests in things (male-things) had an average rating of 6.86 (*SD* = 1.15). For primed participants only, the male-things scores averaged 6.42 (*SD* = 1.03), and for unprimed participants the scores averaged 7.26 (*SD* = 1.10). Participants were also exposed to either a male-things target who was satisfactorily employed (upward comparison target) or a male-things target who was a successful college student peer (lateral comparison target). The mean for the lateral comparison target was 6.65 (*SD* = 1.13) and the mean for the upward comparison target was 7.05 (*SD* = 1.13). The responses to these questions showed internal consistency with a Cronbach alpha of .82.

Female-people comparison target

For all participants, the female speaker with vocational interests in people (female-people) had an average score of 6.88 (*SD* = 1.19). For primed participants only, the female-people scores averaged 6.63 (*SD* = 1.20), and for unprimed participants the scores averaged 7.11 (*SD* = 1.14). Participants were also exposed to either a female-people target who was

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satisfactorily employed (upward comparison target) or a female-people target who was a successful college student peer (lateral comparison target). The mean for the lateral comparison was 6.82 (*SD* = 1.20), and the means for the upward comparison target was 6.94 (*SD* = 1.18). The responses to these questions showed high internal consistency with a Cronbach alpha of .86.

Male-people comparison target

For all participants, the male speaker with vocational interests in people (male-people) had an average rating of 6.82 (*SD* = 1.20). For primed participants only, the male-people mean score was 6.58 (*SD* = 1.21), and for unprimed participants the mean rating was 7.04 (*SD* = 1.15). Participants were also exposed to either a male-people target who was satisfactorily employed (upward comparison target) or a male-people target who was a successful college student peer (lateral comparison target). The mean for the lateral comparison target was 6.64 (*SD* = 1.21), and the mean for the upward comparison target was 6.99 (*SD* = 1.17). The responses to these questions showed high internal consistency with a Cronbach alpha of .86.

Female-data comparison target

For all participants, the female speaker with vocational interests in data (female-data) had an average rating of 6.99 (*SD* = 1.15). For primed participants only, the female-data mean rating was 6.72 (*SD* = 1.16), and for unprimed participants the mean rating was 7.24 (*SD* = 1.09). Participants were also exposed to either a female-data target who was satisfactorily employed (upward comparison target) or a female-data target who was a successful college student peer (lateral comparison target). The mean for the lateral comparison target was 6.84 (*SD* = 1.14), and the mean for the upward comparison target was 7.15 (*SD* = 1.14). The responses to these questions showed internal consistency with a Cronbach alpha of .85.

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Male-data comparison target

For all participants, the male speaker with vocational interests in data (male-data) had an average rating of 6.92 (*SD* = 1.13). For primed participants only, the male-data mean rating was 6.62 (*SD* = 1.08), and for unprimed participants the mean rating was 7.20 (*SD* = 1.10). Participants were also exposed to either a male-data target who was satisfactorily employed (upward comparison target) or a male-data target who was a successful college student peer (lateral comparison target). The mean for the lateral comparison target was 6.72 (*SD* = 1.16), and mean for the upward comparison targets was 7.12 (*SD* = 1.05). The responses to these questions showed high internal consistency with a Cronbach alpha of .83.

Female-ideas comparison target

For all participants, the female speaker with vocational interests in ideas (female-ideas) had an average rating of 6.97 (*SD* = 1.17). For primed participants only, the female-ideas scores averaged 6.71 (*SD* = 1.17), and for unprimed participants the scores averaged 7.22 (*SD* = 1.13). Participants were also exposed to either a female-ideas target who was satisfactorily employed (upward comparison target) or a female-ideas target who was a successful college student peer (lateral comparison target). The mean for lateral comparison targets was 6.72 (*SD* = 1.17), and the mean for upward comparison targets was 7.22 (*SD* = 1.13). The responses to these questions showed internal consistency with a Cronbach alpha of .85.

Male-ideas comparison target

For all participants, the male speaker with vocational interests in ideas (male-ideas) had an average rating of 7.02 (*SD* = 1.15). For primed participants only, the male-ideas scores averaged 6.63 (*SD* = 1.11), and for unprimed participants the scores averaged 7.38 (*SD* = 1.06). Participants were also exposed to either a male-ideas target who was satisfactorily employed

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(upward comparison target) or a male-ideas target who was a successful college student peer (lateral comparison target). The mean for lateral comparison targets was 6.87 (*SD* = 1.12), and the mean for the upward comparison target was 7.17 (*SD* = 1.16). The responses to these questions showed high internal consistency with a Cronbach alpha of .83.

Ranking of comparison target/career speaker

In addition to means calculated for the participants' responses to evaluative questions, the participants ranked all eight targets on their suitability as career speakers from 1 (*most helpful*) to 8 (*least helpful*). Given that social comparison theory would indicate a 'relevant other' would be the choice of comparison target, the first choice of participants was more closely examined. Results are displayed in Table 4.

Table 4: First Choice Comparison Target

Category	Overall	Comparison Level		Priming Condition		Participant Sex	
		Upward	Lateral	Primed	Unprimed	Female	Male
Count	256	**167**	**89**	123	133	160	96
$\chi^2(1, N = 256)$		23.77, $p < .001$		1.89, $p = .169$		2.99, $p = .084$	
Female-Things	34	18	16	**22**	**12**	21	13
Male-Things	45	31	14	19	26	**17**	**28**
Female-People	41	22	19	23	18	**37**	**4**
Male-People	21	14	7	11	10	14	7
Female-Data	29	22	7	12	17	19	10
Male-Data	24	19	5	9	15	12	12
Female-Ideas	35	26	9	18	17	21	14
Male-Ideas	27	15	12	9	18	19	8
$\chi^2(7, N = 256)$		10.85, $p = .145$		9.702, $p = .206$.		27.88, $p < .001$	

Note: Significant differences are noted in **bold.**

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Overall, the female-things target was ranked first by 13.3% of participants, with 18 of these 34 first choices being employed individuals/upward comparison targets. The male-things target was ranked first by 17.6% of participants, with 31 of the 45 representing an upward comparison target. The female-ideas target was ranked first by 13.7% of participants, with 26 of these 35 being an upward comparison target. The male-ideas target was ranked first by 10.5% of participants, with 15 of the 27 first choices being an upward comparison target. The female-people target was ranked first by 16% of participants, with 22 of the 41 select as a first choice being an upward comparison target. The male-people target was ranked first by 8.2% of participants with 14 of the 21 selected as first choice representing upward comparison targets. The female-data target was ranked first by 11.3% of participants, with 22 of these 29 being upward comparison targets. The male-data target was ranked first by 9.4% of participants, with 19 of these 24 being upward comparison targets. First choice rankings are displayed in Table 4.

While controlling for the comparison target's sex and vocational interests, the targets who were selected first showed a significant difference from what would be expected if comparison targets were rated equally on comparison target level. An upward target was a participant's first choice nearly two times as frequently as a lateral comparison target was their first choice (65% upward, 35% lateral), yielding a significant difference from expectations $\chi^2(1, N = 256) = 23.77$, $p < .001$. Crosstabulation of target sex and vocational interests with their status as an upward or lateral comparison target was conducted resulting in a $\chi^2(7, N = 256) = 10.85$, $p = .145$, signifying that upward comparison target was selected more frequently regardless of the comparison targets vocational interests and sex.

Additionally, given the potential impact of the priming manipulation, the first choice of targets were examined for differences between primed and unprimed conditions. The level of

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comparison was crosstabulated with the priming condition, yielding no significant difference of priming on the upward and lateral comparison first choice targets $\chi^2(1, N = 256) = 1.89$, $p = .169$. Using a crosstabulation of the eight possible first choice targets by priming condition, the Pearson Chi-Square analysis revealed no significant differences in which target was chosen first by primed/unprimed condition with $\chi^2(7, N = 256) = 9.702$, $p = .206$. However, closer examination revealed that there is a significant difference for the female-things target first choice, with 22 of the 34 participants selecting this target first representing the primed condition with an adjusted residual of ±2.1.

With previous literature noting the significance of gender and sex as influential in comparison target selection as well as vocational choice, it was important to explore potential sex differences in the sample with regard to which target was selected first by participants. These upward and lateral comparison targets were examined to determine potential influence on comparison target sex and vocational interests in lateral versus upward target choice. The frequency of upward and lateral comparison targets chosen first was crosstabulated with participant sex to determine if there was a statistical difference between males' and females' selection of upward or lateral comparison targets. A Pearson Chi-Square test revealed that there was not a significant difference between the sexes with $\chi^2(1, N = 256) = 2.99$, $p = .084$. Additionally, to explore potential sex differences in which comparison target was ranked first, controlling for whether they were an upward or lateral comparison target, the $\chi^2(1, N = 256) = 27.88$, $p < .001$ indicates that sex differences exist in how frequently certain targets were selected first. A closer examination showed that the male-things target was selected by males 28 times and females 17 times, with an adjusted residual equal to ±3.8, and the female-people target was

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selected first by females 9 times as frequently as it was chosen by male participants (37 females and 4 males) with an adjusted residual of ±4.0. The sex differences for these particular targets exceeded the threshold of residuals ≥ 2 or ≤ -2 to indicate a significant difference between sexes on the frequency with which the male-things target and female-people target was chosen first by participants.

Statistical Model Analyses

Female-things comparison target

In the hierarchical multiple regression analyses of the female career speaker with vocational interest in things (female-things), the addition of comparison target level and priming effects to the model's ability to predict the mean career speaker evaluation yielded an $R^2 = .142$, $F(5, 250) = 9.46$, $p < .001$ compared to the first model in which $R^2 = .004$, $F(3, 252) = 1.341$, $p = .262$. This was a significant change in $R^2 = .138$, $F(2, 250) = 21.32$, $p < .001$ Participants in the primed condition rated the speaker with a lower mean score $\beta = -.366$, $t(250) = -6.239$, $p < .001$. The career speaker as an upward or lateral comparison target did not significantly influence the participants' ratings with $\beta = .103$, $t(250) = 1.771$, $p = .078$. The third model, which included the addition of participant vocational identity, gender self-concept, and career aspiration, did not result in a significant change in the ability to predict the evaluation of a female-things target with a change in $R^2 = .011$, $F(4, 246) = 1.81$, $p = .127$ and total adjusted $R^2 = .153$, $F(9, 246) = 6.13$, $p < .001$. Multiple regression results are delineated in Table 5.

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Table 5: Predictors of Target Rating

Model Predictors	Comparison Target Ratings (N = 256)							
	FT	**MT**	**FP**	**MP**	**FD**	**MD**	**FI**	**MI**
Model 1								
Sex	-.050	.060	.074	.027	.078	-.009	-.030	.041
TP	-.036	-.046	-.272***	-.264***	-.117	-.128	-.119	-.115
DI	-.040	-.006	.057	.107	-.007	.022	.000	-.029
Model 1 R^2	.004	.004	.075***	.086***	.013	.034**	.022	.015
F(3, 252)	1.341, p = .262	1.303, p = .274	7.94, p < .001	8.962, p < .001	2.11, p = .100	3.96, p = .009	2.893, p = .036	2.29, p = .079
Model 2								
Priming	-.364***	-.362***	-.198**	-.201**	-.226***	-.280***	-.216***	-.320***
Up/Lat	.112	.178**	.053	.143**	.144***	.183**	.226***	.143*
Model 2 R^2	.142***	.152***	.109***	.138***	.073***	.129***	.102***	.122***
F(5, 250)	9.46, p < .001	10.16, p < .001	7.26, p < .001	9.19, p < .001	9.18, p < .001	14.82, p < .001	6.81, p < .001	8.09, p < .001
Model 2 ΔR^2	.138***	.148***	.034**	.052***	.060***	.095***	.080***	.107***
F(2, 250)	21.32, p < .001	23.10, p < .001	5.80, p = .003	8.704, p < .001	9.18, p < .001	14.82, p < .001	12.31, p < .001	16.38, p < .001
Model 3								
Masculinity	-.022	.054	-.073	-.061	-.136*	.005	.029	.065
Femininity	.102	.110	.092	.088	.099	.115	.062	.058
Career Asp	.091	.091	.126	.146*	.159**	.167**	.161**	.126
Voc ID	.101	.064	.043	.034	.002	-.035	.113	.083
Model 3 R^2	.153***	.169***	.115***	.148***	.090***	.151***	.140***	.148***
F(9, 246)	6.13, p < .001	6.78, p < .001	5.89, p < .001	7.26, p < .001	4.56, p < .001	6.52, p < .001	5.59, p < .001	6.63, p < .001
Model 3 ΔR^2	.011	.017	.006	.010	.017	.022*	.038**	.026*
F(4, 246)	1.81, p = .127	2.30, p = .059	1.41, p = .230	1.713, p = .148	2.138, p = .077	2.63, p = .035	3.70, p = .006	2.92, p = .022

Note: F=female, M=male, T=things, P=people, D=data, I=ideas, Sex=participant sex, Upward/Lat=comparison level, Voc ID=vocational identity. Values indicate standardized Beta weights for each predictor variable in the third model. Significance level of predictor variables indicated by * for p < .05, ** for p < .01, and *** for p < .001.

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In the ordinal regression analysis, the model predicting ranking of the female-things target was shown to be a good fit, with $\chi^2(10, N = 256) = 26.04$, $p = .004$ and $R^2 = .098$. The odds of an upward comparison female-things target being selected over a lateral comparison target was significant .724 (95% CI, .278 to 1.17), Wald $\chi^2(1) = 10.14$, $p = .001$. No other predictors in this model achieved statistical significance at $p < .05$ level. This model had a marginal ability to predict the ranking of the female-things in second place or higher Wald $\chi^2(1) = 4.60$, $p = .032$. Additionally, in a test of parallel lines, $\chi^2(60) = 160.7$, $p < .001$ indicating that the effect of the model in predicting the rank of this target is not proportional across each ranking category. Ordinal regression analyses results are delineated in Table 6.

Table 6: Predictors of Target Ranking

Model Predictors	**Comparison Target Ranking (*N* = 256)**							
	FT	**MT**	**FP**	**MP**	**FD**	**MD**	**FI**	**MI**
χ^2(10, *N* = 256)	26.04**	51.55***	31.77***	34.31***	39.92***	60.86***	45.77***	21.47*
Sex	.241	.649*	-.687*	.042	-.264	-.010	.139	-.133
TP	-.076	-.050	-.003	.010	.011	.008	.013	.012
DI	-.036	-.024	-.026	.034	.048	.049	-.043	-.004
Rating	-.207	-.149	-.367***	-.212*	-.200	-.362**	-.220*	-.310**
Prime	.431	.060	.338	.358	-.014	-.255	.314	-.047
Up/Lat	.724**	1.00***	.337	.912***	1.05***	1.45***	1.35***	.652***
Masculinity	-.133	-.446**	.090	.071	.400**	.040	.063	-.063
Femininity	-.209	-.126	.051	.432**	.062	.087	-.082	.020
Career Asp	.159	.540**	.433**	-.125	-.342	.116	-.212	-.050
Voc ID	-.019	-.126	.007	.037	-.015	.019	-.003	.029
R^2	.098***	.185***	.119***	.128***	.147***	.215***	.166***	.082**

Note: Rating=participant rating of target, F=female, M=male, T=things, P=people, D=data, I=ideas, Sex=participant sex, Upward/Lat=comparison level, Voc ID=vocational identity. Values indicate estimates. Significance level indicated by * for p < .05, ** for p < .01, and *** for p < .001.

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Male-things comparison target

In the hierarchical multiple regression analyses of the male career speaker with vocational interest in things (male-things), the addition of comparison target level and priming effects to the model's ability to predict the mean career speaker evaluation yielded a change in R^2= .148, $F(2, 250) = 23.097$, $p < .001$ from the first model in which R^2 = .004, $F(3, 252) = 1.303$, $p = .274$. For the second model, the total R^2= .152, $F(5, 250) = 10.16$, $p < .001$. Participants in the primed condition rated the speaker with a lower mean score $\beta = -.356$, $t(250) = -6.096$, $p < .001$. The career speaker's position as an upward comparison target yielded higher participants ratings on average with $\beta = .165$, $t(250) = 2.852$, $p = .005$. The third model, which included the addition of participant vocational identity, gender self-concept, and career aspiration, was significant $R^2 = .169$, $F(9, 246) = 6.78$, $p < .001$, but did not result in a significant change in the ability to predict the evaluation of a male-things target with a change in $R^2 = .017$, $F(4, 246) = 2.30$, $p = .059$.

In the ordinal regression analysis, the model predicting ranking of the male-things target was shown to be a good fit, with $\chi^2(10, N = 256) = 51.55$, $p < .001$ and $R^2 = .185$. An upward comparison increased the odds of a higher ranking of the male-things target 1.001 (95% CI, .542 to 1.46), Wald $\chi^2(1) = 18.28$, $p < .001$. Higher participant career aspirations .540 (95% CI, .145 to), Wald $\chi^2(1) = 7.177$, $p = .007$ and lower masculinity -.446 (95% CI, .786 to -.105), Wald $\chi^2(1) = 6.58$, $p = .01$ were also associated with a greater odds of a higher male-things target ranking. Additionally, the odds that the male-things target was ranked highly by males was .649 (95% CI, .103 to 1.196) that of female participants, with statistically significance Wald $\chi^2(1) = 5.43$, $p = .02$. This model had a marginally significant ability to predict the ranking of the male-

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things in first place or higher Wald $\chi^2(1) = 4.73$, $p = .030$. Additionally, in a test of parallel lines, $\chi^2(60) = 94.78$, $p = .003$ indicating that the effect of the model in predicting the rank of this target is not proportional across each ranking category.

Female-people comparison target

In the hierarchical multiple regression analyses of the female career speaker with vocational interest in people (female-people), the first model yielded an $R^2 = .086$, $F(3, 252) = 7.94$, $p < .001$. Addition of priming condition and comparison target level to the second model resulted in a change in $R^2 = .034$, $F(2, 250) = 5.80$, $p = .003$ yielding total variance accounted for by the second model with $R^2 = .109$, $F(5, 250) = 7.26$, $p < .001$. In the first model the participants' interest in on the people-things dimension of vocational interests was significant with $\beta = -.320$, $t(250) = -4.622$, $p < .001$. With the addition of comparison target level and priming effects to the second model's ability to predict the mean career speaker evaluation, the impact of participant vocational interests remained significant $\beta = -.301$, $t(250) = -4.416$, $p < .001$, signifying that individuals with greater vocational interest in things rated career speakers lower on average. Participants in the primed condition rated the speaker with a lower mean score on average $\beta = -.197$, $t(250) = -3.292$, $p = .001$. The comparison target level effect on this career speaker was not significant with $\beta = .054$, $t(250) = .954$, $p = .341$. The third model, which included the addition of participant vocational identity, gender self-concept, and career aspiration, was significant $R^2 = .115$, $F(9, 246) = 5.89$, $p < .001$, but did not result in a significant change in the ability to predict the evaluation of a female-people target with a change in $R^2 = .006$, $F(4, 246) = 1.41$, $p = .230$. Participant higher vocational interest in things $t(246) = -3.754$, $p < .001$ and priming $t(246) = -3.292$, $p = .001$ continued to significantly impact target evaluations negatively.

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In the ordinal regression analysis, the model predicting ranking of the female-people target was shown to be a good fit, with $\chi^2(10, N = 256) = 31.77$, $p < .001$ and $R^2 = .119$. A higher rating of the female-people target had greater odds of a higher female-people target ranking -.367 (95% CI, -.568 to -.167), Wald $\chi^2(1) = 12.93$, $p < .001$. Females had greater odds than male counterparts of ranking this target highly -.687 (95% CI, -1.232 to -.143), Wald $\chi^2(1) = 6.12$, $p = .013$. Additionally, higher career aspirations were associated with ranking the female-people target highly .433 (95% CI, .049 to .818), Wald $\chi^2(1) = 6.12$, $p = .027$. This model was not able to make significant predictions regarding specific rankings. Additionally, in a test of parallel lines, $\chi^2(60) = 172.0$, $p < .001$ indicating that the effect of the model in predicting the rank of this target is not proportional across each ranking category.

Male-people comparison target

In the hierarchical multiple regression analyses, the first model for predicting the evaluation of the male career speaker with vocational interests in people (male-people) yielded an $R^2 = .086$, $F(3, 252) = 8.962$, $p < .001$. Addition of priming condition and comparison target level to the second model resulted in a change in $R^2 = .052$, $F(2, 250) = 8.704$, $p < .001$ yielding total variance accounted for by the second model with an $R^2 = .138$, $F(5, 250) = 9.187$, $p < .001$. In the first model the participants' interest in on the people-things dimension of vocational interests was significant with $\beta = -.313$, $t(250) = -4.55$, $p < .001$. With the addition of comparison target level and priming effects to the second model's ability to predict the mean career speaker evaluation, the impact of participant people-things vocational interests remained significant $\beta = -.294$, $t(250) = -4.381$, $p < .001$. Participants in the primed condition rated the speaker with a lower mean score on average with $\beta = -.197$, $t(250) = -3.347$, $p = .001$. The comparison target

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level effect on this career speaker evaluations yielded a marginally significant effect with upward targets being rated more favorably on average with β = .150, $t(250) = 2.574$, $p = .011$. The third model, which included the addition of participant vocational identity, gender self-concept, and career aspiration, was significant $R^2 = .148$, $F(9, 246) = 7.26$, $p < .001$, but did not result in a significant change in the ability to predict the evaluation of a male-people target with a change in $R^2 = .010$, $F(4, 246) = 1.713$, $p = .148$. However, participants with higher career aspirations had a marginally significant impact in predicting higher career speaker evaluations with β = .146, $t(246) = 2.273$, $p = .024$. The evaluations continued to be significantly impacted by participant higher vocational interest in things $t(246) = -3.71$, $p < .001$, priming $t(246) = -3.40$, $p = .001$, and comparison target level $t(246) = 2.44$, $p = .016$ in the third model.

In the ordinal regression analysis, the model predicting ranking of the male-people target was shown to be a good fit, with $\chi^2(10, N = 256) = 34.31$, $p < .001$ and $R^2 = .128$. The odds of an upward comparison male-people target being selected over a lateral comparison target was significant .912 (95% CI, .459 to 1.37), Wald $\chi^2(1) = 15.60$, $p < .001$. Higher participant femininity .431 (95% CI, .074 to .787), Wald $\chi^2(1) = 5.61$, $p = .018$ and higher male-people rating -.212 (95% CI, -.411 to -.012), Wald $\chi^2(1) = 4.33$, $p = .037$ were associated with higher male-people ranking. The model was able to significantly predict rankings of sixth or lower with a significant Wald $\chi^2(1) = 4.498$, $p = .034$. Additionally, in a test of parallel lines, $\chi^2(60) = 91.01$, $p = .006$ indicating that the effect of the model in predicting the rank of this target is not proportional across each ranking category.

Female-data comparison target

In the hierarchical multiple regression analyses of, the rating prediction for the female career speaker with vocational interests in data (female-data) in the first model yielded an

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adjusted $R^2 = .013$, $F(3, 252) = 2.11$, $p = .100$. While overall the first model was not significant, the participants' higher vocational interest in things showed marginal significance in yielding lower comparison target evaluations with $\beta = -.175$, $t(250) = -2.44$, $p = .015$. The addition of comparison target level and priming effects to the second model resulted in a change in $R^2 = .060$, $F(2, 250) = 9.18$, $p < .001$ for a total adjusted $R^2 = .073$, $F(5, 250) = 9.18$, $p < .001$. The impact of participant people-things vocational interests remained marginally significant $\beta = -.153$, $t(250) = -2.20$, $p = .029$ in the ability to predict the mean female-data career speaker evaluation. Participants in the primed condition rated the speaker with a lower mean score $\beta = -.223$, $t(250) = -3.65$, $p < .001$. The comparison target level effect on this career speaker evaluations yielded a marginally significant effect with upward targets being rated more favorably on average with $\beta = .141$, $t(250) = 2.33$, $p = .02$. The third model, which included the addition of participant vocational identity, gender self-concept, and career aspiration, was significant $R^2 = .090$, $F(9, 246) = 4.56$, $p < .001$, although it did not result in a significant change in the ability to predict the evaluation of a female-data target with a change in $R^2 = .017$, $F(4, 246) = 2.138$, $p = .077$. However, participants with higher career aspirations had a marginally significant impact in predicting higher career speaker evaluations with $\beta = .159$, $t(246) = 2.39$, $p = .018$. The evaluations were no longer significantly impacted by participant higher vocational interest in things $t(246) = -1.58$, $p = .115$ in the third model. However, priming $t(246) = -3.70$, $p < .001$ and comparison target level $t(246) = 2.37$, $p = .019$ continued to be significant predictors in the third model.

In the ordinal regression analysis, the model predicting ranking of the female-data target was shown to be a good fit, with $\chi^2(10, N = 256) = 39.92$, $p < .001$ and $R^2 = .147$. The odds of an upward comparison female-data target being selected over a lateral comparison target was

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significant 1.05 (95% CI, .594 to 1.51), Wald $\chi^2(1) = 20.40$, $p < .001$. An increase in participant masculinity was also associated with greater odds of ranking this target lower .400 (95% CI, .062 to .738), Wald $\chi^2(1) = 5.38$, $p = .020$. This model was not able to make significant predictions regarding specific rankings. Additionally, in a test of parallel lines, $\chi^2(60) = 122.1$, $p < .001$ indicating that the effect of the model in predicting the rank of this target is not proportional across each ranking category.

Male-data comparison target

In the hierarchical multiple regression analyses of, the rating prediction for the male career speaker with data vocational interest (male-data) the first model was significant $R^2 = .045$, $F(3, 252) = 3.96$, $p = .009$. In the first model the participants' higher vocational interest in things resulted in lower target evaluations with $\beta = -.207$, $t(250) = -2.927$, $p = .004$. With the addition of comparison target level and priming effects to the second model resulted in a change in $R^2 = .095$, $F(2, 250) = 14.82$, $p < .001$ for a total adjusted $R^2 = .129$, $F(5, 250) = 14.82$, $p < .001$. The impact of participant people-things vocational interests remained significant in the second model's ability to predict the mean male-data career speaker evaluation with $\beta = -.181$, $t(250) = -2.69$, $p = .008$. Participants in the primed condition rated the speaker with a lower mean score on average with $\beta = -.262$, $t(250) = -4.435$, $p < .001$. The comparison target level effect on this career speaker evaluations yielded upward targets being rated more favorably on average with $\beta = .191$, $t(250) = 3.27$, $p = .001$. The third model, which included the addition of participant vocational identity, gender self-concept, and career aspiration, was significant $R^2 = .151$, $F(9, 246) = 6.52$, $p < .001$ and resulted in a marginally significant change in the ability to predict the evaluation of a male-data target with a change in $R^2 = .022$, $F(4, 246) = 2.63$, $p = .035$. Participants with higher career aspirations had a marginally significant impact in predicting

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higher career speaker evaluations with β = .167, $t(246) = 2.60$, $p = .010$. The evaluations were no longer significantly impacted by participant higher vocational interest in things $t(246) = -1.80$, $p = .074$ in the third model. However, priming $t(246) = -4.74$, $p < .001$ and comparison target level $t(246) = 3.12$, $p = .002$ continued to be significant predictors of the male-data target evaluations in the third model.

In the ordinal regression analysis, the model predicting ranking of the male-data target was shown to be a good fit, with $\chi^2(10, N = 256) = 60.86$, $p < .001$ and $R^2 = .215$. The odds of an upward comparison male-data target being selected over a lateral comparison target was significant 1.45 (95% CI, .977 to 1.923), Wald $\chi^2(1) = 36.05$, $p < .001$. An increase in participant male-data rating was associated with male-data ranking increase -.362 (95% CI, -.579 to -.144), Wald $\chi^2(1) = 10.66$, $p = .001$. The model was able to significantly predict rankings of first with a significant Wald $\chi^2(1) = 6.31$, $p = .012$. In a test of parallel lines, $\chi^2(60) = 149.9$, $p < .001$ indicating that the effect of the model in predicting the rank of this target is not proportional across each ranking category.

Female-ideas comparison target

In the hierarchical multiple regression analyses of the female career speaker with vocational interests in ideas (female-ideas), the prediction of this career speaker's evaluations in the first model was marginally significant $R^2 = .022$, $F(3, 252) = 2.893$, $p = .036$. In the first model the participants' interest in on the people-things dimension of vocational interests was marginally significant β = -.151, $t(250) = -2.124$, $p = .035$. The second model was significant with $R^2 = .102$, $F(5, 250) = 6.81$, $p < .001$ with a significant change in $R^2 = .080$, $F(2, 250) = 12.31$, $p < .001$ from the first model. The addition of comparison target level and priming effects to the second model's ability to predict the mean career speaker evaluation yielded the impact of

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participant vocational interests as no longer significant β = -.132, $t(250) = -1.931$, $p = .055$. Participants in the primed condition rated the speaker with a lower mean score β = -.214, $t(250) = -3.567$, $p < .001$. The upward comparison target was rated higher on average β = .200, $t(250) = 3.358$, $p = .001$. The third model, which included the addition of participant vocational identity, gender self-concept, and career aspiration, was significant $R^2 = .140$, $F(9, 246) = 5.59$, $p < .001$ and resulted in a significant change in the ability to predict the evaluation of a female-ideas target with a change in $R^2 = .038$, $F(4, 246) = 3.70$, $p = .006$. In addition to priming and comparison target level which remained significant in the third regression model, the addition of participant career aspirations showed a marginally significant ability to predict the female-ideas target evaluation with β = .161, $t(246) = 2.5$, $p = .013$.

In the ordinal regression analysis, the model predicting ranking of the female-ideas was shown to be a good fit, with $\chi^2(10, N = 256) = 45.77$, $p < .001$ and $R^2 = .166$. The odds of an upward comparison female-ideas target being selected over a lateral comparison target was significant 1.35 (95% CI, .880 to 1.83), Wald $\chi^2(1) = 31.43$, $p < .001$. An increase in participant female-ideas rating was associated with female-ideas ranking increase -.220 (95% CI, -.422 to -.017), Wald $\chi^2(1) = 4.51$, $p = .034$. The model was able to significantly predict rankings of second or higher with a significant Wald $\chi^2(1) = 4.22$, $p = .040$. Additionally, in a test of parallel lines, $\chi^2(60) = 56.67$, $p = .591$ indicating that the effect of the model in predicting the rank of this target is proportional across each ranking category.

Male-ideas comparison target

In the hierarchical multiple regression analyses of the male career speaker with vocational interest in ideas (male-ideas), the prediction of this career speaker's evaluations in the first model was not significant $R^2 = .015$, $F(3, 252) = 2.29$, $p = .079$. In the first model the

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participants' interest in on the people-things dimension of vocational interests was marginally significant β = -.160, $t(250) = -2.23$, $p = .026$. The second model was significant $R^2 = .122$, $F(5, 250) = 8.09$, $p < .001$, resulting in a significant change in $R^2 = .107$, $F(2, 250) = 16.38$, $p < .001$. The addition of comparison target level and priming effects to the second model's ability to predict the mean career speaker evaluation yielded the impact of participant things-people vocational interests as no longer significant β = -.131, $t(250) = -1.929$, $p = .055$. Participants in the primed condition rated the speaker with a lower mean score on average β = -.320, $t(250) = -5.298$, $p < .001$. The comparison target level was marginally significant with upward targets being rated higher on average by participants β = .119, $t(250) = 2.031$, $p = .043$. The third model, which included the addition of participant vocational identity, gender self-concept, and career aspiration, was significant $R^2 = .148$, $F(9, 246) = 6.63$, $p < .001$ and resulted in a significant change in the ability to predict the evaluation of a male-ideas target with a change in $R^2 = .026$, $F(4, 246) = 2.92$, $p = .022$. In addition to priming and comparison target level which remained significant in the third regression model, the addition of participant career aspirations showed a marginally significant ability to predict the male-ideas target evaluation with β = .126, $t(246) = 1.97$, $p = .05$.

In the ordinal regression analysis, the model predicting ranking of the male-ideas target was shown to be a marginally good fit, with $\chi^2(10, N = 256) = 21.47$, $p = .018$ and $R^2 = .082$. The odds of an upward comparison male-ideas target being selected over a lateral comparison target was significant .652 (95% CI, .205 to 1.10), Wald $\chi^2(1) = 8.18$, $p = .004$. An increase in participant male-ideas rating was associated with male-ideas ranking increase -.310 (95% CI, -.520 to -.100), Wald $\chi^2(1) = 8.365$, $p = .004$. The model was able to significantly predict rankings of third or higher with a significant Wald $\chi^2(1) = 4.42$, $p = .036$. In a test of parallel

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lines, $\chi^2(60) = 79.22$, $p = .049$ indicating that the effect of the model in predicting the rank of this target is not proportional across each ranking category.

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CHAPTER 5

DISCUSSION

The examination of the data as described provides support for all research questions in this study. The first hypothesis addressing differences between primed and unprimed participant social comparison was supported by comparison target ratings but not rankings. The second hypothesis, which predicted upward comparison targets would be rated more favorably received significant support in both ratings and rankings of comparison targets, but not for all comparison targets. The individual differences between participants were also examined, yielding support for the third hypothesis in that sex, gender self-concept, vocational interests, and career aspirations were significant predictors of target ratings and rankings in some cases. The support and limitations in the analyses of each of these hypotheses will be discussed in the order they were presented. Given the differences that emerged between priming condition impact and participant variables influences target ratings versus target ratings in analyzing social comparison target evaluations, these differences will also be discussed. Finally, the implications of this study and suggestions for future research will be presented.

Research Questions

Priming condition

When evaluating the differences between primed and unprimed conditions, all career speakers were consistently rated lower when primed to make social comparisons versus participants in the unprimed condition. The regression analyses also revealed that priming displayed a consistent ability to predict the comparison target evaluation. This is an indication

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that participants in the primed condition, when asked to think more critically about role of social comparison in their academic and occupational decision making, were subsequently influenced in their evaluation of the career speakers. At this point of greater self-reflection and enhanced self-awareness of what they look for in a comparison target for their own career decision-making, which is implicated as a necessary mechanism in Gottfredson's (1996) theory of circumscription and compromise, participants likely gave a more accurate reflection of their use of social comparison in the evaluation of fictional vignettes. This difference is notable given that research conducted in the social comparison literature often uses fictional comparison targets in vignettes or imagined scenarios (e.g., Zanna et al, 1975; Helgeson & Mickelson, 1995; Li et al, 2015). Based on the findings in the current study, priming participants to self-reflect on their own motives and preferences in making social comparisons may yield more accurate interpretations of the participant engagement in social comparison through evaluation of fictional/imagined social comparison targets.

While the priming effect that was present in target ratings was significant for each target, it was not at all a significant predictor of the target rankings. In this study, each participant was asked to rate each target individually before being asked to rank all of them in comparison to one another. Thus, it could be that the ordering of the method in which the participants were all asked to rate the speakers on the adjectives and statements and then to rank them all, putting each target against one another could have had an impact. Perhaps, if participants were first asked to rank participants, and then rate each one individually, there would be different results. It could also be that the difference between evaluating, or rating, someone involves different considerations than ranking them relative to other targets. This is a limitation when testing the development of methodology as this study did, and thus, further exploration by counterbalancing this rating and

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ranking of comparison targets in future studies would be warranted to gain more clarity in interpreting this difference between rating and ranking pertaining to the priming condition.

Upward versus lateral comparison

The second hypothesis that individuals would judge an upward comparison target more favorably was supported by the current study. The regression analyses of comparison target ratings revealed a notable impact on the comparison target evaluations depending on whether the comparison target is an employed individual (upward target) or a college student peer (lateral target), with the exception of the female-things and female-people target. Examination of the means shows that upward targets were generally rated more highly. Additionally, an upward comparison target was selected as a participant's first choice at almost twice the rate of a lateral comparison target. When examining the rankings, the odds of selecting an upward comparison target versus a lateral comparison target was significant for all comparison targets, except for the female-people target, which also aligns with the rating for the female-people target. The preference for upward targets aligns with the idea that social comparison target level is impactful (e.g., Brown et al, 2007) and that upward comparison targets may be evaluated more favorably (e.g., Gibson & Lawrence, 2010).

These findings indicate that while college students most likely find themselves sharing similarities in age and education level with college student peers, when it comes to obtaining information about career prospects, participants tend to look more favorably upon individuals who are successfully employed in careers they may be considering. This is useful information for those who have developed career role model programs as well as for those who utilize measures like the Strong Interest Inventory, which bases its outcomes on currently successfully employed individuals (Hansen, 2013). This study also informs future examination of social comparison in

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career decision-making in that comparison target level deserves consideration and interpretation of its impact.

Individual differences

In examining the third hypothesis, which sought to determine individual differences in social comparison, participant characteristics of sex and gender self-concept would be expected to influence participant evaluations of the comparison targets given what has been discovered in previous research (e.g., Couch & Sigler, 2001; Zanna et al, 1975). While sex and gender self-concept had no significant impact on their evaluations of the career speakers, sex was a significant predictor of the rankings of the male-things and female-people target, masculinity was a predictor of the male-things and female-data targets, and femininity was a significant predictor of the male-people target in the current study. The trends seem to align with the idea of gender typicality of certain careers and vocational interests (e.g., Shinar, 1975; Glick, Wilk, & Perreault, 1995). It is stereotypical for males to like 'things' interests and females to like 'people,' and thus, individuals who are indicating their preferences for specific targets in relationship to one another use these ideas to ranking certain targets according to 'how appropriate' their vocational interests are for their sex.

In gaining a greater understanding of how this plays out in social comparisons in academic and occupational decision-making, it may be pertinent to explore how sex and/or gender self-concept may be more impactful in certain situations or occupations. Studies examining social comparison made on the basis of social identities (as in the case of gender) indicate these as important considerations for the motivation and selection of comparison targets (e.g., Blanton et al, 1999; Gibson & Lawrence, 2010), which may be more prevalent in certain

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domains when that identity is more salient. Therefore, exploration of sex and gender as dimensions in social comparison in 'gendered' occupations would be useful.

Furthermore, in the examination of participant interests as a predictor of comparison target evaluations, the impact of a participant's things-people interest dimension was a significant predictor in the evaluations of six of the targets in at least one regression model (i.e., female-ideas interests, male-ideas interests, female-people interest, male-people interest, female-data interest, and male-data interest), with a higher vocational interest in things predicting lower ratings. Although for some cases, the impact was no longer significant once the level of comparison (upward and lateral) and priming condition were added to the prediction equation, it did remain significant for the male-people and female-people targets. This same relationship did not appear in the ordinal regression model for rankings. While the data-ideas vocational interest dimension did not have an ability to predict target rating or ranking, there is partial support for Gottfredson's (1996) theory of circumscription and compromise in that people's own vocational interests influence which vocations they consider, and perhaps which comparison targets they consider as relevant to informing their vocational choices.

When trying to interpret why the things-people interest dimension could be impactful in comparison target ratings, it may be that participants with an interest in things as less 'people-oriented' and therefore, possibly perceive any potential comparison targets less favorably because they may not identify with them. Likewise, those individuals who have more people vocational interest may be more inclined to evaluate targets more favorably in general. This idea is supported by the rankings of the comparison targets. By the nature of ranking and choice, participants had to choose the order of preference and thus, everyone could not be evaluated equally.

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Given a the sample consisted mostly of females, who are typically more people-oriented, a larger sample of things-interested individuals and/or male participants could aid the understanding of the relationship of participant sex and vocational interest in the ability to predict targets evaluations on the basis of these dimensions. In the current study, examination of the correlations between participant sex and gender self-concept with vocational interests showed a positive relationships between people vocational interests and women and femininity. With more women undergraduates in psychology courses in this sample, people vocational interests were more prominent, and thus, seemed to be driving some of the comparison target evaluations. Further exploration is warranted in gaining greater understanding of the role of participant sex and vocational interests in academic and occupational decision-making.

It is also noteworthy that higher participant career aspiration was a marginal predictor of positive ratings for more than half of the comparison targets (i.e., male-data, female-data, male-people, and female-ideas). Additionally, career aspirations were a marginal predictor of the rankings for the male-things target and female-people target. Thus, the only target whose ratings or rankings could not be predicted with career aspirations was the female-people target. The correlations of participant variables also revealed a positive relationship between ideas interests and career aspirations. This could be demonstrating a potential relationship between participant higher aspirations being associated with certain career domains, which given what we know of occupational prestige could certainly be true (e.g., Gottfredson, 1996; Gray & O'Brien, 2007). While this study did not include an examination of the prestige level of career speakers, it would be useful to do so in future research. Additionally, the examination of how participant career aspirations and social status align with their vocational interests and how these characteristics can predict choice and evaluation of social comparison targets would be useful.

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The exploration of vocational identity as a predictor of comparison target evaluation also did not achieve significance as predicted. Given social comparison may occur more frequently when an individual is uncertain of where they stand in relationship to other people (Festinger, 1954), an individual who has lower vocational identity (i.e., certainty about their occupational pursuits) would be expected to engage in more social comparison behaviors, which would affect their target evaluations. Previous vocational research would support these conclusions (e.g., Holland et al, 1980; Li et al, 2015). While vocational identity was not predictive of comparison target evaluations, vocational identity did show significant relationships with masculinity and career aspirations. This may be an indicator that more 'goal-directed,' 'concrete,' or 'assertive' career behaviors have a relationship, but it is not clear how this would relate to social comparison behaviors in academic and occupational decision making. There exists potential for social comparison to be more relevant depending on the stage one is at in their career development, such as if they are going through a transition. However, the sample in this study was restricted to undergraduate students (mostly underclassmen), so the range of vocational identity would be fairly restrictive. Future research examining the impact of vocational identity in social comparison in career decision making would benefit from utilizing a more diverse sample in age range and career development levels.

Overall, more information is needed to further explore and find support for the third hypothesis. There was partial support on participant sex, gender self-concept, vocational interests and career aspirations, which aligns with individual differences in social comparison that have previously been explored in the literature (e.g., van der Zee et al, 1999; Gibbons & Buunk, 1999). However, a larger, more diverse sample would likely provide greater understanding of the

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individual differences among people making social comparisons in academic and occupational decision making.

Rating versus ranking comparison targets

Given the differences that have been described of the outcomes in predicting comparison target's rating versus ranking, it should be noted that possible differences that arise in how and what influences social comparison. By developing similar prediction models for both the rating and the ranking of the comparison targets, these analyses could be directly compared with one another in serving as a starting point to determining the best-fitting regression models. For the purposes of this paper, there were notable differences in predictor variables' impact. Specifically, when we examine the variables that consistently stood out in prediction of ratings, the priming condition influenced the prediction of every target but this influence was nonexistent for the rankings. The comparison target level and the participants' sex, gender self-concept, and career aspirations also seem to be more predictive in some cases but not in others. Additionally, the rating of the target was predictive of the ranking of that target in most cases but not in all. It would be expected for the evaluation of the target to subsequently influence how that target is ranked, but why this effect is not present for all ranked targets is unclear. It is likely that there are other variables which have influenced the rating and/or the ranking of these respective comparison targets. Further exploration is needed.

Given the ranking analyses of comparison targets, there is potential for understanding the 'key' characteristics that a participant may consider when selecting a social comparison target. Specifically, some regression models were able to predict more than one of the top ranked categories, but for the male-people target, this trend was reversed. The model was able to more accurately predict the considerations for choosing this target as sixth or lower. Returning to the

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idea of things-people vocational interests operating on a gendered dimension, the male-people target would actually represent what is atypical, and thus, it is easier to predict that people will reject this target as a top choice. Additionally, analyses of the first choice of participants revealed that females in relation to males were disproportionately more likely to pick a female-people target and males in relation to females were disproportionately more likely to select the male-things target. This aligns with the understanding of choices that people make and how they are influenced—when given a list of options, the top and bottom choices will be easier to make than the middle rankings, which are likely less distinguishable from one another. In some cases, these choices will go along with what is expected given gender roles and occupational expectations (e.g., Gottfredson, 1996; Couch & Sigler, 2001; Shinar, 1975).

Implications and Future Directions

This study informs career counseling in highlighting the importance of a client establishing self-awareness and understanding of their self-concept in exploring what is important to them in evaluating who 'should' be the best comparison targets in informing their own academic and occupational decisions. It is important that role models in professional role model programs and other comparison targets be relevant if they are to inform the person making the comparison. Those who design, implement, and study occupational role modeling programs, for example, would be served to have an understanding of how certain participant variables and expectations as well as role model characteristics may be influencing their effectiveness. Depending on the career domain and population, there are going to be important considerations on the role of impact of social comparison if role modeling programs are to accomplish their goals of providing support and encouragement to career decision-makers.

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In this study, the comparison targets varied only on sex, vocational interests, and comparison target level, but there are likely more aspects of a comparison target influencing how they are selected and evaluated. As noted previously, it is also possible that what is salient in one circumstance may not be salient in another circumstance of comparison target selection. Thus, it would be helpful to explore other aspects of a comparison target (e.g., occupational prestige, race/ethnicity) that may shape a person's evaluation of that target. Furthermore, in thinking about how comparison targets are evaluated, it is important to consider the characteristics of *who* is making the social comparison. In this sample, it should be noted a predominantly white, female, people-interested sample of college freshmen may not necessarily indicate how all social comparison targets may be evaluated. What is important for this sample may not be important for all people engaging in social comparisons in their academic and occupational decision making. By examining different populations, such as a group of employed persons or a more demographically diverse sample, there can be a greater understanding of the influences of social comparison in occupational decision-making.

As such, it would be helpful to continue to explore the social comparison motives endorsed most frequently by participants in this study. The endorsement of motives in this sample serve as a means for exploring further what drives individuals to compare themselves to others in the process of academic and occupational decision making. Assumptions have been made in the career role modeling literature that individuals want or need a career role model (e.g., Holland, 1966; Gibson, 2004; Lockwood, 2006). While the motive "because they serve as a role model" was the fourth most-frequently endorsed motive in this study, there was almost one-third of participant to whom this motive was not selected, which indicates that there could be differential expectations or impact of career role modeling programs. Other top motives endorsed

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by participants aligned with a combination of four of Helgeson & Mickelson's (1995) identified motives for social comparison—self-improvement, common bond, self-enhancement, and self-evaluation—indicating these motives, as in other areas that have been examined in the social comparison literature, are manifesting in academic and occupational decision-making. Given the nature of this decision-making process, it could be that some motives are more appropriate in certain instances than in others. Differences could also manifest depending on the characteristics of the person making the social comparison. It is clear that social comparison is operating in this process of academic and occupational decision-making. This study serves as a foundation for future exploration needed in gaining greater understanding of *why* individuals use social comparison in their career decision-making.

Summary and Conclusions

As has been noted there are various considerations to be made in what influences career decision-making and what facets of occupations are most prominent for career decision-makers. Noting that there is a need for examination of social comparison in vocational decision making (Grote & Hall, 2013; Li et al, 2015), this is one of few studies having examined social comparison in occupational choice. Thus, it is important to continue to examine an appropriate methodology for studying these constructs. It is clear that priming versus not priming and rating versus ranking show differences and therefore would be important areas to consider in future study development and data collection.

Given the differences in evaluation based on comparison target level, it is necessary to keep in mind when determining who and how social comparison targets are evaluated, and what motives may drive social comparisons with certain targets. Specifically, this study integrated

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gender and vocational interests into comparison target descriptions, and there was a differential impact of participant variables (i.e., career aspirations) on the evaluation of these targets. Further examination would be needed to understand why this is impactful for the evaluation of some targets, but not others. Understandably, this may be a reflection of the participants in this study. To understand what characteristics of comparison targets may be more important or salient to the person engaging in social comparison, a more diverse sample could be more conclusive. Overall, this study served to inform the development of the bridging of vocational theory and social comparison theory, and there remains much room for exploration within this domain. More work is needed to continue to development an understanding of the *who*, *what*, and *why* of social comparison in academic and occupational decision making.

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APPENDIX A

DEMOGRAPHICS QUESTIONNAIRE

1) Age: _____

2) Sex

Female
Male

3) What is your gender identity?

Man
Woman
Transman
Transwoman
Genderqueer
Other:_____

4) What is your ethnic/cultural identity? (Select all that apply)

Asian American/Pacific Islander
African American
Hispanic/Latino American
Native American/American Indian
White/European American
Other:_____

5) What is your sexual orientation?

Exclusively homosexual
Mostly homosexual
Bisexual/Pansexual
Mostly heterosexual
Exclusively heterosexual

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6) Student class standing:

Freshman
Sophomore
Junior
Senior

7) Current academic major: _____

8) Please, indicate how satisfied/dissatisfied you are with your current academic major.

Satisfied
Somewhat satisfied
Somewhat dissatisfied
Dissatisfied

9) List three careers you have considered:

1)_____2)_____3)_____

10) Which of these careers are you most interested in pursuing at this point?

_____

11) Indicate the highest level of education by an individual in your household who raised you.

No high school
High school diploma/GED
Some college
Technical certificate
Associate's degree
Bachelor's degree
Master's degree
MD, PhD, JD or other advanced degree

12) What is the combined annual income of individual(s) in your household?

Less than $10,000
$10,000-19,999
$20,000-29,999

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$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 and above

13) If you think about your past and present experiences, which label best describes your social class?

Lower class
Lower middle class
Middle class
Upper middle class
Upper class

14) Are you a first-generation college student (no one in your immediate family, except siblings, has earned a college degree)?

Yes
No

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APPENDIX B

ALTERNATE FORMS PUBLIC DOMAIN RIASEC MARKERS (ARMSTRONG, ALLISON, & ROUNDS, 2008)

Please rate how much interest you have in performing each activity listed below using the following scale: 1= Strongly Dislike, 2= Dislike, 3= Neutral, 4= Like, 5= Strongly Like.

Test the quality of parts before shipment
Study the structure of the human body
Conduct a musical choir
Give career guidance to people
Sell restaurant franchises to individuals
Generate the monthly payroll checks for an office
Lay brick or tile
Study animal behavior
Direct a play
Do volunteer work at a non-profit organization
Sell merchandise at a department store
Inventory supplies using a hand-held computer
Work on an offshore oil-drilling rig
Do research on plants or animals
Design artwork for magazines
Help people who have problems with drugs or alcohol
Manage the operations of a hotel
Use a computer program to generate customer bills
Assemble electronic parts
Develop a new medical treatment or procedure
Write a song
Teach an individual an exercise routine
Operate a beauty salon or barber shop
Maintain employee records
Operate a grinding machine in a factory
Conduct biological research
Write books or plays
Help people with family-related problems
Manage a department within a large company
Compute and record statistical and other numerical data

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Fix a broken faucet
Study whales and other types of marine life
Play a musical instrument
Supervise the activities of children at a camp
Manage a clothing store
Operate a calculator
Assemble products in a factory
Work in a biology lab
Perform stunts for a movie or television show
Teach children how to read
Sell houses
Handle customers' bank transactions
Install flooring in houses
Make a map of the bottom of an ocean
Design sets for plays
Help elderly people with their daily activities
Run a toy store
Keep shipping and receiving records

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APPENDIX C

MY VOCATIONAL SITUATION (HOLLAND, GOTTFREDSON, & POWERS, 1980)

Name_____ Date _____ M____ F____ Age_____
Education completed_____ Other_____
List all the occupations you are considering right now.
_____
_____
_____
_____

VI. Try to answer each of the following statements as mostly TRUE or mostly FALSE. Circle the answer that best represents your present opinion.
In thinking about your present job or in planning for an occupation or career:

1. I need reassurance that I have made the right choice of occupation.
2. I am concerned that my present interest may change over the years.
3. I am uncertain about the occupations I could perform well.
4. I don't know what my major strengths and weakness are.
5. The jobs I *can do* may not pay enough to live the kind of life I want.
6. If I had to make an occupational choice right now, I'm afraid I would make a bad choice.
7. I need to find out what kind of career I should follow.
8. Making up my mind about a career has been a long and difficult problem for me.
9. I am confused about the whole problem of deciding on a career.
10. I am not sure what my present occupational choice or job is right for me.
11. I don't know enough about what workers do in various occupations.
12. No single occupation appeals strongly to me.
13. I am uncertain about which occupation I would enjoy.
14. I would like to increase the number of occupations I could consider.
15. My estimates of my abilities and talents vary a lot from year to year.
16. I am not sure of myself in many areas of life.
17. I have known what occupation I want to follow for less than one year.
18. I can't understand how some people can be so set about what they want to do.

For question 19 and 20, circle YES or NO.
OI. 19. I need the following information:

How to find a job in my chosen career.
What kinds of people enter different occupations.
More information about employment opportunities.
How to get the necessary training in my chosen career.
Other:_____

B. 20. I have the following difficulties:

I am uncertain about my ability to finish the necessary education or training.
I don't have the money to follow the career I want most.
I lack the special talents to follow my first choice.
An influential person in my life does not approve of my vocational choice.
Anything else?_____

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Other comments or questions:

_____

_____

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APPENDIX D

CAREER ASPIRATIONS SCALE (O'BRIEN, 1996)

Please read the statements below and indicate how accurately each statement applies to you, using the following scale: Not at All True of me, Slightly True of me, Moderately True of me, Quite a Bit True of me, Very True of me. If the statement does not apply, please indicate Not at All True of me. Please be completely honest. Your answers are entirely confidential and will be useful only if they accurately describe you.

1. I hope to become a leader in my career field.
2. When I am established in my career, I would like to manage other employees.
3. I would be satisfied just doing my job in a career I am interested in.
4. I do not plan to devote energy to getting promoted in the organization or business I am working in.
5. When I am established in my career, I would like to train others.
6. I hope to move up through any organization or business I work in.
7. Once I finish the basic level of education needed for a particular job, I see no need to continue in school.
8. I plan on developing as an expert in my career field.
9. I think I would like to pursue graduate training in my occupational area of interest.
10. Attaining leadership status in my career is not that important to me.

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APPENDIX E

BEM SEX ROLE INVENTORY (BSRI; BEM, 1974)

Please indicate how well each of the following characteristics describes you. The scale ranges from 1 ("Never or almost never true") to 7 ("Almost always true").

Self-reliant
Yielding
Helpful
Defends own beliefs
Cheerful
Moody
Independent
Shy
Conscientious
Athletic
Affectionate
Theatrical
Assertive
Flatterable
Happy
Strong personality
Loyal
Unpredictable
Forceful
Feminine
Reliable
Analytical
Sympathetic
Jealous
Leadership ability
Sensitive to others' needs
Truthful
Willing to take risks
Understanding
Secretive
Makes decisions easily
Compassionate
Sincere

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Self-sufficient
Eager to soothe hurt feelings
Conceited
Dominant
Soft spoken
Likable
Masculine
Warm
Solemn
Willing to take a stand
Tender
Friendly
Aggressive
Gullible
Inefficient
Acts as a leader
Childlike
Adaptable
Individualistic
Does not use harsh language
Unsystematic
Competitive
Loves children
Tactful
Ambitious
Gentle
Conventional

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APPENDIX F

PARTICIPANT SOCIAL COMPARISON INFORMATION

College students often identify a person to whom they can compare themselves to determine which career path is a good fit for them, how they are doing on their current academic and career path, and how they will fare in a certain occupation. These social comparisons in career decision making are quite common. We would like to know more about your social comparisons in career decision making.

1) What characteristics of people with whom you compare your academic and career choices are important to you? Please, rate the level of importance of each characteristic from 1 (*not at all important*) to 7 (*very important*).
    i. Age.
    ii. Academic major.
    iii. Education level.
    iv. Occupation.
    v. Income.
    vi. Gender.
    vii. Race/Ethnicity.
    viii. Social class.
    ix. Sexual orientation.
2) In thinking about your own career decision making, take a moment to think about why these comparisons with other people are valuable to you. In thinking about social comparisons you make regarding your academic and career choices, reasons you make comparisons with others include: (Check all that apply)

So you can get better
To give you a goal
To improve your own situation
Because they serve as role models
For empathy and support
So you won't feel alone or isolated
To share experiences
Because you have things in common
To make yourself feel better
To feel good about your own situation
To convince yourself you’re not like them
To reassure you about your own situation
To see how you’re doing
To provide insight into your own situation
To see if you’re making the right choices
To confirm your career choice

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3) Sometimes individuals find it helpful to learn about the kinds of people entering different occupations. What information about other people entering occupations would be helpful to you? Rate the level of importance from 1 (not at all important) to 5 (very important).

Gender demographics (percentage of women and men) for occupations
Average education level of individuals in occupations
Typical personality characteristics of individuals in that occupation
Average income of individuals in that occupation
Average college grade point average of individuals in that occupation
College major(s) of individuals in that occupation
Racial/ethnic demographics of individuals in that occupation
Average age of individuals in that occupation
Outside hobbies/interests of individuals in that occupation

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APPENDIX G

CAREER SPEAKER INFORMATION AND EVALUATION

Primed Condition

Your former high school is in the planning stages of a Career Exploration Day for their students and is considering bringing in people to speak to students about their own academic and occupational paths. Your former high school is hoping to gain a variety of perspectives and would like to know which speakers may be the most useful for the students. As a college student who attended this high school, you are being asked to provide your input on these speakers. You will be given brief descriptions of prospective career speakers and asked to answer a few questions about each speaker. As you are evaluating each prospective speaker, please keep in mind what would have been helpful for you when you were attending this high school.

Evaluative questions

1. Please, indicate how well each of the following words describes this person from 1 (*not at all*) to 9 (*very*).
    a. Bright
    b. Skillful
    c. Incompetent (reverse scored)
    d. Capable
    e. Unintelligent (reverse scored)
    f. Successful
2. Please, rate the following statements about the career speaker from 1 (*strongly disagree)* to 9 (*strongly agree).*
    a. This person is relevant to me gaining more occupational information.
    b. I want to learn more about this person's academic and career path.
    c. I can see myself pursuing the same academic and career path as this person.
    d. This person would provide educational value for the Career Exploration Day.

Career Speaker Ranking

Now that you have read about all of the prospective career speakers, please rank them according to how useful they would be for the students at your high school. Again, keep in mind who would be the most helpful for you if you were one of these high school students.

Most Helpful Speaker: _____

_____

_____

_____

_____

_____

_____

Least Helpful Speaker: _____

Unprimed Condition

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Your former high school is in the planning stages of a Career Exploration Day for their students and is considering bringing in people to speak to students about their own academic and occupational paths. Your former high school is hoping to gain a variety of perspectives and would like to know which speakers may be the most useful for the students. As a college student who attended this high school, you are being asked to provide your input on these speakers. You will be given brief descriptions of prospective career speakers and asked to answer a few questions about each speaker.

Evaluative questions

3. Please, indicate how well each of the following words describes this person from 1 (*not at all*) to 9 (*very*).
    a. Bright
    b. Skillful
    c. Incompetent (reverse scored)
    d. Capable
    e. Unintelligent (reverse scored)
    f. Successful
4. Please, rate the following statements about the career speaker from 1 (*strongly disagree)* to 9 (*strongly agree).*
    a. This person is relevant to students gaining more occupational information.
    b. Students will want to learn more about this person's academic and career path.
    c. Students will want to pursue the same academic and career path as this person.
    d. This person would provide educational value for the Career Exploration Day.

Career Speaker Ranking

Now that you have read about all of the prospective career speakers, please rank them according to how useful they would be for the students at your high school.

Most Helpful Speaker: _____

_____

_____

_____

_____

_____

_____

Least Helpful Speaker: _____

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APPENDIX H

CAREER SPEAKER DESCRIPTIONS

Group 1 Descriptions

Male/Lateral/Data

Matthew is a student at ISU and reports being very satisfied in his major. He is getting good grades and likes his professors. When he graduates, he plans to pursue a career in which his daily work tasks will include examining the validity and accuracy of data and looking for trends in the data he collects.

Male/Upward/Ideas

Brandon has been employed at the same company for five years. His typical day at work requires him to implement his logic and reasoning skills as well as his creativity in designing and developing new materials. He reports being very happy in his job and has consistently received positive reviews from his supervisor.

Male/Lateral/People

Jacob is a student at ISU. He likes the professors, is doing well in his classes, and reports being very satisfied in his major. When he graduates, he plans to pursue a career in which he will work collaboratively with other people and draw upon his communication skills to satisfy the demands of the job.

Male/Upward/Things

Tyler has been employed at the same company for six years and has consistently received positive evaluations from his supervisor. His daily work tasks require him to utilize his technical skills and materials knowledge in putting together and repairing operating systems. He really enjoys the hands-on nature of his work.

Female/Lateral/Data

Emily is a student at ISU. She likes the professors, is doing well in her classes, and reports being very satisfied in her major. Her ideal job would involve her use of critical thinking and research competencies. After she graduates, she would like her daily work to include gathering information and using objective data to solve problems.

Female/Upward/Ideas

Amanda has been an employee at the same company for six years. Her typical work tasks include designing and creating new materials and using logic and reasoning to examine the information she has gathered and develop alternative solutions. She has consistently received positive evaluations from her supervisor and really enjoys her work.

Female/Lateral/People

Sarah is a student at ISU and reports being very satisfied in her major. She is getting good grades and likes her professors. When she graduates, she plans to pursue a career in which her daily work tasks will require her to utilize her communication skills in the training of, collaboration with, and service to other people.

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Female/Upward/Things
Brittany has been employed with the same company for five years. She reports being very satisfied in her career. She draws upon her technical skills and attention to detail to satisfy the demands of her job, which involves using her hands and putting equipment together. She has consistently received positive evaluations from her supervisor.

Group 2 Descriptions
Male/Upward/Data
Joshua has been employed at the same company for five years and has consistently received positive reviews from his supervisor. His typical work tasks involve researching and examining data, verify its accuracy and looking for trends. He enjoys putting his critical thinking skills to work every day and is very happy in his job.

Male/Lateral/Ideas
Christopher is a student at ISU. He likes the professors, is doing well in his classes, and reports being very satisfied in his major. When he graduates, he plans to pursue a career in which he will be able to design and create new materials. His ideal job would involve using his creative competencies and generating new ideas.

Male/Upward/People
Nicholas has been employed at the same company for five years and reports being very happy in his job in working with others. His typical day requires him to draw upon his interpersonal abilities in communicating effectively and collaborate with other people. He has consistently received positive evaluations from his supervisor.

Male/Lateral/Things
Michael is a student at ISU. He likes the professors, is doing well in his classes, and reports being very satisfied in his major. His ideal job would require him to utilize his mechanical and technical abilities. He would prefer a job in which he can work with his hands, such as putting equipment together and other practical work tasks.

Female/Upward/Data
Hannah has been employed with the same company for five years. She reports being very satisfied in her career, and she has consistently received positive evaluations from her supervisor. Her daily work tasks require her think critically as she verifies the accuracy and validity of data, looking for trends and patterns in the data she collects.

Female/Lateral/Ideas
Ashley is a student at ISU. She likes the professors, is doing well in her classes, and reports being very satisfied in her major. Her ideal job would involve developing and examining new ideas. She wants to observe and examine information from a variety of sources and apply new knowledge in her job.

Female/Upward/People

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Samantha has been employed with the same company for five years. She has consistently received positive evaluations from her supervisor. Her daily work tasks require regular interaction with colleagues and the people her company serves. She reports enjoying her work, especially communicating and collaborating with other people.

Female/Lateral/ Things

Jessica is a student at ISU. She likes the professors, is doing well in her classes, and reports being very satisfied in her major. She plans to pursue a career that involves practical work tasks that allow her to work with her hands by putting machines together and operating technical equipment. She hopes to be able to apply her technical skills to her daily work.

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APPENDIX I

INFORMED CONSENT DOCUMENT

INFORMED CONSENT DOCUMENT

Title of Study: Influences on Academic and Career Choice

Investigators: Elizabeth TenBrook, M.P.A.

Patrick Ian Armstrong, Ph.D., Caitlin Anderson, B.A.

This is a research study being conducted by the Identity Development Laboratory, Department of Psychology, Iowa State University. Please take your time in deciding if you would like to participate. Please feel free to ask questions at any time. As indicated in our course syllabus, participation in experiments is one option for earning experimental credit.

INTRODUCTION

The purpose of this study is to learn more about the career choices people make. This study will examine how people gain information about different occupations and work environments and how this information impacts their occupational choice. In this study, you will be asked to provide information about your academic and career decisions.

You are being invited to participate in this study because you are currently enrolled as a study at Iowa State University. You should not participate if you are under age 18.

DESCRIPTION OF PROCEDURES

If you agree to participate, you will be asked to complete an online survey. One week after completing this first part, you will receive an e-mail with a link to the remaining portion of the study, also to be completed online. Your participation will last for 60 minutes total—30 minutes for the first part and 30 minutes for the second part.

RISKS

While participating in this study you may experience the following risks or discomforts: There are no know physical, legal, pain, or privacy risks in this study. This study may be inconvenient due to the time it takes to complete the assessments. Although unlikely, there is also the potential for minimal psychological and emotional discomfort as you complete the vocational and personality assessments. Completing these assessments may bring up questions for you about career exploration, career decision-making, or your personality. To minimize these risks, you will receive contact information for career exploration and counseling services in case you would like to seek

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out these services. You may end your participation at any time. You may skip and question that you do not wish to answer or that makes you feel uncomfortable.

BENEFITS

If you decide to participate in this study, there will be no direct benefit to you. It is hoped that the information gained in this study will benefit society by contributing to the understanding of vocational and personality assessments and to the understanding of career choices. In addition, this information may provide career counselors with increased knowledge of the assessments they use in helping people make career-related decisions. Ultimately, the information gained in this study could benefit clients in career counseling.

COSTS AND COMPENSATION

You will not have any costs associated with participation in this study. You will receive SONA credits as compensation for your time to complete the assessments for this study. You will receive one SONA credit for completing the first part of the study and one SONA credit for completing the second part of the study.

PARTICIPANT RIGHTS

Your participation in this study is completely voluntary. You may choose not to take part in the study or to stop participating at any time, for any reason. You can skip any questions that you do not wish to answer. If you decide not to participate in this study or to leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled. To earn research credits for your course, there are alternatives to completing the study that are described in your course syllabus.

CONFIDENTIALITY

Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, federal government regulatory agencies, auditing departments of Iowa State University, and the Institutional Review Board (a committee that reviews and approves human subject research studies) may inspect and/or copy study records for quality assurance and data analysis. These records may contain private information.

To ensure confidentiality to the extent permitted by law, the following measures will be taken. Participants will be assigned a unique code. Participants' name and study number will be removed once this code is assigned and data has been entered. Only the faculty member and research assistants on this project will have access to the data. The data will be stored in locked offices and labs. Raw data will be stored for five years after the results are published and then will be destroyed. Your individual answers will be combined with those obtained from other participants and reported as a group. If the results are published, your identity will remain confidential.

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QUESTIONS OR PROBLEMS

You are encouraged to ask questions at any time during this study.

- For further information ***about the study,*** contact Patrick Armstrong, Ph.D., at 515-294-8788, pia@iastate.edu.
- If you have any questions *about the rights of research subjects or research-related injury*, please contact the IRB Administrator, (515) 294-4566, IRB@iastate.edu, or Director, (515) 294-3115, Office for Responsible Research, Iowa State University, Ames, Iowa 50011.

PARTICIPANT SIGNATURE

Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document, and that your questions have been satisfactorily answered. You will receive a copy of the written informed consent prior to your participation in the study.

Participant's Name (printed): _____

Participant's Student Number: _____

_____ _____

(Participant's Signature) (Date)

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APPENDIX J

DEBRIEFING FORM

Influences on Academic and Career Choice
Study Information and Debriefing Form
Patrick Ian Armstrong, Ph.D. & Elizabeth TenBrook, M.P.A.

Thank you for participating in the Influences on Academic and Career Choice study. We asked for your participation in this study because you are currently enrolled in a psychology class Iowa State University. This study is an investigation of the use of social information and social comparisons made by those making decisions and evaluations of academic and occupational choice conducted by Patrick Armstrong, Ph.D. and Elizabeth TenBrook, M.P.A., from the counseling psychology program, Department of Psychology, Iowa State University.

The aim of this study is to learn more about the career choices people make. The purpose of this study is to understand the social influences on individuals' career choice. Specifically, the aim is to explore how individuals develop an understanding of occupational fit by comparing themselves with other people. The goal will be to understand the relevant dimensions of people identified for comparison and subsequent impact of these comparisons on career choice.

It is hoped that the information gained in this study will contribute to a greater understanding of vocational perceptions and to the understanding of career choices that individuals make. The expectation is that this study will also advance knowledge in the fields of social comparison theory and vocational theory, with the hope that this study will yield new information about how these theories on human behavior intersect and inform career counselor interventions. Ultimately, the information gained in this study could benefit clients in career counseling and individuals who are making important educational and career-related choices.

Please remember that your participation in this study is completely voluntary and that you may withdraw from this study at any time, for any reason. Your decision to participate or not participate in this study will not have an effect on your grade in any course you take as a student at Iowa State University. As mentioned before, all responses will be kept confidential. Your responses will be kept in a locked cabinet, in a locked office, and on password protected computers. Raw data will be stored for five years after the results are published and then will be destroyed. Your individual answers will be combined with those obtained from other participants and reported as a group. If the results are published, your identity will remain confidential.

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If you have any concerns about this study, please direct your questions to Patrick Armstrong, Ph.D. at 515-294-8788, pia@iastate.edu. If participation in this study raised personal concerns that you would like to discuss with a counselor, there are community resources listed below.

Community Resources

Student Counseling Services: 3rd Floor Student Services Building, 294-5056

Eyerly Ball Community Mental Health Services: 2521 University Blvd, Suite 121, 290-3642

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APPENDIX K

IRB APPROVAL DOCUMENT

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
1138 Pearson Hall
Ames, Iowa 50011-2207
515 294-4566
FAX 515 294-4267

Date: 10/1/2015

To: Elizabeth TenBrook
W112 Lagomarcino Hall

CC: Dr. Patrick Armstrong
W237 Lagomarcino Hall

From: Office for Responsible Research

Title: Influences on Acedemic and Career Choices

IRB ID: 15-517

Approval Date:	10/1/2015	**Date for Continuing Review:**	9/30/2017
Submission Type:	New	**Review Type:**	Expedited

The project referenced above has received approval from the Institutional Review Board (IRB) at Iowa State University according to the dates shown above. Please refer to the IRB ID number shown above in all correspondence regarding this study.

To ensure compliance with federal regulations (45 CFR 46 & 21 CFR 56), please be sure to:

- **Use only the approved study materials** in your research, **including the recruitment materials and informed consent documents that have the IRB approval stamp**.
- **Retain signed informed consent documents for 3 years after the close of the study,** when documented consent is required.
- **Obtain IRB approval prior to implementing any changes** to the study by submitting a Modification Form for Non-Exempt Research or Amendment for Personnel Changes form, as necessary.
- **Immediately inform the IRB of** (1) **all serious and/or unexpected adverse experiences** involving risks to subjects or others; and (2) **any other unanticipated problems involving risks** to subjects or others.
- **Stop all research activity if IRB approval lapses**, unless continuation is necessary to prevent harm to research participants. Research activity can resume once IRB approval is reestablished.
- **Complete a new continuing review form** at least three to four weeks prior to the **date for continuing review** as noted above to provide sufficient time for the IRB to review and approve continuation of the study. We will send a courtesy reminder as this date approaches.

Please be aware that IRB approval means that you have met the requirements of federal regulations and ISU policies governing human subjects research. **Approval from other entities may also be needed.** For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **IRB approval in no way implies or guarantees that permission from these other entities will be granted.**

Upon completion of the project, please submit a Project Closure Form to the Office for Responsible Research, 1138 Pearson Hall, to officially close the project.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.

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