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Career Decision-Making within the College Social Microcosm: Social Value Determinants, Self-Enhancement Bias, and Psychological Needs

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Career decision-making within the college social microcosm: Social value determinants,

self-enhancement bias, and psychological needs

by

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On a personal level, I can't claim sole responsibility for any of my achievements. The only reason I've been able to reach any life goals is because of the unconditional love and support I constantly receive from my family and friends.

ABSTRACT

Social Cognitive Career Theory posits a career decision-making model conceptualized within the person's larger social context, defined by supports and barriers (Lent et al., 2000). The present investigation combined social and vocational psychology in order to examine the college social microcosm and its relations to career decision-making. Study 1 ($N = 433$) presented participants with two fictional student vignettes to examine whether the college social microcosm is comprised of interpersonal social phenomena found in other sociocultural settings, such as stereotypes and biases. Results revealed that a student certain about his/her academic major was judged significantly more positively than a student who was uncertain. The medium effect of this difference ($d = 0.71$) provides strong evidence that negative social bias is occurring in the college environment. Unexpectedly, the certain student was also judged more negatively. This effect was driven by participants high in subjective career distress; they rated the certain student more negatively than the uncertain student. Self-enhancement motives may have contributed to these results. Study 2 compared effects of two experimental manipulations of social exclusion (career-based, $n = 46$; personal, $n = 46$) to career-based inclusion ($n = 56$) on Williams' (2009) basic psychological needs (belonging, sense of control, state-self-esteem, and meaning in life) and subsequent effects on career decision-making self-efficacy and vocational outcome expectations, per Social Cognitive Career Theory (Lent, Brown, & Hackett, 2000). Both types of exclusion led to significantly lower levels of belonging, sense of control, state self-esteem, and meaning in life compared to career-based inclusion. Belonging, sense of control, and meaning in life made significant contributions to both vocational variables; however, exclusion/inclusion status did not significantly influence the vocational variables. There were no differences between type of social exclusion. Conclusions and implications are discussed.

CHAPTER ONE
OVERVIEW

The study of career decision-making has progressed to allow for an expanded, overarching view of the process (Lent, Brown, & Hackett, 2000; Sharf, 2013). This broader perspective takes into account social and contextual variables to help explain the way individuals move forward in their career development. Social Cognitive Career Theory (SCCT; Lent, Brown, & Hackett, 1994, 2002) is one example of a model that seeks to explain interest development, the career choice process, and performance in the context of one's environment. The SCCT career decision-making theory is of most interest to the present discussion. It emphasizes not only individual difference factors, but also the environmental factors inextricably linked to the person and his or her career-related thoughts and behavior.

Social Cognitive Career Theory Model of Career Choice

This model stems from adaptations of Bandura's Social Cognitive Theory (1986) to career decision-making (CDM), focusing most heavily on three main variables as personal determinants of CDM: Self-efficacy, outcome expectations, and personal goals (Lent et al., 2002). These three CDM "building blocks" theoretically enable people to exercise personal control over their CDM processes, and interact with each other within the individual's environmental context (Lent et al., 2000).

The model posits that learning experiences first influence self-efficacy and outcome expectations, which in turn affect interests, choice goals, and choice actions (Lent et al., 2002; Sharf, 2013). It is an iterative process that SCCT theorists emphasize occurs within the contextual factors of an individual's larger environment. As CDM does not occur in a vacuum of ideal circumstances, barriers are included in the model (Lent et al., 2000, 2002). They can take the form of background contextual factors (e.g., gender roles expectations, culture) or proximal

contextual influences (e.g., financial constraints, academic barriers), and ultimately influence how the CDM process unfolds for a given individual (Lent et al., 2000). While the SCCT CDM framework is comprehensive and inclusive of factors influencing the progression of individuals' idiosyncratic CDM processes, the present investigation focused exclusively on barriers as contextual factors influencing two of the variables, career decision-making self-efficacy and vocational outcome expectations.

Barriers in Social Cognitive Career Theory

A review of the SCCT barriers literature suggests barriers are not well understood (Lent et al. 2000). Examples of barriers are financial stress, pressure from parents, academic constraints, racial biases, and gender biases in certain academic majors. In the literature they have been measured as perceived retrospective barriers (e.g., educational barriers subscale of Perception of Barriers Scale; Luzzo & McWhirter, 2001), anticipated future barriers (e.g., career barriers subscale of Perception of Barriers Scale; Luzzo & McWhirter, 2001), and likelihood of encountering barriers (e.g., Contextual Supports and Barriers Scale; Lent et al., 2001). Consistent with the SCCT CDM model, barriers have been significantly related to person inputs (e.g., gender; Raque-Bogden et al., 2013), career-related self-efficacy (e.g., Kim & Seo, 2014), career-related outcome expectations (e.g., Inda, Rodríguez, & Peña, 2013), and choice goals (e.g., Constantine, Wallace, & Kindaichi, 2005). However, some studies have produced findings opposite of what the SCCT CDM model predicts, such as positive relations between anticipated career barriers and vocational outcome expectations (e.g., Lindley, 2005). Still others have produced null findings, such as between anticipated career barriers and career decision-making self-efficacy (e.g., Duffy, Diemer, & Jadidian, 2012). Further research is needed to better

understand the relation between barriers and SCCT variables in order to better understand how barriers influence the career decision-making process.

An additional critique of the literature examining barriers in the SCCT CDM model is the indirect measurement methodology in which barriers are retrospectively reported, prospectively anticipated, or estimated based on fictional scenarios. The present investigation proposed a potential alternative to the current barriers measurement methodology that would add experimental causality to our understanding of barriers in career decision-making. Instead of assessing for barriers individuals have experienced or anticipate experiencing, experimentally manipulating a potential barrier involved in the CDM process would allow direct examination of causal effects on subsequent SCCT variables. The present investigation proposed one potential contextual barrier to CDM inherent in the social environment in which college students are immersed.

Social Environment as a Contextual Barrier in Career Decision-Making

Lent and colleagues (2000) stated "individuals are invariably affected by aspects of the objective and perceived large environment" (p. 45). The environment, comprised of many contextual factors, can present both barriers and supports for individuals as they navigate the CDM process theorized by SCCT (Lent et al., 2002). College students are a unique population in that they are immersed both in CDM and the distinctive college environment. This environment is also an inherently social one. Given that social barriers (e.g., gender stereotyping for women in engineering) have been shown to significantly influence self-efficacy and outcome expectations (e.g., Inda et al., 2013), could the social environment of college undermine students' career decision-making by negatively influencing self-efficacy and outcome expectations?

The College Social Environment

College students are faced with many new social experiences as they navigate choosing academic majors, taking classes toward those majors, and eventually graduating and entering their chosen career fields. These tasks are central to the college experience. However, students often do not have the luxury of tackling those tasks in ideal conditions. They are immersed within the larger social context of the college environment. Upon meeting new people, "What's your name?" is followed immediately by, "What's your major?" When the latter question is so salient in the college environment, how do students feel if they do not yet have majors with which to answer? Does it feel like they are being socially excluded? Until now, no research has examined whether the social context of college influences aspects of the career decision-making process in students. Building toward the present investigation, social psychology provides an empirically-supported foundation from which these questions can be examined: Social exclusion.

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Overview of Social Exclusion

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Decades of psychological research into human behavior and evolution have established that human beings are fundamentally social creatures (Baumeister, Masicampo, & Twenge, 2013). Social belonging has been identified as an important aspect of many fitness-relevant behaviors, such as child-rearing, mate acquisition, and self-protection (Neuberg et al., 2010). We have evolved to be highly attuned to potential or perceived social exclusion, precisely because belonging is so influential to our survival and, consequently, everything survival affords us. However, once we introduce the nuanced complexity of human thought and behavior into this relatively simple adaptive system, our responses to social exclusion become less straightforward.

Experimental research has found varied reactions to social exclusion that illustrate the complexity of human social behavior. Some studies have found that social rejection creates

feelings of hurt, anger, and sadness (e.g., Vangelisti, Young, Carpenter-Theune, & Alexander, 2005); while others have found emotional numbing responses (e.g., Twenge, Catanese, & Baumeister, 2003). People often behave in prosocial ways in order to reconnect with others (e.g., Maner, DeWall, Baumeister, & Schaller, 2007), but equally as often they act in aggressive and antisocial ways to create safe distance from others (e.g., Leary, Twenge, & Quinlivan, 2006; Warburton, Williams, & Cairns, 2006). Williams (1997, 2001, 2009) proposed a need-threat model of ostracism in an effort to guide our understanding of the complex human behavior that occurs in response social exclusion.

Williams' Need-Threat Model

Williams (2009) revised and elaborated on his initial ostracism model (1997, 2001) in order to comprehensively capture our human response to social exclusion. Largely based on social evolutionary theory, Williams proposed four major stages involved after a social exclusion experience. The first is an initial detection of social exclusion, which, Williams (2009) posited likely involves over-detection due to the high cost of mistakenly overlooking signs of exclusion. Second is the reflexive stage (Williams, 2009), which first involves a reflexive psychological pain response thought to have adapted similarly to the way physical pain alerts us to threats to our physical bodies (Neuberg et al., 2010; Williams, 2009). Following the reflexive pain response, and most pertinent to the present study, is the sense that four specific fundamental needs are being threatened (Williams, 2009): Belonging, perceived control, self-esteem, and meaning. When these four needs have been targeted through threatening research paradigms, they have been linked to harmful psychological outcomes (Baumeister & Leary, 1995; Williams, 2009). Clinical depression, for example, has been related to deficits in all four needs (Allen & Badcock, 2003; Baumeister & Leary, 1995; Myoshi, 2001).

The third stage in Williams' (2009) model, the reflective stage, involves cognitive appraisal of the ostracism event, the associated pain, and awareness of threatened needs. During this stage, individuals can begin attempts to restore threatened needs. They often engage in behaviors aimed, consciously or otherwise, at increasing their likelihood of being socially accepted (e.g., Lakin et al., 2008), increasing self-esteem (e.g., Gardner, Jefferis, & Knowles, 2009), regaining a sense of control over aspects of the situation (e.g., Williams, 2005), or ensuring others recognize their existence as meaningful (e.g., Maner et al., 2007). The final stage of Williams' (2009) model, the resignation stage, was added to emphasize the detrimental effects of chronic experiences of social exclusion. Persistent ostracism over time, theoretically through chronic depletion of the four fundamental needs, has been found to result in feelings of alienation, unworthiness, helplessness, and depression (e.g., Zadro, Williams, & Richardson, 2004).

Williams' (2009) need-threat model posits the effects of social exclusion are mediated by inevitable threats to four basic human needs: Belonging, control, self-esteem, and meaning. The need of belonging is defined as the need to experience frequent and caring interactions with people (Baumeister & Leary, 1995). It is central to social exclusion research, as experiments have been specifically designed to threaten belonging (Baumeister & Leary, 1995; Williams, 2007). The need for control is defined as the perceived ability to influence or effect change in a situation or environment (Williams, 2009). One's perceived sense of control can influence how one approaches and acts within a given situation (Lachman & Weaver, 1998). The need for self-esteem is defined as an affective self-evaluation of one's personal worth (Leary, 2005; Rosenberg, 1965). Finally, the need for a meaning is defined as the need to believe one has

purpose and value in his or her life, as well as meaningful interactions with the world (Williams, 2001).

Meta-analytic evidence (Gerber & Wheeler, 2009) supports William' need-threat model, in that these four needs are significantly, reliably threatened after social exclusion experimental manipulations. Compared to non-excluded participants, socially excluded participants consistently reported significantly lower levels of belonging ($d = -0.69$, $k = 39$, $p = .0008$, 95% CI = -1.09, -0.29), control ($d = -1.16$, $k = 53$, $p < .00005$, 95% CI = -1.39, -0.94), self-esteem ($d = -0.70$, $k = 36$, $p < .00005$, 95% CI = -0.84, -0.57), and meaning ($d = -1.60$, $k = 24$, $p < .00005$, 95% CI = -2.02, -1.18). These robust effects provide substantial evidence that these four needs are negatively affected by social exclusion events. While social exclusion has not yet been investigated in the context of SCCT or CDM, Williams' four threatened needs are not entirely novel constructs in the CDM literature.

Williams' Basic Needs & Career Decision-Making

Social exclusion has produced robust significant effects on people's senses of belonging, control, self-esteem, and meaningful existence in the experimental research that has emerged largely in the past two decades (Gerber & Wheeler, 2009). Constructs related to belonging, control, self-esteem, and meaning have also been significantly associated with variables in the SCCT CDM framework. It is possible social exclusion could serve as a contextual barrier in the SCCT CDM framework. By threatening belonging, control, self-esteem, and meaning, social exclusion could impede career decision-making in college students. The social environment of college could be making career decision-making process difficult for those that feel excluded. In order to test this possibility, a social exclusion experimental paradigm will be used to operationalize one potential aspect of the college social environment.

The Present Investigation

Many operational definitions could be used as potential analogues to barriers inherent in a social environment. However, the present investigation proposed social exclusion as an experimental paradigm to test how one aspect of a social environment can influence CDM within the SCCT framework. Research related to social exclusion has found that the shared experiences and characteristics of members within a social group determine the standards for relational value (Hogg, 2006). Though comprised of many students and diffuse individual differences, American college students all have at least one thing in common: An academic major. In an environment designed specifically for career preparation, might an unclear career goals make one feel out of place?

MacDonald, Saltzman, and Leary (2003) demonstrated that people's self-evaluations of particular parts of their identities were significantly directly related to trait self-esteem, but only when they believed those particular features were relevant to social acceptance in a given context. It may be that in the college environment where career is made highly salient, students perceive their academic majors or other aspects of their career identities as relevant to social acceptance. If this is the case, how might anticipated or experienced social exclusion – e.g., being a college student without a major – affect CDM?

College student CDM does not occur in a vacuum (Lent et al., 2000). They are navigating this important process in the greater context of the college social environment. Grounded in SCCT (Lent et al., 2002) and Williams' (2009) need-threat model, the present investigation sought to test whether the social environment of college (manipulated using a social exclusion paradigm) could serve as a contextual barrier that negatively affects career decision-making self-efficacy and vocational outcome expectations. The overarching hypothesis was that the threat of

social exclusion, by negatively influencing students' needs for belonging, control, self-esteem, and meaning (per Williams' model), would serve as a proximal contextual barrier negatively affecting college students' career decision-making self-efficacy and career outcome expectations. To test this overarching hypothesis, the present investigation tested four hypotheses using two separate experiments.

Study 1

The first aspect of the overarching hypothesis of the present investigation empirically tested whether there was any threat of social exclusion related to career decision-making in the college social environment. In order to test this, Study 1 focused on the most proximal CDM task for college students: Choosing an academic major. A sample of college students was presented with two descriptions of fictional students: One who was certain about his or her major, and one who was uncertain. Participants were asked to rate each fictional student on various positive and negative characteristics. This paradigm was used previously to assess individuals' attitudes toward various targets in social psychological research (Greenberg, Simon, Pyszczynski, Solomon, & Chatel, 1992).

Hypothesis 1. If a lack of academic major clarity is socially devalued in the college environment, the uncertain student description compared to the certain student description would be rated significantly lower on positive characteristics and significantly higher on negative characteristics. These results would provide evidence that lacking an academic major as a college student is socially devalued and, thus, socially undesirable.

In addition, potential effects of self-enhancement were examined by analyzing participants' own levels of academic major certainty and subjective career distress. Aspects of participants' own career decision-making experiences may influence their judgments of the

certain and uncertain student vignettes in the direction opposite of Hypothesis 1 (i.e., participants devalue the certain student over the uncertain student). Hypothesis 2 examined two participant variables (academic major certainty and subjective career distress) as possible precipitants to self-enhancement bias in response to the posited social devaluation of uncertainty examined through Hypothesis 1. Self-enhancement is conceptualized as a self-protective reaction aimed at fostering or maintaining a positive view of oneself or one's self-identified group (Crocker & Major, 1989). In the context of Study 1, self-enhancement bias was hypothesized to occur for participants who reported low levels of academic major uncertainty or high levels of subjective career distress.

Hypothesis 2a. If students are engaging in self-enhancement bias based on academic major certainty, participants lower in academic major certainty will rate the certain student (compared to the uncertain student) significantly lower on positive traits and higher on negative traits. Participants higher in academic major certainty will show the effect predicted by Hypothesis 1, in which the certain student (compared to the uncertain student) is rated significantly higher on positive traits and lower on negative traits.

Hypothesis 2b. If students are engaging in self-enhancement bias based on subjective career distress, participants higher in subjective career distress will rate the certain student (compared to the uncertain student) significantly lower on positive traits and higher on negative traits. Participants lower in subjective career distress will show the effect predicted by Hypothesis 1, in which the certain student (compared to the uncertain student) is rated significantly higher on positive traits and lower on negative traits.

Study 2

Study 2 sought to examine how the social devaluation in Hypothesis 1 influences students' senses of belonging, control, self-esteem, and meaning in the context of their career decision-making. To test this, a common social exclusion paradigm first used by Leary (1995) was employed to make students' lack of academic major certainty salient. Students who were relatively uncertain about their academic majors were recruited and subsequently subjected to either social exclusion or inclusion after disclosing their lack of academic major certainty to other ostensible participants. They were then asked to complete measures assessing their sense of belonging, control, self-esteem, and meaning.

Hypothesis 3. If making one's lack of academic major clarity salient negatively influences the same basic needs that are negatively influenced by social exclusion, then socially excluded participants compared to their socially included counterparts would have significantly lower levels of belonging, control, self-esteem, and meaning. These results would provide preliminary evidence that the social environment of college as a contextual barrier has the potential of interfering with career decision-making.

Hypothesis 4. If social exclusion acts as a contextual barrier within the SCCT CDM framework, its effects on belonging, control, self-esteem, and meaning would significantly negatively affect career decision-making self-efficacy, which would in turn significantly negatively affects outcome expectations. This final hypothesis connects social exclusion to the SCCT CDM framework as a contextual barrier influencing how students navigate the career decision-making process.

Practical Implications of the Present Study

College students are experiencing independence more or less for the first time when they enter a university, while simultaneously attempting to form and understand their identities

(Arnett, 2000). Beyond those somewhat daunting tasks, students are entering college for very specific reasons: To obtain an education that will prepare them for future work. In an ideal world, those three tasks would be the extent of the challenge for college students. However, they are confronting those tasks within a microcosm of human social behavior. The environment provides them with the same patterns and experiences of general human social behavior, but with enhanced focus on the future and themselves, with relatively little responsibility (Arnett, 2000).

The academic experience of college is frequently challenged by social experiences. Studies have found that social engagement during the first year of college significantly contributes to the prediction of second-year enrollment (Pascarella & Terenzini, 2005). Social connectedness also significantly predicted college persistence (Robbins et al., 2004), and social belonging has been associated with academic self-efficacy and intrinsic motivation for academics (Freeman, Anderman, & Jensen, 2007). However, until now no research has sought to test whether the college social environment has the potential to impede effective career decision-making processes, per the SCCT CDM model. Universities should be providing students with as much support as possible in order to make their college studies most helpful for their future careers. If social exclusion serves as a contextual barrier in the CDM process of college students, universities and student support staff will be compelled to make changes in order to improve the environments in which students are navigating the CDM process. As emerging adults, making decisions about one's future is difficult enough for college students. The present investigation sought to test one possible way in which the social environment of college could be creating unnecessary impediments to CDM so appropriate changes can be made in universities for the purpose of easing the CDM process for students.

CHAPTER TWO
LITERATURE REVIEW

The study of career decision-making has progressed to allow for an expanded, overarching view of the process (Lent, Brown, & Hackett, 2000). This broader perspective takes into account social and contextual variables to help explain the way individuals move forward in their career development. Social Cognitive Career Theory (SCCT; Lent & Brown, 1996; Lent, Brown, & Hackett, 1994, 2002) is one example of a model that seeks to explain interest development, the career choice process, and performance in the context of one's environment. The SCCT career decision-making theory is of most interest to the present discussion. It emphasizes not only individual difference factors, but also the environmental factors inextricably linked to the person and his or her career-related thoughts and behavior.

Social Cognitive Career Theory Model of Career Decision-Making

This model stems from adaptations of Bandura's Social Cognitive Theory (1986) to career decision-making (CDM), focusing most heavily on three main variables as personal determinants of CDM: Self-efficacy, outcome expectations, and personal goals (Lent et al., 2002). These three CDM "building blocks" theoretically enable people to exercise personal control over their CDM processes (Lent et al., 2000). Importantly, however, these three variables interact with each other within the individual's environmental context. In the SCCT CDM framework, barriers and supports are emphasized as factors potentially impeding or helping one's decision-making process, respectively (Lent et al., 2002). As CDM does not occur in a vacuum of ideal circumstances, barriers are highly emphasized in the model (Lent et al., 2000, 2002). They can take the form of background contextual factors (e.g., gender roles expectations, culture) or proximal contextual influences (e.g., barriers), and ultimately influence how the CDM process unfolds for a given individual (Lent et al., 2000).

The SCCT CDM framework is comprehensive and inclusive of factors influencing the progression of individuals' idiosyncratic CDM processes. Simplified, the model posits that learning experiences first influence self-efficacy and outcome expectations, which in turn affect interests, choice goals, and choice actions (Figure 1; Lent et al., 2002; Sharf, 2013). It is an iterative process that SCCT theorists emphasize occurs within the contextual factors of an individual's larger environment. Figure 1 illustrates the part of the model this investigation is focused on, with key variables in bold.
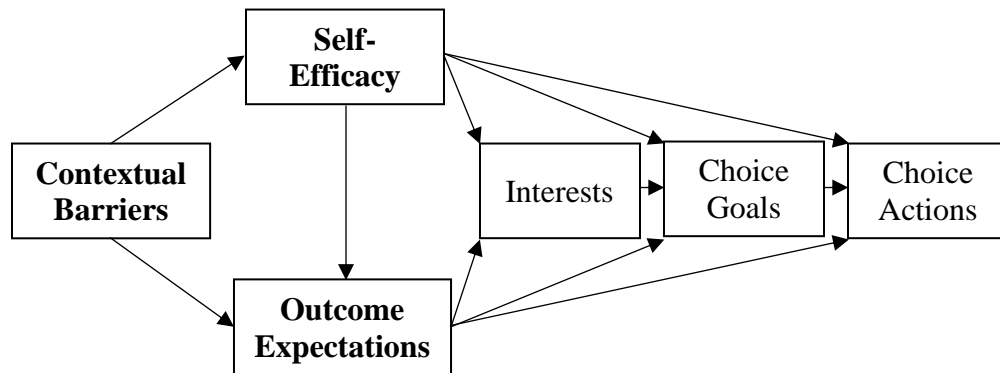
Figure 1. Social Cognitive Career Theory career decision-making model.

The present investigation is anchored in the SCCT CDM framework and focuses exclusively on barriers as contextual factors influencing two main variables, self-efficacy and outcome expectations. (However, self-efficacy is inherently domain-specific and dependent on factors related to the person, behavior, and environment (Lent et al., 2002). Therefore, the present investigation will focus on a specific domain of self-efficacy: Career decision-making self-efficacy.) In the interest of gaining initial clarity about the role of barriers in the SCCT CDM model, the present investigation will limit its purview to career decision-making self-efficacy and outcome expectations. This decision is in line with Lent and colleagues' (2000)

recommendations to improve understanding of barriers in CDM. They suggested examining how barriers interrelate specifically with self-efficacy since it, in turn, asserts influence over the successive variables. In addition, because outcome expectations are theorized to develop parallel to self-efficacy (Lent et al., 2002), they have been incorporated in this investigation as well. The following sections review barriers, and then investigations of barriers with career decision-making self-efficacy and with outcome expectations within the framework of SCCT.

Barriers in Social Cognitive Career Theory

Barriers are defined as "events or conditions, either within the person or in his or her environment, that make career progress difficult" (Swanson & Woitke, 1997; p. 434). Barriers can be both environmental (e.g., discrimination) and intrapersonal (e.g., stereotype threat), since both have the potential to negatively impact career development. Gender and cultural factors, for example, have received great attention in the literature and revealed how potent gender stereotypes within cultures are in influencing career decisions (Deemer, Thoman, Chase, & Smith, 2014). While gender identification can be considered helpful in guiding people toward potential careers, it is a barrier when it manifests as stereotype threat, implicitly and explicitly encouraging people to limit their career aspirations to circumscribed, "gender-appropriate" options.

Barriers are a main focus in the present discussion because, in describing SCCT's CDM model, Lent and colleagues (2002) acknowledged that career development rarely occurs under ideal conditions. Contextual variables must be included to provide additional context and capture the complexity of the process. They also emphasized individuals as active agents in their career decision processes, but recognized that there are limits to that free-agency – "career development theorists need to reckon with both external and internal factors that affect career choice

behavior" (Lent et al., 2002; p. 274). SCCT authors have acknowledged the relatively traditional view of interests influencing choice goals, and goals influencing actions, but they assert that contextual influences such as barriers are important in determining how those processes unfold. SCCT argues that these barriers can influence people's career choices by acting in tandem with, or even superseding personal interests depending on the context (Lent et al., 2000).

Measurement of Barriers

Within the SCCT CDM framework, barriers are not well understood, in part due to their nuanced, idiosyncratic nature heavily dependent on complex individual differences (Lent et al. 2000). The nature of barriers within CDM has limited their study to indirect assessment methods. Three methods of assessment emerged in the literature. First is retrospective self-reports of barriers individuals have encountered during their personal CDM processes. For example, the Educational Barriers subscale of the Perception of Barriers Scale (POB; Luzzo & McWhirter, 2001) assesses concerns that participants believe were barriers to their educational performance (e.g., financial problems, poor study habits). In effect, scales such as this measure the construct of *perceived retrospective* barriers, which is what much of the research has focused on thus far. The second method of assessing barriers is to ask participants to prospectively report barriers they anticipate encountering as they pursue careers. For example, the Career Barriers subscale of the POB (Luzzo & McWhirter, 2001) assesses prospective barriers anticipated as individuals pursue careers (e.g., gender or racial discrimination). In this review, barriers assessed with this method are referred to as *anticipated* barriers. The third method of assessing barriers presents participants with various career scenarios and asks them to list barriers they would likely encounter if those scenarios played out in their lives. For example, the Contextual Supports and Barriers Scale (Lent et al., 2001) asks participants to imagine choosing various career paths (e.g.,

electrician, mechanic) and report how they believe people in their lives would react to their decisions. They are presented with items such as "I would receive negative comments or discouragement about this choice from friends." In this review, barriers assessed with this method are referred to as *likelihood of encountering* barriers. Though it also measures anticipated barriers, it is conceptually different because it asks participants to imagine barriers in various career paths, rather than barriers anticipated in their chosen career paths. In this sense, the likelihood of encountering barriers provides information about the likelihood of participants encountering barriers in general. Overall, the nature of barriers in CDM has restricted our understanding of the construct by limiting barriers assessment to perceived retrospective self-reports, anticipated future barriers, and likelihood of encountering barriers in general. However, understanding the research findings produced by these assessment methods is important in leading up to the present investigation.

Literature Review of Barriers in Social Cognitive Career Theory

In order to review the literature examining barriers in the context of the SCCT CDM model, a PsycINFO search was conducted using subject term *barrier*, with the term *social cognitive career theory* anywhere in the article. It yielded 27 empirical peer-reviewed articles published in English between 2001 and 2016. Findings from these articles are presented in four categories based on the SCCT framework: Person inputs, self-efficacy, outcome expectations, and choice goals.

Person inputs. Within the SCCT framework, person inputs refer to distal contextual factors stemming from a person's background (Lent & Brown, 1996, Lent et al., 1994). Person inputs differ, but still influence, proximal contextual factors that affect individuals' progression through the career decision-making process. Several studies have examined gender and culture

as person inputs within SCCT. After controlling for parental support, gender was found to significantly predict anticipated career barriers ($\beta = -.28$, $p < .001$) and perceived retrospective educational barriers ($\beta = -.05$, $p < .05$), with women reporting higher levels of both types of barriers (Raque-Bogdan, Klingaman, Martin, & Lucas, 2013). Another study corroborated this finding, with significantly more anticipated career barriers of reported by women compared to men ($d = .31$, $p < .05$; Lindley, 2005). In Mexican American college students, perceived retrospective educational barriers were related to Anglo-oriented acculturation (vs. Mexican-oriented; $r = .19$, $p < .05$; Garriott & Flores, 2013). In addition, anticipated barriers to choosing a career was significantly predicted by nationalist racial ideology in Black undergraduates ($\beta = .49$, $p < .01$; Byars-Winston, 2006). The nationalist racial ideology is unique from other racial ideologies in that it emphasizes the importance and uniqueness of being Black. The authors suggest this ideology may be associated in increased awareness of racial differences across environments, possibly contributing to increased perception of barriers.

Self-efficacy. Self-efficacy, theorized as one's perception of his or her probable effectiveness in a given situation, has received significant attention in vocational literature. Bandura's self-efficacy theory (1977) describes self-efficacy as a mechanism influencing one's behavioral response to new or threatening situations. Bandura (1977, 1986) and others (e.g., Betz, 2004; Betz & Hackett, 1981; Lent, Brown, & Hackett, 1994) posit high self-efficacy causes individuals to approach new or threatening situations with the belief that successful outcomes are likely. Conversely, low self-efficacy may result in avoidant behavior leading to preference for the familiar and safe instead of the new and uncertain. Importantly, Lent and colleagues (2002) assert self-efficacy is a dynamic construct specific to particular domains and dependent on factors related to the person, behavior, and environment. Self-efficacy is not a fixed trait free of

contextual factors, but rather highly malleable and dependent on experience inextricably tied to specific contextual domains. While type of self-efficacy is noted in the context of study findings, some studies measured general self-efficacy.

In male Spanish engineering students, likelihood of encountering peer barriers significantly predicted self-efficacy beliefs ($\beta = -.16$, $p < .001$); though that finding was not found in females (Inda, Rodriguez, & Peña, 2013). In South Korean engineering students, perceived retrospective gender barriers were significantly related to academic self-efficacy ($r = -.11$, $p < .01$), and perceived retrospective social barriers were significantly related to academic self-efficacy ($r = -.10$, $p < .01$) and coping with barriers self-efficacy ($r = -.08$, $p < .05$; Kim & Seo, 2014). In Portuguese high school students, likelihood of encountering barriers significantly related to self-efficacy for realistic, artistic, and conventional career categories (rs ranged from .11 to .12, ps < .05; Lent, Paixap, Silva, & Leitao, 2010). Structural equation modeling revealed likelihood of encountering barriers had a significant indirect effect on whether participants reported considering careers within the realistic, artistic, and conventional categories. Those indirect effects occurred through the significant direct effect of likelihood of encountering barriers on general self-efficacy. These results were replicated in a sample of Italian high school students (Lent, Brown, Nota, & Soresi, 2003). Perceived retrospective math and science education-related barriers have been significantly related to math self-efficacy ($r = -.19$, $p < .05$), self-efficacy for coping with barriers ($r = -.42$, $p < .01$; Lent et al., 2001). Anticipated career barriers were significantly related to occupational self-efficacy (defined as self-efficacy specific to certain occupational titles) for women with artistic interests ($r = .22$, $p < .05$) and for men with realistic, artistic, enterprising, and conventional interests (rs ranged from .20 to .32, ps < .05; Lent et al. 2002). Perceived retrospective educational barriers were significantly related to

occupational self-efficacy for women with realistic, artistic, and social interests (*r*s ranged from .21 to .22, *ps* < .05), and men with realistic, investigative, and conventional interests (*r*s ranged from .23 to .31, *ps* < .05).

Several studies have examined a specific domain of self-efficacy pertinent to the present investigation, career decision-making self-efficacy (CDMSE). This construct refers to one's belief that he or she is able to successfully engage in and complete tasks necessary to career decision-making (Betz, 2000). Unlike content domain self-efficacy, which focuses on self-efficacy in specific fields (e.g., math, engineering), CDMSE is a process domain of self-efficacy (Betz & Hackett, 2006). It captures one's confidence in his or her approach to the career decision-making process. Higher CDMSE is theorized to increase the ease of career decision-making, as well as the quality of career decision-making (Lent et al., 1994; 2005). Findings have revealed significant relations between CDMSE and anticipated career barriers in groups of White women (*r* = -.21, *p* < .01), African American women (*r* = -.42, *p* < .01), and Hispanic women (*r* = -.37, *p* < .01; Lopez & Yi, 2006). Significant relations were also found between CDMSE and perceived retrospective educational barriers; *r* = -.40 for White women, *r* = -.42 for African American women, and *r* = -.48 for Hispanic women, *ps* < .01. The only significant difference between the three ethnic groups was for anticipated career barriers, with the African American group of women reporting significantly more anticipated career barriers (*F* (14, 686) = 5.54, *p* < .001, *η2* = .10) than the White and Hispanic groups of women. Others have corroborated these findings with significant relations between CDMSE and anticipated career barriers (*r* = -.19, *p* < .05; Creed & Yin, 2006; *r* = -.25, *p* < .001; Creed, Yin, & Hood, 2009). However, other studies have found significant relations between anticipated career barriers and CDMSE in the opposite direction (*r* = .25, *p* < .01; Gushue, Clarke, Pantzer, & Scanlan, 2006; *r* = .36, *p* < .01; Metz,

Fouad, & Ihle-Helledy, 2009). Further, additional studies have found no significant relations between anticipated career barriers and CDMSE (Creed & Patton, 2007; Creed, Patton, & Bartrum, 2004; Duffy, Diemer, & Jadidian, 2012).

Outcome expectations. Outcome expectations, influenced by self-efficacy beliefs but also theorized to exert their own influence on subsequent variables in the career development process, refer to beliefs about the outcomes of specific behaviors (Lent et al., 2002). Outcome expectations answer the question, "If I do this, what will happen?" It allows one to hypothesize about the future – a necessary activity in CDM as it is an inherently future-oriented process. SCCT posits self-efficacy influences outcome expectations, and the two then influence interests, choice goals, choice actions, and subsequent performance and attainment of career goals (Lent et al., 2002; Sharf, 2013). Outcome expectations play an important role in motivating behavior aimed at pursuing career goals; thus, more positive outcome expectations are theoretically associated with better CDM outcomes (Lent & Brown, 1996; Lent et al., 1994, 2002).

In female Spanish engineering students, likelihood of encountering family barriers significantly predicted outcome expectations ($\beta = -.21$, $p < .01$; Inda, Rodriguez, & Peña, 2013), while in males, likelihood of encountering peer barriers significantly predicted outcome expectations ($\beta = -.16$, $p < .001$). In South Korean engineering students, perceived retrospective social barriers were significantly related to outcome expectations ($r = -.18$, $p < .05$; Kim & Seo, 2014). In another study, anticipated career barriers significantly related to outcome expectations for women with realistic interests ($r = .22$, $p < .05$), artistic interests ($r = .23$, $p < .05$), and conventional interests ($r = .27$, $p < .01$; Lindley, 2005). Perceived retrospective educational barriers significantly related to outcome expectations for women with realistic interests ($r = .21$, $p < .05$), investigative interests ($r = .21$, $p < .05$), and conventional interests ($r = .25$, $p < .05$).

These findings were unexpected by Lindley, given higher perceived barriers were significantly related to higher outcome expectations, which runs counter to the SCCT framework (Brown & Lent, 1996; Lent et al., 1994).

The likelihood of encountering career barriers was significantly positively associated with outcome expectations in a sample of rural high school students ($r = .29$, $p < .05$; Ali & Menke, 2013). However, in a sample of lower socioeconomic status high school students the likelihood of encountering career barriers was significantly negatively associated with outcome expectations ($r = -.47$, $p < .01$; Ali, McWhirter, & Chronister, 2005). In female Spanish engineering students, the likelihood of encountering family barriers significantly predicted outcome expectations ($\beta = -.21$, $p < .01$; Inda, Rodriguez, & Peña, 2013). For males, the likelihood of encountering peer barriers significantly predicted outcome expectations ($\beta = -.16$, $p < .001$). In South Korean engineering students, perceived retrospective social barriers were significantly related to outcome expectations ($r = -.18$, $p < .05$; Kim & Seo, 2014), and in Chinese immigrant high school students, perceived retrospective educational barriers significantly predicted vocational outcome expectations ($\beta = -.18$; $p < .01$; Ma & Yeh, 2010). In another study, anticipated career barriers significantly related to outcome expectations for women with realistic interests ($r = .22$, $p < .05$), artistic interests ($r = .23$, $p < .05$), and conventional interests ($r = .27$, $p < .01$; Lindley, 2005). Perceived retrospective educational barriers significantly related to outcome expectations for women with realistic interests ($r = .21$, $p < .05$), investigative interests ($r = .21$, $p < .05$), and conventional interests ($r = .25$, $p < .05$). While barriers are theorized to impede career decision-making (Lent et al., 2002), these significant positive associations between barriers and outcome expectations across different interest areas suggest more perceived barriers may increase the perceived desirability of

overcoming them, measured by outcome expectations (Lindley, 2005). However, two studies found no significant relations between outcome expectations and perceived retrospective educational barriers (Lent et al., 2001; Quimby, Wolfson, & Seyala, 2007).

Choice goals. Within the SCCT framework, choice goals refers to individuals' intentions to pursue certain career paths (Lent et al., 1994). Related findings have revealed significant relations between career indecision (defined within SCCT as lack of choice goals; Lent et al., 1994) and anticipated career barriers in groups of White women ($r = .27$, $p < .01$), African American women ($r = .50$, $p < .01$), and Hispanic women ($r = .40$, $p < .01$; Lopez & Yi, 2006). Perceived retrospective educational barriers also related significantly to career indecision in White women ($r = .44$, $p < .01$), African American women ($r = .46$, $p < .01$), and Hispanic women ($r = .37$, $p < .01$). No significant differences emerged among the three groups on career indecision scores. In another study, career indecision was significantly related to barriers (perceived retrospective educational barriers and anticipated career barriers combined) in male high school students ($r = -.29$, $p < .05$), but not females (Creed et al., 2004). In Spanish engineering students, likelihood of encountering peer barriers significantly predicted choice goals for females ($\beta = -.27$, $p < .001$) and males ($\beta = -.19$, $p < .01$; Inda, Rodriguez, & Peña, 2013). In the same study, likelihood of encountering family barriers also significantly contributed to the prediction of choice goals in males ($\beta = -.24$, $p < .001$). In South Korean engineering students, choice goals were significantly related to perceived retrospective gender barriers ($r = -.16$, $p < .01$) and perceived retrospective social barriers ($r = -.24$, $p < .01$; Kim & Seo, 2014). In a sample of African American adolescents, anticipated career barriers were significantly related to career indecision ($r = .28$, $p < .001$; Constantine, Wallace, & Kindaichi, 2005). Further, in high school students, likelihood of encountering educational barriers

significantly differed between students who planned to pursue postsecondary education and students who planned to work after high school (d = .70), and between students pursuing postsecondary education and students who planned to enter vocational/technical programs (d = .56; Ali & McWhirter, 2006). Students planning to work or enter vocational/technical programs reported significantly higher likelihood of encountering educational barriers.

Summary

The career decision-making model of Social Cognitive Career Theory (Lent et al., 2002) emphasizes not only personal agency variables, but also the environmental factors inextricably linked to the person and his or her career-related thoughts and behavior. This model focuses most heavily on three main variables as personal determinants of CDM: Self-efficacy, outcome expectations, and choice goals (Lent et al., 2002). These variables theoretically enable people to exercise personal control over their CDM processes (Lent et al., 2000). Importantly, however, these three variables interact with each other within the individual's environmental context. As CDM does not occur in a vacuum of ideal circumstances, barriers are included in the model (Lent et al., 2000, 2002). They can take the form of background contextual factors (e.g., gender roles expectations, culture) or proximal contextual influences (e.g., discrimination, family involvement or lack thereof), and ultimately influence how the CDM process unfolds for a given individual (Lent et al., 2000). While the SCCT CDM framework is comprehensive and inclusive of factors influencing the progression of individuals' idiosyncratic CDM processes, the present investigation focuses exclusively on barriers as contextual factors influencing two of the variables, career decision-making self-efficacy and outcome expectations.

A review of the SCCT barriers literature suggests barriers are not well understood, likely due to their nuanced, idiosyncratic nature heavily dependent on complex individual differences

(Lent et al. 2000). Consistent with the SCCT CDM model, perceived retrospective barriers, anticipated future barriers, and likelihood of encountering barriers have been significantly related to person inputs (e.g., gender; e.g., Raque-Bogden et al., 2013), self-efficacy (e.g., Kim & Seo, 2014), outcome expectations (e.g., Inda et al., 2013), and choice goals (e.g., Constantine et al., 2005). However, some studies have produced findings opposite of what the SCCT CDM model predicts, such as positive relations between anticipated career barriers and outcome expectations (e.g., Lindley, 2005). Still others have produced null findings, such as between anticipated career barriers and career decision-making self-efficacy (Duffy et al., 2012). Further research is needed to parse out the apparently nuanced relation between barriers and SCCT variables in order to better understand how barriers influence the career decision-making process. An additional critique of the literature examining barriers in the SCCT CDM model is the indirect measurement methodology in which barriers are retrospectively reported, prospectively anticipated, or estimated based on fictional scenarios. Future research should investigate ways of directly examining the influence of barriers on the CDM process. The present investigation proposes a potential alternative to the current barriers measurement methodology that would add experimental causality to our understanding of barriers in career decision-making. Instead of assessing for barriers individuals have experienced or anticipate experiencing, experimentally manipulating a potential barrier involved in the CDM process would allow examination of causal effects on subsequent SCCT variables. The present investigation proposes one potential contextual barrier to CDM is inherent in the social environment in which college students are immersed.

Social Environment as a Contextual Barrier in Career Decision-Making

Lent and colleagues (2000) stated "individuals are invariably affected by aspects of the objective and perceived large environment" (p. 45). The environment, comprised of its many contextual factors, can present both barriers and supports for individuals as they navigate the CDM process theorized by SCCT (Lent et al., 2002). College students are a unique population in that they are immersed both in CDM and the distinctive college environment. This environment is also an inherently social one. Given social barriers (e.g., peer barriers) have been shown to significantly influence self-efficacy and outcome expectations (e.g., Inda et al., 2013), could the social environment of college undermine college students' career decision-making by negatively influencing self-efficacy and outcome expectations?

The College Social Environment

The American college student population is of particular interest because of the unique social microcosm in which they are immersed, combined with the equally unique purpose they have for being there. College students are experiencing independence more or less for the first time when they enter a university, while simultaneously attempting to form and understand their identities (Arnett, 2000). Beyond those somewhat daunting tasks, students are entering college for very specific reasons: To obtain an education that will prepare them for future work. In an ideal world, those three tasks would be the extent of the challenge for college students. However, they are confronting those tasks within a microcosm of human social behavior. The environment provides them with the same patterns and experiences of general human social behavior, but with enhanced focus on the future and themselves, with relatively little responsibility (Arnett, 2000). The academic experience of college is frequently challenged by the social experiences. Studies have found social engagement during the first year of college significantly contributes to the

prediction of second-year enrollment (Pascarella & Terenzini, 2005). Social connectedness also significantly predicted college persistence (Robbins et al., 2004), and social belonging has been associated with academic self-efficacy and intrinsic motivation for academics (Freeman, Anderman, & Jensen, 2007).

College students are faced with many new social experiences as they navigate choosing academic majors, taking classes toward those majors, and eventually graduating and entering their chosen career fields. These major tasks are central to the college experience. However, students do not have the luxury of tackling those tasks in a vacuum. They are immersed within the larger social context of the college environment. Upon meeting new people, What's your name? is followed immediately by, What's your major? When the latter question is so salient in the college environment, how do students feel if they do not yet have majors with which to answer? Does it feel like they are being socially excluded? Until now, no research has examined whether the social context of college influences aspects of the career decision-making process in students. Building toward the present investigation, social psychology provides an empirically-supported foundation from which these questions can be examined: Social exclusion. Before connecting social exclusion to SCCT and CDM, a brief overview is presented.

Overview of Social Exclusion

Decades of psychological research into human behavior and evolution have revealed that human beings are fundamentally social creatures (Baumeister, Masicampo, & Twenge, 2013). We each experience our individual, autonomous selves, but research suggests much of our day-to-day lives are dedicated to promoting and maintaining relational value so we can securely belong with others (Baumeister et al., 2013; Leary, 2010). Social belonging has been identified as an important aspect of many fitness-relevant behaviors, such as child-rearing, mate

acquisition, and self-protection (Neuberg et al., 2010). Evolutionarily speaking, belonging has been deemed highly valuable; thus, psychological mechanisms have been adapted to increase our motivation to foster social connections. These mechanisms attentively monitor our social interactions, judge the quality of them, and alert us to problems using our cognitive and affective systems. We attempt to interpret and understand the reasons for our exclusion, then are compelled to take action to "fix" the situation (i.e., avoid, punish, or seek reconnection with the excluder; Neuberg et al.). This complex system makes us highly attuned to potential or perceived social exclusion, precisely because belonging is so influential to our survival and, consequently, everything survival affords us.

It is reasonable to argue that our survival is only minimally influenced by belonging in modern times, but the evolutionary process is admittedly slow and imperfect (Neuberg et al., 2010). Humans change their environments much faster than they can reproduce psychological adaptations in their offspring. Therefore, while social exclusion is no longer literally life-threatening, we continue to suffer very real consequences from experienced or anticipated social exclusion. For example, neurological areas involved in the experience of physical pain have been implicated in the mental processing of psychological pain associated with social exclusion (Eisenberger & Lieberman, 2004; Rainville, 2002). The subjective experiences of physical pain and psychological pain may differ, but an angry look from someone we care about will startle and frighten us just as a burn would if we were too close to a fire. These cognitive-affective responses to social exclusion alert us of threats to our social connection just as physical pain alerts us of threats to our physical well-being. However, once we introduce the nuanced complexity of human thought and behavior into this relatively simple adaptive system, our responses to social exclusion become less straightforward.

Williams' need-threat model. Experimental research has found varied reactions to social exclusion that illustrate the complexity of human social behavior. Some studies have found that social rejection creates feelings of hurt, anger, and sadness (e.g., Vangelisti, Young, Carpenter-Theune, & Alexander, 2005); while others have found emotional numbing responses instead (e.g., Twenge, Catanese, & Baumeister, 2003). People often behave in prosocial ways in order to reconnect with others (e.g., Maner, DeWall, Baumeister, & Schaller, 2007), but equally as often they act in aggressive and antisocial ways to create distance from others (e.g., Leary, Twenge, & Quinlivan, 2006; Warburton, Williams, & Cairns, 2006). Williams (1997, 2001, 2009) proposed a need-threat model of ostracism in an effort to guide our understanding of the complex human behavior occurring after social exclusion. He identified four basic human needs threatened by social exclusion: Belonging, control, self-esteem, and meaning.

Williams (2009) revised and elaborated on his initial ostracism model (1997, 2001) in order to comprehensively capture our human response to social exclusion. Largely based on social evolutionary theory, Williams proposed four major stages involved after a social exclusion experience (Figure 2). The first is an initial detection of social exclusion, which, Williams (2009) posited likely involves over-detection due to the high cost of mistakenly overlooking signs of exclusion. This likely over-detection is supported by social evolutionary theory (Neuberg et al., 2010) and error management theory (Haselton & Nettle, 2006), which argue humans have adapted to engage in self-serving error bias (i.e., attending to more false positives for fear of not detecting a true positive). Following the initial detection of social exclusion is the reflexive stage (Williams, 2009). This stage first involves a reflexive psychological pain response thought to have adapted similarly to the way physical pain alerts us to threats to our physical bodies (Neuberg et al., 2010; Williams, 2009). Studies utilizing both self-report (e.g., Chen, Williams,

Fitness, & Newton, 2008) and neuroimaging methods (e.g., Eisenberger & Lieberman, 2004;

Rainville, 2002) of assessing psychological pain support the existence of a reflexive pain

response upon detection of social exclusion. Activation has been found in the dorsal anterior

cingulate cortex, a brain region implicated in both pain and error detection (Bush, Luu, &

Posner, 2000; Pinel, 2011).
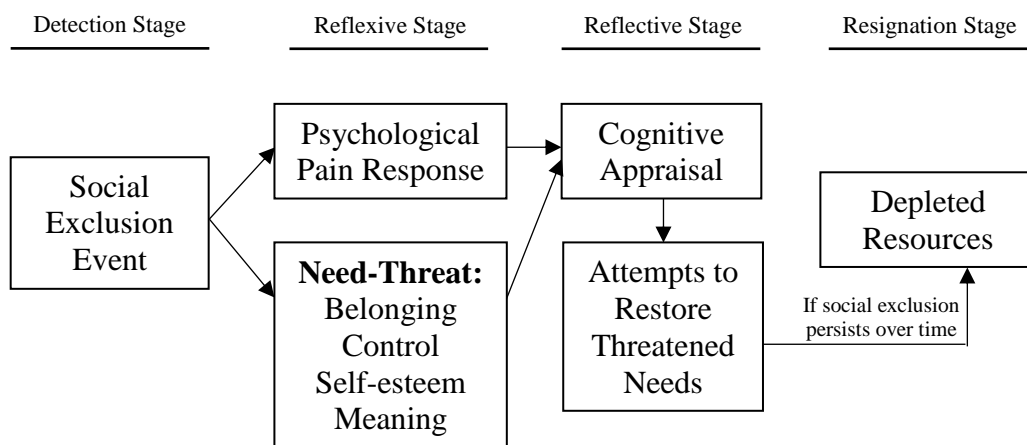
Figure 2. Williams' (2009) need-threat model.

Following the reflexive pain response to social exclusion, and most pertinent to the

present study, is the sense that four specific fundamental needs are being threatened (Williams,

2009): Belonging, perceived control, self-esteem, and meaning. When these four needs have

been targeted through threatening research paradigms, they have been linked to harmful

psychological outcomes (Baumeister & Leary, 1995; Williams, 2009). Clinical depression, for

example, has been related to deficits in all four needs (Allen & Badcock, 2003; Baumeister &

Leary, 1995; Myoshi, 2001). The third stage in Williams' (2009) model, the reflective stage,

involves cognitive appraisal of the ostracism event, the associated pain, and awareness of

threatened needs. At this point, the social exclusion enters cognitive awareness and the individual is able to analyze the event for meaning and relevance. During this stage, individuals can begin attempts to restore threatened needs. They often engage in behaviors aimed, consciously or otherwise, at increasing their likelihood of being socially accepted (e.g., Lakin et al., 2008), increasing self-esteem (e.g., Gardner, Jefferis, & Knowles, 2009), regaining a sense of control over aspects of the situation (e.g., Williams, 2005), or ensuring others recognize their existence as meaningful (e.g., Maner et al., 2007). The final stage of Williams' (2009) model, the resignation stage, was added to emphasize the detrimental effects of chronic experiences of social exclusion. Persistent ostracism over time, theoretically through chronic depletion of the four fundamental needs, has been found to result in feelings of alienation, unworthiness, helplessness, and depression (e.g., Zadro et al., 2004).

Empirical evidence for the need-threat model. Williams' (2009) need-threat model posits the effects of social exclusion are mediated by inevitable threats to four basic human needs: Belonging, control, self-esteem, and meaning. The need of belonging is defined as the need to experience frequent and caring interactions with people (Baumeister & Leary, 1995). It is central to social exclusion research, as experiments have been specifically designed to threaten belonging (Baumeister & Leary, 1995; Williams, 2007). The need for control is defined as the perceived ability to influence or effect change in a situation or environment (Williams, 2009). One's perceived sense of control can influence how one approaches and acts within a given situation (Lachman & Weaver, 1998). The need for self-esteem is defined as an affective self-evaluation of one's personal worth (Leary, 2005; Rosenberg, 1965). Finally, the need for a meaning is defined as the need to believe one has purpose and value in his or her life, as well as meaningful interactions with the world (Williams, 2001).

Meta-analytic evidence (Gerber & Wheeler, 2009) supports William' need-threat model, in that these four needs are significantly, reliably threatened after social exclusion experimental manipulations. Compared to non-excluded participants, socially excluded participants consistently reported significantly lower levels of belonging (d = -0.69, k = 39, p = .0008, 95% CI = -1.09, -0.29), control (d = -1.16, k = 53, $p <$ .00005, 95% CI = -1.39, -0.94), self-esteem (d = -0.70, k = 36, $p <$ .00005, 95% CI = -0.84, -0.57), and meaning (d = -1.60, k = 24, $p <$ .00005, 95% CI = -2.02, -1.18). These robust effects provide substantial evidence that these four needs are negatively affected by social exclusion events. While social exclusion has not yet been investigated in the context of SCCT or CDM, Williams' four threatened needs are not entirely novel constructs in the CDM literature.

Williams' Basic Needs & Career Decision-Making

Within the CDM literature, Williams' four basic needs of belonging, control, self-esteem, and meaning have been examined alongside constructs related to the SCCT CDM model. The findings are sparse, but they provide support for social exclusion as a potential contextual barrier within the SCCT CDM framework. The following sections present findings from the literature relating both SCCT CDM variables and each of Williams' four basic needs.

Belonging. The need of belonging is defined as the need to experience frequent and caring interactions with people (Baumeister & Leary, 1995). A PsycINFO search using keywords belonging and career decision-making yielded zero articles, so the search was expanded to include terms conceptually similar to belonging. A new PsycINFO search using keywords [*social*, *approval*, or *acceptance*] and [*career decision-making, outcome expectations*, or *career decision-making self-efficacy*] yielded 84 empirical peer-reviewed articles published in English between 1962 and 2015. Articles were excluded if they examined variables unrelated to

belonging and career decision-making (e.g., entrepreneurial interests, college women and intimate partner violence), if they focused on unique populations (e.g., college students with Asperger's syndrome, working adults), or if they focused on CDM constructs outside of the SCCT CDM framework (e.g., college adjustment, career maturity, career adaptability, career optimism).

Several studies examined belonging-related variables alongside domains of self-efficacy. Meta-analyses revealed significant relations between social support and academic self-efficacy ($r = .26$, $k = 8$; Robbins et al., 2004). Studies not included in that meta-analysis revealed social acceptance is significantly related to academic self-efficacy ($r = .31$, $p < .001$; Freeman, Anderman, & Jensen, 2007). A meta-analysis found a significant relation between peer support career decision-making self-efficacy ($r = .35$, $k = 4$, $p < .01$; Choi et al., 2011), while individual studies not included in that meta-analysis reported similar significant relations between social support and career decision-making self-efficacy ($r = .22$; Duffy & Lent, 2008; $r = .32$; Metheny & McWhirter, 2013). In addition, Lopez and Yi (2006) examined social support in three different racial/ethnic groups of women (White, African American, and Hispanic), finding significant relations of social support and career self-efficacy (rs between .29 and .40, $ps < .01$). Also closely related to the SCCT CDM framework, Işık (2013) found family support was a significant predictor of vocational outcome expectations ($\beta = -.16$; $p < .01$).

Other studies have found significant associations between belonging-related constructs and career indecision, which termed "choice actions" in the SCCT CDM framework (Lent et al., 2002). Social support was significantly related to career indecision in both LGBT and general population college students ($r = -.16$; Schmidt, Miles, & Welsh, 2011; $r = -.27$; Schmidt & Nilsson, 2006, respectively). Lopez and Yi (2006) examined social support in three different

racial/ethnic groups of women (White, African American, and Hispanic), finding significant relations to career indecision (rs between -.20 and -.37, $ps < .01$). Further, Guay, Ratelle, Senecal, Larose, and Deschenes (2006) found parental and peer support was significantly related to career indecision across three time points over two years, with correlations ranging from -.14 to -.25 ($p < .05$).

College retention and college commitment, also included in the choice actions construct of the SCCT CDM model, were found in relation to belonging. College belonging and peer support were significantly related to career commitment one year later, after controlling for ethnicity, socioeconomic status, gender, and high school grade point average (Dennis, Phinney, & Chuateco, 2005). Meta-analyses by Robbins and colleageus (2004) also revealed social support was significantly related to college student retention ($r = .20$, $k = 26$); likewise social involvement was also significantly related to college student retention. ($r = .17$, $k = 36$; Robbins et al., 2004).

These findings provide evidence of medium (Cohen, 1992) relations between social support and academic self-efficacy (e.g., Robbins et al., 2004), career decision-making self-efficacy (e.g., Metheny & McWhirter, 2013), and career indecision (e.g., Lopez & Yi, 2006). Further, small relations were established between social support, vocational outcome expectations (e.g., Metheny & McWhirter, 2013), and student retention (Robbins, 2004). However, the construct of belonging has received no direct attention in the area of CDM. These findings linking belonging-related constructs to important CDM constructs suggests the need for belonging is involved in aspects of CDM for college students. More so, these findings are indicative of the need for direct examination of belonging in college students in order to gain an understanding of its role in CDM.

Control. The need for control is defined as the perceived ability to influence or effect change in a situation or environment (Williams, 2009). One's perceived sense of control can influence how one approaches and acts within a given situation (Lachman & Weaver, 1998). A PsycINFO search for articles including the terms *control* and *career decision-making* in the subject field yielded 33 peer-reviewed journal articles published in English between 1977 and 2015. Of those articles, 11 were relevant to this literature review. No meta-analyses were located. Articles were excluded from this review if they examined variables unrelated to control and career decision-making (e.g., need for power, college instructor control, cognitive interference), or if they focused on unique populations (e.g., secretarial and management students), or if they focused on CDM constructs outside of the SCCT CDM framework (e.g., career adaptability, career optimism, career readiness). No articles examined perceptions of control or sense of control, but they instead examined a conceptually similar construct, locus of control, in which lower levels indicate more internal locus of control and higher levels indicate more external locus of control.

External locus of control refers to the belief one does not have control over a situation, but rather the situation is controlled by external forces (Millar & Shevlin, 2007). External locus of control has been found to be significantly negatively related to career decision-making self-efficacy (rs ranging from -.21 to -.31, $ps < .05$; Brown, Glastetter-Fender, & Shelton, 2000; Lease & Dahlbeck, 2009; Luzzo, McWhirter, & Hutcheson, 1997; Taylor & Popma, 1990; Trice, Haire, & Elliott, 1989). An examination of Chinese college students (Tian, Heppner, & Hou, 2014) revealed internal locus of control was significantly related to problem solving confidence which is similar to problem-solving self-efficacy ($r = .26$, $p < .01$).

In other research, external locus of control also significantly negatively predicted positive career outcome expectations (r = -.41; Isik, 2013). Additionally, career certainty ("choice action" in the SCCT CDM model; Lent et al., 2002) was examined in two older studies. Significant differences in locus of control were found between college students decided and undecided about their careers, and between male and female college students (Taylor, 1982). Those differences were characterized by significantly higher external locus of control in women compared to men (d = 0.24) and undecided students compared to their decided counterparts (d = 0.61). Further, Taylor (1982) found locus of control (higher external locus of control being associated with poorer outcomes) contributed significantly to the prediction of vocational indecision in male college students (β = .25) and female college students (β = .23).

These findings provide evidence of medium (Cohen, 1992) negative relations between external locus of control and career outcome expectations (e.g., Isik, 2013) and problem solving confidence (e.g., Tian et al., 2014). Further, small relations were established between external locus of control and career decision-making self-efficacy (e.g., Lease & Dahlbeck, 2009) and career indecision (Taylor, 1982). Further, external locus of control has been shown to differentiate between students who are decided and undecided about their careers (Taylor, 1982). While these correlational findings tell us little about the causal role of control in CDM, it is clear several important career process and outcome variables are related to locus of control.

Self-esteem. The need for self-esteem is defined as an affective self-evaluation of one's personal worth (Leary, 2005; Rosenberg, 1965). A PsycINFO search for articles including the terms *self-esteem* and *career decision-making* in the subject field yielded 19 peer-reviewed journal articles published in English between 1981 and 2015. Of those articles, 15 were relevant to this literature review. Articles were excluded from this review if they examined variables

unrelated to self-esteem and career decision-making (e.g., sex-role attitudes), or if they focused on unique populations (e.g., students with long-term mental illness), or if they focused on CDM constructs outside of the SCCT CDM framework (e.g., career adaptability, career optimism, career maturity). Notably, while the self-esteem literature differentiates between state and trait self-esteem (Heatherton & Polivy, 1991), the studies found in this literature search all used measures of trait self-esteem (e.g., Rosenberg Self-Esteem Scale; Rosenberg, 1965).

Meta-analysis findings relating self-esteem to self-efficacy revealed a significant relation between self-esteem and career decision-making self-efficacy ($r = .49$, k = 5, $p < .01$; Choi et al., 2012). Self-esteem was also related significantly to college academic self-efficacy ($r = .27$, $p < .01$; Hull-Blanks et al., 2005). Similar to SCCT choice goals and actions (Lent et al., 2002), Hull-Blanks and colleagues also found self-esteem significantly related to college persistence ($r = .25$, $p < .01$) and commitment to career choices ($r = .16$, $p < .01$). Finally, self-esteem has been significantly negatively related to career indecision which is considered a choice action (Lent et al., 2002) ($r = -.33$; Creed, Patton, & Hood, 2010; $r = -.35$; Smith & Betz, 2002).

Overall, these correlational findings provide some support for relations between self-esteem and variables related to the SCCT CDM framework. Self-esteem has been shown to have significant medium (Cohen, 1992) relations to career decision-making self-efficacy (Choi et al., 2012) and career indecision (e.g., Creed et al., 2010). Moreover, self-esteem has had significant small to medium relations with college persistence and career commitment (Hull-Blanks et al., 2005). These findings provide evidence that self-esteem is involved in aspects of the SCCT CDM framework; though the nature of its role remains unclear.

Meaning. The need for a meaning is defined as the need to believe one has purpose and value in his or her life, as well as meaningful interactions with the world (Williams, 2001). A

PsycINFO search for articles including the terms *meaning* and *career decision-making* in the subject field yielded 4 peer-reviewed journal articles published in English between 2008 and 2014. Three studies found significant relations between meaning in life and career decision-making self-efficacy ($r = .20$, $p < .01$; Dik, Sargent, & Steger, 2008; $r = .51$, $p < .01$; Duffy, Allan, & Dik, 2011; $r = .39$, $p < .001$; Steger & Dik, 2009). One additional study found that the presence of meaning in life was significantly negatively associated with career indecision ($r = -.38$, $p < .001$; Miller & Rottinghaus, 2014).

The paucity of research relating meaning in life to CDM is apparent. However, its consistent medium (Cohen, 1992) relations with both career decision-making self-efficacy (e.g., Duffy et al., 2011) and career indecision (Miller & Rottinghaus, 2014) provide compelling evidence to continue examining it in the context of CDM.

Summary. Social exclusion has produced robust significant effects on people's senses of belonging, control, self-esteem, and meaningful existence in the experimental research outside of the CDM literature that has emerged largely in the past two decades (Gerber & Wheeler, 2009). Constructs related to belonging, control, self-esteem, and meaning have also been significantly associated with variables in the SCCT CDM framework. It is possible social exclusion could serve as a contextual barrier in the SCCT CDM framework. By threatening belonging, control, self-esteem, and meaning, social exclusion could impede career decision-making in college students. In SCCT barriers are defined as "events or conditions, either within the person or in his or her environment, that make career progress difficult" (Swanson & Woitke, 1997; p. 434). The social environment of college could be making career decision-making processes difficult for those that feel excluded. In order to test this possibility, a social exclusion experimental paradigm will be used to operationalize one potential aspect of the college social environment.

The Present Investigation

Many operational definitions could be used as potential analogues to barriers inherent in a social environment. However, the present investigation utilized social exclusion as an experimental paradigm to test how one aspect of a social environment could influence CDM within the SCCT framework. Research related to social exclusion has found that the shared experiences and characteristics of members within a social group determine the standards for relational value (Hogg, 2006). Though comprised of many students and diffuse individual differences, American college students all have at least one thing in common: An academic major. In an environment designed specifically for career preparation, might unclear career goals make one feel out of place?

MacDonald, Saltzman, and Leary (2003) demonstrated that people's self-evaluations of particular parts of their identities were significantly directly related to trait self-esteem, but only when they believed those particular features were relevant to social acceptance in a given context. It may be that in the college environment where career is made highly salient, students perceive their academic majors or other aspects of their career identities as relevant to social acceptance. If this is the case, how might anticipated or experienced social exclusion – e.g., being a college student without a major – affect CDM?

College student CDM does not occur in a vacuum (Lent et al., 2000). Students are navigating this important process in the greater context of the college social environment. Grounded in SCCT (Lent et al., 2002) and Williams' (2009) need-threat model, the present investigation sought to test whether the social environment of college (operationally defined as social exclusion or inclusion) could serve as a proximal contextual barrier that affects career decision-making self-efficacy and vocational outcome expectations. The overarching hypothesis

was that social exclusion, by negatively influencing students' needs for belonging, control, self-esteem, and meaning (per Williams' model), would serve as a proximal contextual barrier that negatively affected college students' career decision-making self-efficacy and vocational outcome expectations. Figure 3 illustrates the pieces of the SCCT CDM model and Williams' basic needs model that were combined to form this hypothesis. To examine this overarching hypothesis, the present investigation tested three hypotheses using two studies.
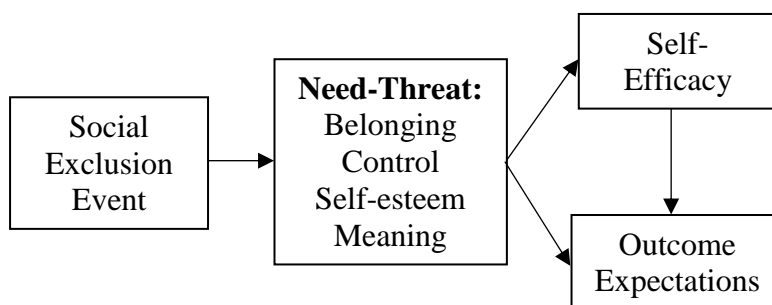
Figure 3. Hypothesized model connecting Social Cognitive Career Theory career decision-making model & Williams' need-threat model

Study 1

The first aspect of the overarching hypothesis that was empirically tested through the present investigation was whether there is any threat of social stigma related to career decision-making in the college social environment. In order to test this, Hypothesis 1 focused on the most proximal CDM task for college students: Choosing an academic major. A sample of college students was presented with two descriptions of fictional students: One who is certain about his or her major, and one who is uncertain. Participants were asked to rate each fictional student on positive and negative characteristics. This paradigm has been used previously to assess individuals' attitudes toward various targets in social psychological research (Greenberg, et al. 1992).

Hypothesis 1. If a lack of academic major clarity is socially devalued in the college environment, the uncertain student description compared to the certain student description will be rated significantly lower on positive characteristics and significantly higher on negative characteristics. These results would provide evidence that lacking an academic major as a college student is socially devalued and, thus, socially undesirable.

Alternatively, aspects of participants' own career decision-making experiences may influence their judgments of the certain and uncertain student vignettes in the direction opposite of Hypothesis 1 (i.e., participants devalue the certain student over the uncertain student). Hypothesis 2 examined two participant variables (academic major certainty and subjective career distress) as possible precipitants to self-enhancement bias in response to the posited social devaluation of uncertainty examined through Hypothesis 1. Self-enhancement is conceptualized as a self-protective reaction aimed at fostering or maintaining a positive view of oneself or one's self-identified group (Crocker & Major, 1989). In the context of Study 1, self-enhancement bias was hypothesized to occur for participants who reported low levels of academic major uncertainty or high levels of subjective career distress. These two participant groups had two opportunities to employ self-enhancement bias for the purpose of preserving their own positive self-image: Rating the certain student less positively or more negatively than the uncertain student. It was anticipated that academic major certainty and subjective career distress would be significantly and positively related, as the subjective career distress subscale of the CCI (Larson, Toulouse, Ngumba, Fitzpatrick, & Heppner, 1994) included items such as, "I spend time every day thinking about a major and career, and what I might do about it" and "I feel stress or pressure in selecting a satisfying major and career." While this significant correlation would have made it redundant to examine both variables as potential moderators, previous research findings

have shed doubt on whether undergraduate self-reported levels of academic major uncertainty are accurate. Pesch (2014) found a ceiling effect for academic major certainty and no relation to knowledge of the career participants were "certainly" pursuing, suggesting students may be overestimating their levels of certainty. Therefore, subjective career distress was included in the hypothesis to capture students who may report high academic major certainty, but who are still reportedly experiencing distress related to their academic major/career decision-making process.

Hypothesis 2a. If students are engaging in self-enhancement bias based on academic major certainty, participants lower in academic major certainty will rate the certain student (compared to the uncertain student) significantly lower on positive traits and higher on negative traits. Participants higher in academic major certainty will show the effect predicted by Hypothesis 1, in which the certain student (compared to the uncertain student) is rated significantly higher on positive traits and lower on negative traits.

Hypothesis 2b. If students are engaging in self-enhancement bias based on subjective career distress, participants higher in subjective career distress will rate the certain student (compared to the uncertain student) significantly lower on positive traits and higher on negative traits. Participants lower in subjective career distress will show the effect predicted by Hypothesis 1, in which the certain student (compared to the uncertain student) is rated significantly higher on positive traits and lower on negative traits.

Until now, no research has examined whether the lack of academic major certainty in college students is associated with social value in the college environment. However, being a college student is associated, to some degree, with having an academic major that is preparing one for a future career. During the first year or two of college, some students may not know exactly what majors they want to study. Yet the expectation is that they will choose one before

the end of their second year at many major four-year universities. Hypothesis 1a sought to test whether lack of academic major certainty is socially devalued in the college environment. If so, the social implications of being uncertain about one's major may influence one's career decision-making process, which were tested in Study 2. Hypothesis 1b sought to test whether students feel compelled to engage in self-enhancement to combat feeling personally socially devalued because of their own lack of academic major certainty or elevated subjective career distress. This second hypothesis aimed to offer additional clarity of the Hypothesis 1a results.

Study 2

Study 2 sought to examine whether the social devaluation in Hypothesis 1 influences students' senses of belonging, control, self-esteem, and meaning in the context of their career decision-making. To test this, a common social exclusion paradigm first used by Leary (1995) was employed to make students' lack of academic major certainty salient. Students who were relatively uncertain about their academic majors were recruited and subsequently subjected to either social exclusion or inclusion after disclosing their lack of academic major clarity. A third condition subjected students to social exclusion but did not highlight students' lack of academic major clarity. Rather, this condition made students' personal interests salient in order to determine whether any effects found were due to career-related exclusion or simply general exclusion. They were then asked to complete measures assessing their senses of belonging, control, self-esteem, and meaning.

Hypothesis 3. If social exclusion negatively affects Williams' (2009) basic psychological needs, then then socially excluded participants (compared to their socially included counterparts) would have significantly lower levels of belonging, control, self-esteem, and meaning. These

results would provide preliminary evidence that the social environment of college has the potential of interfering with career decision-making as a contextual barrier.

Social exclusion has produced robust significant effects on people's senses of belonging, control, self-esteem, and meaning in the experimental research that has emerged largely in the past two decades (Gerber & Wheeler, 2009). These significant effects found across 88 experimental studies support Williams' (2009) need-threat model, which posits threatened needs drive behavior aimed, consciously or otherwise, at restoring the needs of belonging, control, self-esteem, and meaning. Socially excluded participants, compared to their non-excluded counterparts, have demonstrated significantly more behaviors aimed at increasing their likelihood of being socially accepted (e.g., Lakin, Chartrand, & Arkin, 2008), increasing their self-esteem (e.g., Gardner, Jefferis, & Knowles, 2009), regaining a sense of control over aspects of the situation (e.g., Williams, 2005), or ensuring others recognize their existence as meaningful (e.g., Maner et al., 2007). Hypothesis 2 of the present investigation sought to test whether Williams' (2009) four needs are negatively affected by social exclusion and, in Hypothesis 3, whether those threatened needs negatively influence career decision-making.

Hypothesis 4. If social exclusion acts as a contextual barrier within the SCCT CDM framework, its effects on belonging, control, self-esteem, and meaning would significantly negatively affect career decision-making self-efficacy. It would also significantly negatively affect vocational outcome expectations directly and indirectly through career decision-making self-efficacy. This final hypothesis connects social exclusion to the SCCT CDM framework as a contextual barrier influencing how students navigate the career decision-making process.

Constructs related to belonging, control, self-esteem, and meaning have also been significantly positively associated with career decision-making self-efficacy (e.g., Choi et al.,

2012; Duffy et al., 2011; Lease & Dahlbeck, 2009; Metheny & McWhirter, 2013) and outcome expectations (Isik, 2013; Metheny & McWhirter, 2013), which are central variables in the SCCT CDM model (Lent et al., 1994). Within that model, of great importance are contextual barriers, defined as "events or conditions, either within the person or in his or her environment, that make career progress difficult" (Swanson & Woitke, 1997; p. 434). The social environment of college could act as a barrier, making the career decision-making process difficult for college students who feel excluded because they lack clarity about their academic majors. Hypothesis 3 sought to test social exclusion as a contextual barrier in the SCCT CDM framework. By threatening belonging, control, self-esteem, and meaning, social exclusion could impede career decision-making in college students through negative effects on career decision-making self-efficacy and outcome expectations.

CHAPTER THREE
METHODS

This chapter outlines the methodology used in the present studies. The research designs, participants, measures, and procedures for each study will be discussed, followed by Chapter Four, which will present results for each study.

Study 1

Study 1 was conducted to address the first research question of the present study: Is a lack of academic major clarity socially devalued in the college environment? It further sought to address a secondary question of whether that social devaluation compels students to engage in self-enhancement bias.

Design

This study utilized a within-subjects randomized experimental design to investigate whether participants evaluate a fictional description of a student uncertain about his or her major significantly less positively or more negatively compared to a student certain about his or her major.

Participants

The target population of the present study was undergraduate college students enrolled in introductory psychology courses during the fall 2015 semester. The Study 1 sample consisted of 433 students. Participant ages ranged from 18 to 53 ($M = 19.36$, $SD = 2.26$), 238 identified as female (55%), and 195 identified as male (45%). Two hundred and twelve were first-year students (49%), 108 were second-year students (24.9%), 68 were third-year students (15.7%), 29 were fourth-year students (6.7%), and 16 were fifth-year students or above (3.7%). Regarding the ethnic diversity of the sample, 338 identified as European American/White (78.1%), 24 as

Pacific Islander/Asian American (5.5%), 16 as Black/African American (3.7%), 13 as Latino/a American (3%), 15 as multiracial American (3.5%), and 24 as international students (5.5%).

The web-based survey hosted by Qualtrics (2015) for Study 1 was advertised alongside other research studies through a departmental research program, and entitled "Academic Major Decision-Making." Students who volunteered to participate received one credit toward their psychology courses. Based on guidelines set by Cohen (1992) for sample sizes needed to detect significant mean differences between two groups, a minimum of 393 participants were needed to detect a small effect at Power = .80 for $p < .05$.

Materials

Demographics. Participants were asked a series of demographic questions regarding age, gender, ethnicity, country of origin, and year in school that were used for descriptive purposes.

Fictional student descriptions. Two descriptions were presented, one describing a student who was very certain about his or her academic major, and one describing a student who was very uncertain about his or her academic major (Appendix A). Both descriptions were gender-neutral, with the same age and year in school. They were presented to participants in a random order.

Positive and negative characteristics. Based on the paradigm first used by Greenberg and colleagues (1992), participants were asked to separately evaluate the two fictional student descriptions on a variety of positive and negative characteristics. Negative characteristics included rigid, arrogant, insensitive, argumentative, snobbish, obnoxious, self-centered, and immature; positive traits included honest, likeable, intelligent, reliable, tolerant, stable, knowledgeable, rational, kind, patient, warm, humane, and practical. The measure included a 9-point response scale from (1) *Not at all applicable* to (9) *Extremely applicable*. Results are

reported as mean levels of positive and negative characteristics, with effect sizes for individual characteristics presented for descriptive purposes. The within-subjects design facilitated comparison of positive and negative evaluations of the uncertain student relative to the certain student for each participant. Two manipulation check items were included in the list of characteristics (decisive and indecisive). For both the certain and uncertain student vignettes, coefficient alphas were .92 for the positive characteristics and .89 for the negative characteristics.

Academic Major Certainty. In order to test for potential self-enhancement bias based on participant levels of academic major certainty, the Academic Major Certainty Scale (Pesch, 2015; Appendix B) was administered after the experimental procedure. Comprised of four items, it had a response scale from (1) *Strongly disagree* to (6) *Strongly agree*. Two items were reverse-scored and mean scores were computed. Coefficient alpha for this scale in the present study was .91.

Subjective Distress. In order to test for potential self-enhancement bias based on participant levels of distress related to their own career decision-making process, the Subjective Distress subscale of the Coping with Career Indecision (Larson et al.,1994) was administered after the experimental procedure. Comprised of 21 items, it had a response scale from (1) *Strongly disagree* to (6) *Strongly agree*. Mean scores were computed. Coefficient alpha for this scale in the present study was .93.

Procedure

Approval by the Institutional Review Board was obtained prior to data collection to ensure that all aspects of the study were in compliance with the ethical standards defined by the American Psychological Association.

Participants were recruited using the Department of Psychology's online research participation system that manages undergraduate students' participation in department-associated research projects. The present study was one of many web-based survey options in which students were able to participate. Qualtrics (2015) was used to create the survey and collect responses. The survey took less than 30 minutes to complete, and students received one credit for participating. Prior to their participation in the survey, students were presented with an informed consent statement containing a brief description of the study's purpose and procedures. They indicated their informed consent to begin the survey, and they were informed of their right to discontinue study participation at any time.

Participants were first asked to provide demographic information. They were then presented with the two descriptions of fictional students in random counterbalanced order: One who was certain about his or her major, and one who was uncertain. Along with each description, participants were asked to rate the fictional student on positive and negative characteristics. Finally, participants were presented with the Academic Major Certainty and Subjective Distress scales. Upon reaching the end of the survey, participants were debriefed. The researcher's contact information was provided if participants had questions or concerns regarding the study.

Study 2

Study 2 was conducted to address the second and third research questions of the present study: Does making one's lack of academic major clarity salient negatively influence the same basic needs that are negatively influenced by social exclusion? If so, do they, in turn, negatively influence students' career decision-making self-efficacy?

Design

This study featured a three-group randomized mixed experimental design to test the effects of social exclusion on the basis of academic major certainty. Participants were randomly assigned to one of three conditions, and they completed six measures and four manipulation check items after receiving the experimental manipulation. The first two experimental conditions involved career-related social exclusion and inclusion, respectively. The third experimental condition was added for the purpose of differentiating effects of career-based social exclusion from general personal social exclusion.

Participants

The target population of this study was undergraduate students who were relatively uncertain about their academic majors. Data collection occurred over two semesters. Fall 2015 participants were selected from a research pool of 781 undergraduate students who had completed Mass Testing, a large-scale, routine survey conducted at the beginning of the semester. Scale items for the present study were administered alongside items from other research studies within the department of psychology. Students were contacted via email to participate in the in-person laboratory study if they scored at or below the mean on the Academic Major Certainty Scale. Spring 2016 participants chose this study among an array of online and in-person studies advertised by the department of psychology. All participants who completed

the study received two credits toward their psychology courses for participating in the laboratory portion of this study. One student received only 1 credit after withdrawing from the study after receiving the informed consent.

Two hundred and sixty-nine students completed the study overall; 131 completed it during the Fall 2015 semester and 138 during the Spring 2016 semester. These participants were randomly assigned to one of three conditions upon arrival for the study. Of those 269 students, 85 were ineligible because they scored above the mean on the Academic Major Certainty scale administered before the experimental manipulation was delivered. Of the remaining 184 students, 36 were excluded for failing one or both manipulation checks. To pass the first manipulation check, participants had to correctly report how many of the ostensible participants had wanted to talk to them during the experiment ("4 out of 4 participants" was the correct response for the inclusion condition and "0 out of 4 participants" was the correct response for the exclusion conditions). To pass the second manipulation check, the mean of three Likert scale items was calculated in which participants indicated how they felt on three continuums: Included-Excluded, Welcomed-Avoided, and Accepted-Rejected. For the inclusion condition, participants passed the check if they were greater than one standard deviation above the mean. For the exclusion conditions, participants failed the check if they were greater than one standard deviation below the mean.

The final sample size was 148 participants (118 females, 33 males). The mean score on the Academic Major Certainty Scale was 3.07 (SD = 0.79, Range = 1 to 4.08). The mean age was 18.75 years (SD = 1.03, Range = 18 to 23). One hundred participants were in their first years, 35 in their second years, 7 in their third years, and 6 in their fourth years. One hundred and twenty-

six identified as White, 7 as Pacific Islander/Asian American, 7 as biracial, 3 as Black, 3 as Latino/a American, 1 as Native American, and 1 as an international student.

Distributed across conditions, sample sizes were 56 for the career-salient inclusion condition (Condition A), 46 for the career-salient exclusion condition (Condition B), and 46 for the personal exclusion condition (Condition C). There were no significant differences in number of excluded participants among conditions [X^2 (2, N = 184) = 0.36, p = .837].

Based on guidelines set by Cohen (1992) for testing significant differences between three groups using analysis of variance, a minimum of 52 participants were needed to detect a medium effect at Power = .80 for $p < .05$.

Pretest Materials

Demographics. Participants were asked a series of demographic questions regarding age, gender, ethnicity, country of origin, and year in school for descriptive purposes.

Academic Major Certainty Scale. The Academic Major Certainty Scale (AMCS; Pesch, 2015; Appendix B) is comprised of four items (e.g., *I have some doubts about which major is right for me*), with response scales from (1) *Strongly disagree* to (6) *Strongly agree*. Mean scores were computed. For Fall 2015 participation, students were invited to the laboratory portion of this study if they scored at or below the mean of the Mass Testing sample of 781 students, with lower scores reflecting less academic major certainty. For Spring 2016 participation, the study was open to all undergraduate psychology students and the AMCS was administered immediately after the informed consent and prior to beginning the experiment. Participant data from Spring 2016 was included in analyses if they scored at or below the AMCS mean used to select Fall 2015 participants from the Mass Testing sample. Coefficient alpha for this scale in the present study was .89.

Posttest Materials

Sense of Belonging Scale. The Sense of Belonging (SBS) subscale of the Perceived Cohesion Scale (Bollen & Hoyle, 1990) is a three-item scale assessing the extent to which participants feel a sense of belonging to their university (e.g., *I see myself as part of the _____ community*). Responses are recorded on a six-point scale from (1) *Strongly disagree* to (6) *Strongly agree*. Mean scores were calculated, with higher scores indicating higher sense of belonging. Internal consistency of the SBS has been reported as .95 (Chin, Salisbury, Pearson, & Stollak, 1999). The two-factor structure of the SBS was confirmed in samples of college students and residents of a mid-sized city (Bollen & Hoyle, 1990), and the scale has been found to significantly correlate with morale associated with group membership ($r = .90$, $p < .05$; Chin et al., 1999). No estimates of test-retest reliability were located. Coefficient alpha for this scale in the present study was .94.

Sense of Control Scale. The Sense of Control Scale (SCS; Lachman & Weaver, 1998) is a 10-item scale assessing the extent to which participants feel a sense of control over their lives. Higher scores on the mastery subscale, comprised of five items, indicate a higher sense of control (e.g., *I can do just about anything I really set my mind to*). Higher scores on the constraints subscale, comprised of five items, indicate lower sense of control (e.g., *I have little control over the things that happen to me*). Responses are recorded on a six-point scale from (1) *Strongly disagree* to (6) *Strongly agree*. Based on previous research (Duffy, 2010), the two subscales were added together with the constraints items reversed to create a mean score with higher levels indicating higher sense of control. Internal consistency for the scale as a whole has been reported as .81 (Guo & Spina, 2014) and .87 (Duffy, 2010). Slight modifications were made to item wording in order to increase applicability to the major decision-making process rather

than life in general (e.g., *I often feel helpless in dealing with problems in life* was changed to *I often feel helpless in dealing with problems related to choosing a major*). Previous research has found the SCS significantly correlates to self-esteem ($r = .54$, $p < .01$) and career optimism ($r = 51$, $p < .01$; Duffy, 2010). No estimates of test-retest reliability were located. Coefficient alpha for this scale in the present study was .85.

State Self-esteem Scale. The State Self-Esteem Scale (SSES; Heatherton & Polivy, 1991) is a 20-item scale measuring participants' levels of self-esteem at a particular point in time. While studies examining self-esteem and career decision-making measured trait self-esteem, the present study will also measure state self-esteem, as it is more sensitive to changes in self-esteem from situation to situation (Heatherton & Polivy, 1991). The SSES is comprised of three subscales: Social self-esteem, performance self-esteem, and appearance self-esteem. Only the social self-esteem subscale will be used for the present study. It includes seven items designed to be sensitive to changes in self-esteem across social situations and contexts (e.g., *I am worried about what other people think of me*). Responses are recorded on a five-point scale from (1) *Not at All* to (6) *Extremely*. All items were reverse-scored so higher scores reflect higher social state self-esteem. Mean scores were calculated. Internal consistency for this subscale of the SSES has been reported as .80 (Haught, Rose, Geers, & Brown, 2015) and .92 (McCain, Jonason, Foster, & Campbell, 2015). It has been significantly correlated to feelings of inadequacy ($r = -.77$ and $-.70$, $p < .05$), anxiety ($r = -.43$, $p < .05$), and depression ($r = -.45$, $p < .05$; Heatherton & Polivy, 1991). Across three time points, test-retest reliability correlating was reported as .75 and .72 (Heatherton & Polivy, 1991). Coefficient alpha for this scale in the present study was .92.

Meaning in Life Questionnaire. The Meaning in Life Questionnaire (MLQ; Steger, Frazier, Oishi, & Kaler, 2006) is a 10-item measure comprised of two subscales, Presence of Meaning and Search for Meaning, each with five items. Only the Presence of Meaning subscale was included in the present study, as it is designed to reflect current perceptions of meaning in one's life (e.g., *My life has a clear sense of purpose*). Responses are recorded on a seven-point scale from (1) *Absolutely untrue* to (7) *Absolutely true*. Mean scores were calculated, with higher scores representing a higher sense of meaning in life. Internal consistency for the Presence of Meaning subscale has ranged from .82 to .88 in previous research, with one-month test-retest reliability reported as .70 (Steger & Frazier, 2005). The MLQ has been significantly correlated to optimism ($r = .45$, $p < .001$) and well-being ($r = .66$, $p < .001$; Steger & Frazer, 2005). Coefficient alpha for this scale in the present study was .91.

Career Decision Self-Efficacy Scale. The Career Decision Self-Efficacy Scale (CDSES; Taylor & Betz, 1983) is a 50-item scale designed to measure one's belief that he or she will be able to successfully engage in and complete tasks necessary to career decision-making (Betz, 2000). The CDSES include five subscales: self-appraisal, occupational information, goal selection, planning, and problem solving. Participants respond by indicating their perceived abilities to complete career decision-making tasks on a 5-point Likert scale from (1) *no confidence at all* to (5) *complete confidence*. Mean scores were used, with higher scores reflecting stronger beliefs regarding one's probable effectiveness in career decision-making tasks. Internal consistency has been established for the 5-level continuum scoring method of the CDSES ($\alpha s = .78$ to .87) and for the total score ($\alpha s = .93$ to .95; Betz, Hammond, & Multon, 2005; Betz & Voyten, 1997; Betz, Klein, & Taylor, 1996). The CDSES has been significantly correlated to career indecision ($r = -.52$, $k = 12$, $p < .01$) and vocational identity ($r = .48$, $k = 6$,

$p < .01$; Choi et al., 2011). Six-week test-retest reliability has been reported as .83 (Luzzo, 1992). Coefficient alpha for this scale in the present study was .96.

Vocational Outcome Expectations Scale. The Vocational Outcome Expectations Scale (VOES; McWhirter, Rasheed, & Crothers, 2000) was used to assess outcome expectations in the context of career decision-making. It is comprised of 12 statements asking the participant to rate the extent to which they agree with each one (e.g., *My career planning will lead to a satisfying career for me*, *I will be successful in my chosen career/occupation*). Participants estimate their agreement using a 4-point Likert scale from (1) *strongly disagree* to (4) *strongly agree*. Mean scores were calculated, with higher scores indicating more positive outcome expectations. In previous studies, internal consistency estimates were found to be .83 (McWhirter et al., 2000) and .92 (Ali et al., 2005). Nine-week test-retest reliability in high school sophomores has been reported as .59 (McWhirter et al., 2000). The VOES has been significantly correlated to vocational/educational self-efficacy ($r = .55$, $p < .01$), parental support ($r = .37$, $p < .01$), and socioeconomic status ($r = .22$, $p < .05$; Ali et al., 2005). Coefficient alpha for this scale in the present study was .88.

Procedure

Approval by the Institutional Review Board was obtained prior to data collection in order to ensure that the present study was in compliance with the ethical standards defined by the American Psychological Association.

Laboratory session. Fall 2015 participants were recruited via email based on their responses to the Academic Major Certainty Scale in Mass Testing. They were invited to sign up for an in-person laboratory visit entitled "Career Discussions." Spring 2016 participants chose

the Career Discussions study advertised on a departmental research website alongside other in-person and online studies in the department of psychology.

When they arrived for their lab visit, each participant was randomly assigned to one of the three experimental conditions: Career social inclusion (Condition A), career social exclusion (Condition B), or personal social exclusion (Condition C). The research assistant followed the study protocol using a standardized script. The experimental paradigm was conceptually similar to that used in Study 3 by Leary and colleagues (1995). Participants were told that there were four other students currently participating in the study as well; though this statement was not true. Each participant, run individually in the lab, first provided informed consent on paper and demographic information using a web-based survey hosted by Qualtrics (2015) on a lab computer. They were then asked to write a brief essay on a piece of paper about their career paths (Conditions A and B) or personal interests (Condition C; Appendix C). The research assistant then ostensibly circulated each participants' essay to all other participants. For Conditions A and B, the four fictional participants' essays reflected extreme certainty about their academic majors and subsequent occupations they expected to obtain (Appendix D). The fictional participants' certainty contrasted the actual participant's relative uncertainty, since relatively uncertain students were specifically recruited to participate. For Condition C, the four fictional participants' essays reflected typical college student interests and activities (Appendix D). These essays were all handwritten on the same printout as the actual participant's essay, gender was neutral, and years in school were diverse.

After reading the four essays, the participant was asked to rank the fictional participants (Appendix E); 1 indicating the most desire to speak with him or her, and 4 indicating the least desire to speak with him or her. The participant was told the other participants were engaging in

the same ranking process after reading all essays. The research assistant then collected the participant's rankings, and left the room to ostensibly collect rankings from the other participants and compile them to determine discussion pairs.

Experimental manipulation of social exclusion. In the exclusion conditions (Conditions B and C), the research assistant returned to the participant's room, stating that the four fictional participants all ranked the actual participant fourth. The research assistant told the participant that since he or she was ranked fourth from everyone else, he or she had to wait to engage in the career discussion activity. The research assistant left the exclusion ranking sheet (Appendix E) with the participant and left the room. After two minutes, the research assistant returned and asked the participant to start working on a survey while he or she waited to talk with other participants. Once the participant finished the survey, he or she was debriefed about the study.

Experimental manipulation of social inclusion. In the inclusion condition (Condition A), the research assistant returned to the participant's room, stating that the four fictional participants all ranked the actual participant first. The research assistant recorded these rankings on a sheet of paper and left it with the participant (Appendix E). The research assistant then stated the participant would be able to talk to his or her first choice of the fictional participants, but first he or she will complete a few surveys. Debriefing occurred after the participant completed the survey, but before any purported discussions with other participants took place.

Administration of dependent measures. Demographic information was requested after participants provide informed consent, but before they began the study. Following the essay and ranking process, participants were presented with the Sense of Belonging Scale, the Sense of Control Scale, the Social State Self-Esteem Scale, the Meaning in Life Questionnaire, the Career Decision Self-Efficacy Scale, and the Vocational Outcome Expectations Scale.

Manipulation check. At the end of the study, participants were presented with four manipulation check items. The first manipulation check asked participants to indicate how many other participants wanted to talk with them (4 out of 4, 3 out of 4, 2 out of 4, 1 out of 4, 0 out of 4). They were asked to rate how excluded they felt after learning of their inclusion or exclusion from the fictional participants. Three bipolar items on 7-point scales were presented to assess exclusion: Included-excluded, accepted-rejected, and welcomed-avoided; Leary et al., 1995).

Debriefing. Before being debriefed, research assistants asked participants questions regarding the nature of the study in order to determine whether participants knew they were being deceived. Participants were then fully verbally debriefed by the research assistants regarding the purpose and deceptive nature of the study. They had the opportunity to ask questions at that time. Research assistants were trained to assess for distress in participants assigned to the social exclusion conditions. All participants were given a copy of the written debriefing information with the researcher's contact information, as well as information about resources for career exploration and counseling on campus.

CHAPTER FOUR
RESULTS

Study 1

Descriptive Statistics

Table 1 presents descriptive statistics and correlations among study variables: Academic

Major Certainty, Subjective Distress, and Positive and Negative Characteristic average scores for

each of the experimental conditions.

Table 1.
Descriptive Statistics and Correlations among Study 1 Variables.

	Mean	SD	1	2	3	4	5	6
1 Academic Major Certainty	3.94	1.37	.91					
2 Subjective Career Distress	3.08	.92	**-.46***	.93				
3 Certain Student Condition (+)	5.27	1.35	.07	-.05	.92			
4 Uncertain Student Condition (+)	4.49	1.36	-.06	.01	**.68***	.92		
5 Certain Student Condition (-)	3.00	1.42	-.03	**.23***	.11	**.24***	.89	
6 Uncertain Student Condition (-)	2.65	1.24	.03	**.16***	**.20***	**.28***	**.59***	.89

Note. *N* = 433; Coefficient alphas are listed at the correlation table diagonal; (+) Signifies measurement of positive characteristics; (-) Signifies measurement of negative characteristics; Academic Major Certainty and Subjective Career Distress were measured using 6-point scales, with higher scores indicating higher levels of certainty and distress, respectively; Mean scores ranged from 1 to 6 for Academic Major Certainty and from 1 to 5.95 for Subjective Career Distress; Positive and negative characteristics were measured using 9-point scales. RANGES
* *p* < .01.

Manipulation Check

The validity of the certain and uncertain student descriptions used in the experimental

manipulation was tested using two of the characteristics rated by participants: Decisive and

indecisive. Results of a paired sampled *t*-test for "decisive" revealed a within-subject mean

difference of 4.28 (*SD* = 2.53), with the certain student having a higher decisiveness rating (*t* =

35.12, *p* < .00001). The effect size of the difference was 1.69, 95% CI [1.59, 1.78]. For

"indecisive," the within-subject mean difference was -4.65 (*SD* = 2.55), with the uncertain

student having a higher indecisiveness rating ($t = -37.97$, $p < .00001$). The effect size of the difference was -1.82, 95% CI [-1.92, -1.73]. These results indicate that the experimental manipulation materials were valid and effective.

Hypothesis Testing

Hypothesis 1. If a lack of academic major certainty is socially devalued in the college environment, the uncertain student, compared to the certain student, will be rated significantly lower on positive characteristics and significantly higher on negative characteristics.

Hypothesis 1 was partially supported. A series of paired-samples *t*-tests was conducted to detect significant within-subject differences between the average positive characteristic ratings and average negative characteristic ratings of the two fictional students. The within subjects 2-level independent variable was the type of fictional student description (uncertain vs. certain), and the two dependent variables were mean scores of positive characteristics and mean scores of negative characteristics.

Results revealed that participants rated the certain student significantly higher than the uncertain student on positive characteristics ($t = 14.76$, $d = 0.71$, $p < .00001$). The effect size was medium (Cohen, 1992). Participants also rated the certain student significantly higher than the uncertain student on negative characteristics, but the effect size was small ($t = 5.87$, $d = 0.28$, $p < .00001$). In addition, a series of paired-samples *t*-tests was conducted for individual positive and negative characteristics in order to provide additional information and aid interpretation of results. A Bonferroni adjustment for multiple comparisons was used to determine significance. A significance level of $p < .004$ was used for the 12 positive characteristics and $p < .007$ for the seven negative characteristics. The characteristics with the largest effect sizes were *stable* ($d = 0.97$, $p < .001$), *reliable* ($d = 0.75$, $p < .001$), *knowledgeable* ($d = 0.64$, $p < .001$), *intelligent* ($d = $

0.58, *p* < .001), and *practical* (*d* = 0.49, *p* < .001), each favoring certain over uncertain students.

Results are presented in Table 2.

Table 2.
Results of Paired-Samples t*-tests (Certain – Uncertain) across Averaged and Individual Positive and Negative Characteristics.*

| Characteristics | Within-Subject Difference | | 95% CI of the Difference | | | |
	Mean	SD	Lower	Upper	*d*	*t*
Decisive	4.28*	2.53	4.04	4.52	1.69	35.12
Indecisive	-4.65*	2.55	-4.89	-4.41	-1.82	-37.97
Positive Mean	**0.78***	**1.10**	**0.68**	**0.89**	**0.71**	**14.76**
Stable	2.32[a]	2.40	2.10	2.55	0.97	20.18
Reliable	1.61[a]	2.15	1.41	1.81	0.75	15.62
Knowledgeable	1.20[a]	1.88	1.02	1.38	0.64	13.32
Intelligent	1.04[a]	1.79	0.87	1.21	0.58	12.06
Practical	1.08[a]	2.20	0.87	1.28	0.49	10.21
Rational	1.01[a]	2.13	0.81	1.21	0.47	9.88
Tolerant	0.32[a]	1.99	0.13	0.50	0.16	3.32
Likeable	0.22	1.75	0.05	0.38	0.12	2.58
Humane	0.19	1.70	0.03	0.35	0.11	2.38
Kind	0.19	1.68	0.03	0.35	0.11	2.38
Warm	0.18	1.62	0.03	0.33	0.11	2.31
Honest	0.04	1.97	-0.15	0.22	0.02	0.39
Negative Mean	**0.34***	**1.21**	**0.23**	**0.46**	**0.28**	**5.87**
Rigid	0.84[b]	2.25	0.63	1.06	0.38	7.80
Arrogant	0.49[b]	1.88	0.32	0.67	0.26	5.49
Self-centered	0.45[b]	1.78	0.28	0.62	0.25	5.23
Snobbish	0.39[b]	1.66	0.24	0.55	0.24	4.92
Argumentative	0.39[b]	2.19	0.19	0.60	0.18	3.74
Insensitive	-0.26[b]	1.58	-0.41	-0.11	-0.16	-3.43
Obnoxious	0.09	1.62	-0.63	0.24	0.06	1.15

Note. N = 433; Manipulation check items are listed first, followed by positive and negative characteristics from highest to lowest effect sizes.
*Statistical significance at *p* < .001.
[a]Statistical significance at Bonferroni adjustment cutoff of *p* < .004.
[b]Statistical significance at Bonferroni adjustment cutoff of *p* < .007.

Consistent with Hypothesis 1, the uncertain student was rated significantly less positively than the certain student. The medium effect of this difference ($d = 0.71$) suggests that academic major certainty is viewed more positively than academic major uncertainty, and thus the latter can be considered as a socially devalued attribute. However, inconsistent with Hypothesis 1 was the finding that the certain student, while rated significantly more positively than the uncertain student, was also rated significantly more negatively than the uncertain student; though this difference was small. Only one of the eight negative characteristics were rated in the predicted direction: *Insensitive* ($d = -0.16$) had a small effect in line with Hypothesis 1's prediction that the uncertain student would be rated more negatively than the certain student.

Hypothesis 2a. If students are engaging in self-enhancement bias based on academic major certainty, participants lower in academic major certainty will rate the certain student (compared to the uncertain student) significantly lower on positive traits and higher on negative traits. Participants higher in academic major certainty will show the effect predicted by Hypothesis 1, in which the certain student (compared to the uncertain student) is rated significantly higher on positive traits and lower on negative traits.

A mean split procedure was used to dichotomize academic major certainty in order to examine potential moderator and interaction effects on positive and negative ratings of the two fictional students. Scores below the mean were considered "Low Academic Major Certainty," while scores above the mean were considered "High Academic Major Certainty." The dichotomized variable was entered into two separate 2 X 2 repeated measures mixed analyses of variance (ANOVA) as a between-subjects independent variable. Experimental condition was the within-groups variable (certain condition/uncertain condition). The first dependent variable

examined was the positive characteristics mean and the second was the negative characteristics mean.

For the positive characteristics mean, results revealed a significant main effect of the within-subjects variable, positive characteristics mean, across the certain and uncertain student conditions, with the certain student rated more positively, $F(1, 430) = 216.88$, $p < .001$. Results revealed no significant main effect of the between-subjects variable, academic major certainty, $F(1, 430) = .002$, $p = .967$, partial $\eta^2 = .335$. However, there was a significant interaction effect between experimental condition and academic major certainty on the positive characteristic mean, $F(1, 430) = 6.57$, $p = .011$, partial $\eta^2 = .015$. An examination of the interaction effect revealed that participants with high academic major certainty produced a large range between positive ratings of the certain and uncertain students, with the certain student rated more positively than the uncertain student. Participants with low academic major certainty produced the same pattern of ratings, but the range between the certain and uncertain student was smaller by .27 for the positive characteristics. These results are presented in Figure 4.

For the negative characteristics mean, results revealed a significant main effect of the within-subjects variable, negative characteristics mean, across the certain and uncertain student conditions, with the certain student rated more negatively, $F(1, 430) = 34.90$, $p < .001$, partial $\eta^2 = .075$. Results revealed no significant main effect of the between-subjects variable, academic major certainty ($F(1, 430) = .198$, $p = .657$). The interaction effect between experimental condition and academic major certainty was also not significant ($F(1, 430) = .909$, $p = .341$).
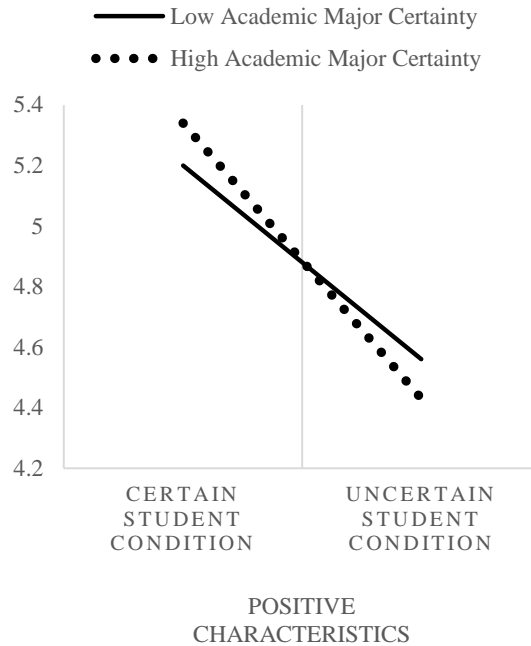
Figure 4. Line graphs illustrating the effects of academic major certainty on positive characteristic ratings of the certain and uncertain student vignettes.

Hypothesis 2b. If students are engaging in self-enhancement bias based on subjective career distress, participants higher in subjective career distress will rate the certain student (compared to the uncertain student) significantly lower on positive traits and higher on negative traits. Participants lower in subjective career distress will show the effect predicted by Hypothesis 1, in which the certain student (compared to the uncertain student) is rated significantly higher on positive traits and lower on negative traits.

A mean split procedure was used to dichotomize subjective career distress in order to examine potential moderator and interaction effects on positive and negative ratings of the two fictional students. Scores below the mean were considered "Low Subjective Career Distress," while scores above the mean were considered "High Subjective Career Distress." This dichotomized variable was entered into two separate 2 X 2 repeated measures mixed ANOVAs

as a dichotomous between-subjects independent variable. Experimental condition was the within-groups variable (certain condition/uncertain condition). The first dependent variable examined was the positive characteristics mean and the second was the negative characteristics mean.

For the positive characteristics mean, results revealed a significant main effect of the within-subjects variable, positive characteristics mean, across the certain and uncertain student conditions, with the certain student rated more positively, $F (1, 430) = 225.87$, $p < .001$, partial $\eta^2 = .344$. Results revealed no significant main effect of subjective career distress, $F (1, 430) = .01$, $p = .904$. There was no significant interaction effect between experimental condition and subjective career distress on the positive characteristic mean, $F (1, 430) = .30$, $p = .585$.

For the negative characteristics mean, results revealed a significant main effect of the within-subjects variable, negative characteristics mean, across the certain and uncertain student conditions, with the certain student rated more negatively, $F (1, 430) = 34.12$, $p < .001$, partial $\eta^2 = .074$. Results revealed a significant main effect of subjective career distress, with higher distress participants rating both fictional students more negatively, $F (1, 430) = 15.78$, $p < .001$, partial $\eta^2 = .035$. The interaction effect between experimental condition and subjective career distress was also significant, $F (1, 430) = 7.95$, $p = .005$, partial $\eta^2 = .018$. An examination of the interaction effect revealed that the High Subjective Career Distress group (compared to the Low Subjective Career Distress group) rated both the certain and uncertain students significantly more negatively. Further, the High Subjective Career Distress group rated the certain student significantly more negatively than the uncertain student. These results are presented in Figure 5.
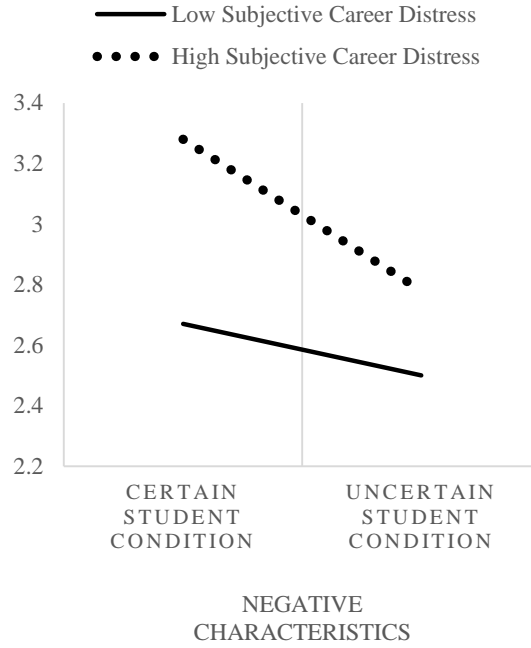
Figure 5. Graph illustrating the differential effects of subjective career distress on negative characteristic ratings of the certain and uncertain student vignettes.

Study 2

Manipulation Check

Three unidimensional Likert items (included-excluded, accepted-rejected, and welcomed-avoided) were averaged to produce a check of the experimental manipulation. Each item was on a 7-point scale, with higher scores indicated a greater feeling of exclusion. Within the full sample of relatively uncertain participants ($N = 184$), the career-based inclusion condition ($n = 69$) had a mean of 1.69 ($SD = 1.06$, range: 1-5.33). The career-based exclusion condition ($n = 59$) had a mean of 5.56 ($SD = 1.12$, range: 3.67-7), and the personal exclusion condition ($n = 56$) had a mean of 5.64 ($SD = 1.06$, range: 3-7). Results from a one-way ANOVA indicated significant differences between groups, $F (2, 181) = 282.16$, $p < .001$. Post hoc comparisons revealed significant differences between the inclusion condition and both exclusion conditions, and no significant difference between the two exclusion conditions.

Hypothesis Testing

Analyses were conducted to ensure equal groups across conditions and semester of participation. There were no statistically significant differences in academic major certainty among the three experimental conditions, $F (2, 145) = 0.50$, $p = .605$. The final study sample consisted of 148 participants, 105 participated in Fall 2015 and 42 in Spring 2016. There were no significant differences between these two groups of participants on any study variables except Vocational Outcome Expectations, with Fall 2015 participants reporting higher levels than Spring 2016 participants, $F (1, 146) = 7.89$, $p = .006$.

Hypothesis 3. If social exclusion negatively affects Williams' (2009) basic psychological needs, then then socially excluded participants (compared to their socially included counterparts) will have significantly lower levels of belonging, control, state self-esteem, and meaning (as

measured by the Sense of Belonging Scale, the Sense of Control Scale, the Social State Self-Esteem Scale, and the Meaning in Life Questionnaire, respectively).

This hypothesis was tested by conducting a series of one-way between-groups ANOVAs to compare the effect of experimental condition (career inclusion, career exclusion, and personal exclusion) on the four psychological needs. The variances across groups for each dependent variables were statistically homogenous (*ps* > .05). Supporting Hypothesis 3, results revealed significant differences among the three experimental conditions for all four need variables: Sense of Belonging (*F* [2, 145] = 3.50, *p* = .033), Sense of Control (*F* [2, 145] = 3.63, *p* = .029), State Self-Esteem (*F* [2, 145] = 3.85, *p* = .024), and Meaning in Life (*F* [2, 145] = 3.40, *p* = .036). Table 3 presents results from the post-hoc comparisons between the career inclusion condition and the two exclusion conditions. Post-hoc comparisons among the three groups revealed that participants in the career inclusion condition (compared to participants in the two exclusion conditions) had significantly higher scores on all four need variables, with effect sizes ranging from small to medium. These results indicate that the experimental manipulation successfully replicated past findings connecting social exclusion to lower levels of belonging, sense of control, state self-esteem, and meaning in life. The only non-significant difference was between career inclusion and career exclusion on the Meaning in Life variable, which was inconsistent with Hypothesis 3.

Table 3.
ANOVA Post-Hoc Comparisons of Psychological Need Variable Means among the Three Experimental Conditions.

Psychological Need Variables	Career Inclusion (–)	Mean Difference	*p*	95% CI of the Difference		*d*
				Lower	Upper	
Sense of Belonging	Career Exclusion	0.37	.040	0.01	0.72	0.40*
	Personal Exclusion	0.42	.018	0.08	0.77	0.52*
Sense of Control	Career Exclusion	0.22	.049	0.01	0.44	0.40*
	Personal Exclusion	0.28	.013	0.06	0.50	0.53*
State Self-Esteem	Career Exclusion	0.46	.015	0.09	0.82	0.50*
	Personal Exclusion	0.41	.027	0.05	0.78	0.45*
Meaning in Life	Career Exclusion	0.41	.074	-0.04	0.85	0.37
	Personal Exclusion	0.56	.014	0.12	1.01	0.51*

Note. Career Inclusion *n* = 56; Career Exclusion *n* = 46; Personal Exclusion *n* = 46.
*p < .05

Hypothesis 3 revealed that the socially excluded participants – regardless of whether they were excluded for career-related reasons or personal reasons – experienced significantly lower levels of belonging, sense of control, state self-esteem, and meaning in life compared to their socially included peers. Hypothesis 4 went on to test whether those experimentally lowered psychological needs have any significant effects on two variables related to the career decision-making process: Career decision self-efficacy and vocational outcome expectations.

Hypothesis 4. If social exclusion acts as a contextual barrier within the Social Cognitive Career Theory (SCCT) career decision-making (CDM) framework, its effects on Williams' (2009) four psychological needs (Sense of Belonging Scale, the Sense of Control Scale, the Social State Self-Esteem Scale, and the Meaning in Life Questionnaire) would significantly negatively affect Career Decision Self-Efficacy. The four needs would also significantly negatively affect Vocational Outcome Expectations directly and indirectly through career decision-making self-efficacy.

This hypothesis was tested through two separate series of hierarchical multiple regression models. One series of models was designed to predict Career Decision Self-Efficacy (CDSE) , while the second was designed to predict Vocational Outcome Expectations (VOE). Dummy coding was used to facilitate direct comparisons among the three levels of experimental condition; thus each series of regressions was comprised of four models comparing different experimental conditions. Experimental condition dummy variables were entered into the first step of each regression model. The four need variables (Sense of Belonging Scale, the Sense of Control Scale, the Social State Self-Esteem Scale, and the Meaning in Life Questionnaire) were entered simultaneously in the second step as continuous predictor variables. The models predicting CDSE were comprised of only those two steps; however, in accordance with the SCCT career choice model, the models predicting VOE included a third step with CDSE as a continuous predictor variable.

Results revealed that experimental condition did not contribute significantly to the prediction of either CDSE or VOE. Sample sizes among conditions may not have provided enough power to detect significant effects resulting from experimental manipulation. Regarding the need variables in step 2, various significant effects were seen across models. Three out of four need variables (belonging, sense of control, and meaning in life) significantly contributed to CDSE in two predictive models, accounting for 33-47% of the variance. The same three need variables significantly contributed to the prediction of VOE in all models (with the exception of sense of control in one model), accounting for 38-44% of the variance. The most important need variable across all models for both criterion variables was meaning in life; while the least important need variable was state self-esteem, which had no significant effects in any model.

Consistent with the SCCT career choice model, CDSE was a significant predictor of VOE, accounting for an additional 9-11% of the variance after the significant contributions of the four need variables. The proportion of variance in VOE accounted for by the full models ranged from 47-55%.

Overall, Hypothesis 4 was partially supported. While experimental condition did not matter statistically, three of the four psychological needs that had decreased due to social exclusion produced significant and direct effects on the two vocational variables. Results from regression models predicting Career Decision Self-Efficacy are presented in Table 4, while results predicting Vocational Outcome Expectations are presented in Table 5.

Table 4.

Results of Hierarchical Regression Models with Experimental Condition and Psychological Needs Predicting Career Decision Self-Efficacy.

Step	Predictor Variables	Model 1: (0) Career Inclusion (1) Career Exclusion			Model 2: (0) Career Inclusion (1) Personal Exclusion			Model 3: (0) Career Exclusion (1) Personal Exclusion			Model 4: (0) Career Inclusion (1) Both Types of Exclusion		
		B	SE	β	B	SE	β	B	SE	β	B	SE	β
1	(Constant)	3.55***	0.07		3.55***	0.07		3.54***	0.08		3.55***	0.07	
	Condition	-0.02	0.10	-.02	-0.13	0.11	-.12	-0.11	0.11	-.11	-0.07	0.09	-.07
		F 0.02			F 1.50			F 1.01			F 0.66		
		R^2 .000			R^2 .015			R^2 .011			R^2 .005		
2	Sense of Belonging	0.10	0.05	.19	0.10	0.06	.15	0.11*	0.05	.19	0.10*	0.05	.17
	Sense of Control	0.16	0.09	.18	0.20	0.11	.20	0.18*	0.08	.21	0.19*	0.08	.20
	State Self-Esteem	0.05	0.06	.10	0.12	0.06	.21	0.09	0.06	.15	0.09	0.05	.16
	Meaning in Life	0.13**	0.04	.29	0.07	0.05	.16	0.16***	0.04	.36	0.12**	0.04	.28
		F 8.34***			F 6.82***			F 14.96***			F 14.16***		
		R^2 .303			R^2 .262			R^2 .465			R^2 .333		
		ΔR^2 .303			ΔR^2 .247			ΔR^2 .454			ΔR^2 .328		

Note. Career Inclusion n = 56; Career Exclusion n = 46; Personal Exclusion n = 46.

*p < .05. **p < .01. ***p < .001.

Table 5.
Results of Hierarchical Regression Models with Experimental Condition and Psychological Needs Predicting Vocational Outcome Expectations.

Step	Predictor Variables	Model 1: (0) Career Inclusion (1) Career Exclusion			Model 2: (0) Career Inclusion (1) Personal Exclusion			Model 3: (0) Career Exclusion (1) Personal Exclusion			Model 4: (0) Career Inclusion (1) Both Types of Exclusion		
		B	SE	β	B	SE	β	B	SE	β	B	SE	β
1	(Constant)	3.55***	0.05		3.55***	0.05		3.45***	0.06		3.55***	0.05	
	Condition	-0.10	0.08	-.13	-0.12	0.07	-.16	-0.02	0.08	-.03	-0.11	0.07	-.14
		F 1.60			F 2.74			F 0.08			F 2.90		
		R^2 .016			R^2 .027			R^2 .001			R^2 .019		
2	Sense of Belonging	0.09*	0.04	.22	0.09*	0.04	.21	0.09*	0.04	.21	0.09**	0.03	.21
	Sense of Control	0.16*	0.07	.23	0.08	0.07	.12	0.19**	0.06	.30	0.14**	0.05	.21
	State Self-Esteem	0.07	0.04	.16	0.06	0.04	.14	-0.01	0.04	-.03	0.04	0.03	.10
	Meaning in Life	0.08*	0.03	.22	0.13***	0.03	.39	0.13***	0.03	.40	0.11***	0.03	.34
		F 11.84***			F 12.01***			F 13.55***			F 18.57***		
		R^2 .382			R^2 .385			R^2 .441			R^2 .395		
		ΔR^2 .366			ΔR^2 .358			ΔR^2 .440			ΔR^2 .376		
3	Career Decision Self-Efficacy	0.29***	0.07	.36	0.26***	0.06	.36	0.33***	0.07	.46	0.28***	0.06	.38
		F 14.02***			F 14.72***			F 17.62***			F 22.52***		
		R^2 .470			R^2 .482			R^2 .554			R^2 .489		
		ΔR^2 .088			ΔR^2 .097			ΔR^2 .114			ΔR^2 .094		

Note. Career Inclusion $n = 56$; Career Exclusion $n = 46$; Personal Exclusion $n = 46$.
*$p < .05$. **$p < .01$. ***$p < .001$.

CHAPTER FIVE
DISCUSSION

Study 1

The purpose of this overall investigation was to better understand the full, complex picture of college student career decision-making. Most career decision-making theories delineate the process as if it occurred within a vacuum and without external factors supporting or thwarting career decision-making success. Social Cognitive Career Theory, however, posits a model in which the career decision-making process is conceptualized within the larger social context – defined by supports and barriers (Lent et al., 2000). The present investigation combined social psychology and vocational psychology in order to examine characteristics of the college social microcosm and their relations to career decision-making. Study 1 was designed to first answer the simple question of whether the social microcosm of college includes interpersonal social phenomena found in other sociocultural settings, such as stereotyping and biases. Results revealed that these divisive social behaviors do exist in college student culture. A student who was certain about his/her academic major and career path was judged significantly more positively than a student who was uncertain. This difference was of a medium effect ($d = 0.71$; Cohen, 1992) and provides strong evidence that negatively biased social stereotyping is occurring in the college student environment. As academic majors and career paths are highly salient with the college student population, it seems that students have developed social judgments unique to their circumstances that aid determination of social value.

In any social environment, people instinctually develop both implicit and explicit judgments of group members' social value (Baumeister et al., 2013). There is generally purpose to these judgments and some truth in them despite their overgeneralized use (Steele, Spencer, & Aronson, 2002). For college students, clarity and certainty regarding academic major and career

goals have emerged as determinants of social value. This judgment makes sense, as higher clarity and certainty allow students to engage fully with the academic aspect of college and prepare themselves for careers; however, students still need to navigate their career decision-making processes in individually appropriate ways. Idiosyncratic career development is emphasized to some extent in every theory of vocational development (Sharf, 2013); yet these social judgments and biases may be motivating students to behave in a manner aimed at increasing their social value, causing them to sacrifice thoughtful, intentional engagement in the career decision-making process.

While the certain student was judged more positively than the uncertain student, an unanticipated finding from Study 1 was that the certain student was also judged more negatively. However, upon examining this finding in a subsample of participants who reported low levels of subjective career distress, the discrepancy in negative judgments between the certain and uncertain student disappeared; both students were rated equally on negative characteristics. It was the participants who reported high levels of subjective career distress who rated the certain student more negatively than the uncertain student. The high career distress participants rated both fictional students more negatively than their low career distress peers, but showed an even increased negativity when it came to the certain student. This effect is consistent with the self-enhancement bias hypothesized to occur for participants who may have felt threatened by the "success" of the fictional certain student.

Regardless of their own levels of academic major certainty, high career distress participants may have perceived the certain student as someone who has not encountered distress and perhaps navigated the career decision-making process with ease. This may have been interpreted as a threat to self-esteem, thus requiring a response that would reverse the feeling that

the certain student holds higher social value than the participant. One available strategy to reduce the social value of the certain student and achieve protective self-enhancement was to assign them more negative character evaluations. A number of studies have linked prejudice and negative outgroup stereotyping to efforts to enhance one's positive or valuable self-image (e.g., Fein & Spencer, 1997; Twenge, Baumeister, Tice, & Stucke, 2001). Future research will have to examine the practical implications of students downgrading their "successful" (i.e., certain) career decision-making peers for self-enhancement purposes. However, it is likely that this pattern of social behavior is detrimental to the campus climate and social relationships among students.

An additional unanticipated finding was that, while academic major certainty and subjective career distress were significantly related ($r = .46$), academic major certainty did not differentially affect negative ratings of the fictional students like subjective career distress did. In essence, participants with higher academic major certainty would not need to engage in self-enhancement by rating the certain student more negatively, but they still produced that effect. This finding may be a product of the very phenomenon this investigation sought to examine: A self-protective, social value-enhancing response to clear social bias against academic major *uncertainty*. The results of this investigation as a whole call into question the validity of students' self-reported levels of academic major uncertainty, as their estimations are inextricably tied to the knowledge that uncertainty is a socially devalued quality in a college student. This explanation sheds additional doubt on the validity of other vocational assessments – if academic major certainty is biased by social desirability, what other constructs are subjected to the same problem?

Regarding character assessments in Study 1, bidimensional assessment of positive and negative characteristics allowed for participants to convey a sense of ambivalence when it came to judging their certain and uncertain peers. Findings from Study 1 indicate that college students are experiencing internal conflict between acknowledging seemingly valid determinants of social value in their environment and maintaining positive views of self. Career decision-making, previously thought of as its own inclusive process, is likely complicated by these conflictual external and internal social conditions. How might social stereotypes and biases be influencing career decision-making in college students? Study 2 sought to begin answering this question through an experimental manipulation of social exclusion.

Study 2

Within the larger investigation of how the college social environment may be influencing career decision-making processes, Study 2 utilized Social Cognitive Career Theory (Lent et al., 2000) to examine social exclusion as a possible contextual barrier within their career decision-making model. Study 1 provided compelling evidence that the college social environment is conducive to the development of unique stereotyping and group biases. These socially divisive constructs serve as determinants of social value in order for group members to quickly determine who might be more valuable to them, thus causing exclusion and inclusion behaviors (Neuberg et al., 2010). Study 2 focused specifically on social exclusion in this initial examination of how the social environment of college may influence students' career decision-making processes.

Consistent with previous research on social exclusion, socially excluded participants produced significantly lower levels of belonging, sense of control, state self-esteem, and meaning in life than their included peers. Effect sizes ranged from small to medium, indicating that excluded participants showed practically meaningful decreases in their basic psychological

needs (Williams, 2009). When these needs were examined alongside two important vocational variables, career decision-making self-efficacy and vocational outcome expectations, meaningful effects again emerged from the data. Belonging, sense of control, and meaning in life all made significant individual contributions to both vocational variables, accounting for 33-47% of the variance in career decision-making self-efficacy and 38-44% of the variance in vocational outcome expectations. Meaning in life emerged as the most potent predictor of the two vocational variables, while state self-esteem did not make any significant contributions to either variable. Furthermore, belonging, sense of control, meaning in life, and career decision-making self-efficacy together accounted for 47-55% of the variance in vocational outcome expectations. Consistent with the SCCT career decision-making model, career decision-making self-efficacy significantly contributed to vocational outcome expectations in addition to the direct effects of belonging, sense of control, and meaning in life. However, the direction of these relations remains unclear given the methodology used in the present study and the null effects of experimental condition. Future research will need to clarify the underlying process and direction of the relations between career decision-making self-efficacy, vocational outcome expectations, belonging, sense of control, and meaning in life.

The experimental manipulation of social exclusion significantly influenced basic psychological needs, but did not significantly contribute to the vocational variables. Instead, a large portion of the variance was attributed exclusively to three of the psychological needs. These results suggest that Williams' (2009) basic psychological needs (with the exception of state self-esteem) are implicated in the career decision-making process of college students, independent of the social exclusion paradigm used in this experiment. As these needs have been linked to social exclusion and inclusion experiences with medium to large effects in previous

research (Gerber & Wheeler, 2009), it is possible that the manipulation used in this study was not potent enough to precipitate the hypothesized reactions. It may also be the case that social exclusion stemming from stereotype biases is too subtle in the college environment to be captured by the methodology of the present study. Alternatively, the effects of social exclusion on career decision-making processes could be highly complicated by myriad other social psychological phenomena. However, as this is the first study explicitly examining the influence of social factors on aspects of the career decision-making process, it provides a foundation from which future research can be conducted. Future research can examine predictors of Williams' (2009) four basic psychological needs that also contribute to vocational variables, such as those examined here.

A finding inconsistent with hypotheses was that no significant differences were found between career-based and personal social exclusion. In fact, trends in the data indicated that personal exclusion was a more potent exclusion experience than career-based exclusion, even in the prediction of vocational variables. This trend may be a byproduct of differential views of "career" in college students; some students may view it as part of their identities, while others may view it as means to a financial end.

Conclusions & Implications

Studies 1 and 2 provided evidence that career decision-making is entangled with the larger social culture of college, and academic major/career certainty has become a determinant of social value in that culture. Furthermore, subsequent stereotyping and biases may lead to divisive social behavior, such as social exclusion, which the present investigation linked to lower levels of belonging, sense of control, state self-esteem, and meaning in life. Three of those needs (belonging, sense of control, and meaning in life) were positively related to two important

aspects of career decision-making: Career decision-making self-efficacy and vocational outcome expectations. While much of the research on career decision-making has examined the process as if it were a simple step-by-step path, the present findings support contextualized models that account for cultural supports and barriers. For example, Social Cognitive Career Theory (Lent et al., 2000) posits that career decision-making occurs within the larger social context of the person's environment. Students are likely experiencing internal conflict between wanting to engage with the career decision-making process in a thoughtful, intentional way that is individually authentic, while struggling with internal and external negative judgments if they perceive themselves as "behind" their peers.

While the social exclusion manipulation in the present investigation did not produce effects on vocational variables, career decision-making self-efficacy and vocational outcome expectations were negatively affected by lowered levels of belonging, sense of control, and meaning in life. These three needs must be attended to in the vocational literature as important precipitants to engagement with the career decision-making process. Further, consistent with the SCCT career choice model (Lent et al., 2002), future research should assess how these needs influence interests, choice goals, and choice actions through self-efficacy and outcome expectations.

Researchers, professors, counseling center staff, academic advisors, university officials, and other university staff need to be aware of the unique social pressures students are facing at colleges and universities. While it remains unclear how these social stereotypes and biases are practically affecting students' career decision-making processes, measures can be taken to normalize individualized career decision-making processes in order to lessen the effects of social pressure. For example, universities can emphasize thoughtful, intentional navigation through the

career decision-making process. Most students are left to navigate this process on their own, without knowing necessarily how to go about it. Many universities offer career development courses, the effectiveness of which has been empirically supported (Reese & Miller, 2006). However, students who take those classes are the exception rather than the rule. Students need support from the people they regularly interact with – such as instructors and teaching assistants, academic advisors, residence advisors, etc. Action must be taken to eliminate the negative bias against academic major uncertainty to prevent it from pushing students into majors they do not like, or leading students to overwhelming distress for feeling like they have fallen behind their purportedly certain peers. More attention must be paid to guiding students through the career decision-making process so they graduate with majors they enjoy and career paths they will find fulfilling. A more thoughtful, deliberate approach would benefit universities and colleges as well. Students may end up changing their majors fewer times, they may experience less career distress, they may engage in less social comparison leading to a more peaceful campus climate, and they would likely graduate feeling satisfied with their college experience.

Finally, the finding that meaning in life was the most powerful predictor of both vocational variables is worth attention in the vocational literature, as well as colleges and universities. One interpretation of the finding is that students who have high career decision-making self-efficacy and vocational outcome expectations subsequently report greater meaning in their lives. If so, individualized guidance and support aimed at increasing those aspects of career decision-making should be emphasized in order to ensure all students are benefitting from a sense that their lives have meaning. If students feel like the time and energy they spend in college is meaningful, they may feel more engaged, more optimistic, and more motivated to create fulfilling vocational lives for themselves. However, a second interpretation of this finding

is that a greater sense of meaning in life contributed to students having higher career decision-making self-efficacy and vocational outcome expectations. In this case, interventions aimed at increasing students' meaning in life (e.g., giving them a sense of importance in classes, residence halls, or within their majors) would serve the important purpose of increasing their self-efficacy in career decision-making and improving their vocational outcome expectations. While future research needs to further examine this relation, either interpretive direction points to practically meaningful implications for college student career decision-making.

Limitations & Future Directions

Further research needs to be conducted in order to replicate and expand upon the findings of the present investigation. As many of the conclusions drawn here are being presented for the first time, caution must be taken in generalizing them without further supportive research. In addition, there are potential limitations in generalizability due to content of the experimental manipulations in Study 1 and 2. Future research could replicate these study designs using alternative manipulation content to clarify whether these results were specific or generalizable to the college student population. The null findings between social exclusion and vocational variables may have been a manipulation potency problem. Future research could experiment with alternative manipulation paradigms that better emphasize career-based social exclusion. Future research could also examine the differential effects of social exclusion based on idiosyncratic proximal vs. distal identity factors. For example, the degree to which students connect career to their personal identities (as opposed to viewing it exclusively as a means of financial support) may influence how they respond to career-based social exclusion. Furthermore, the title used to advertise Study 2 ("Career Discussions") may have resulted in sampling bias, deterring students who may have been avoidant of anything career-related due to

uncertainty or career distress. Thus, Study 2 results may have been affected by the loss of this subgroup of students.

An important limitation of the present investigation is the lack of cultural diversity among the sample. The samples for both Study 1 and 2 were predominantly White and, for Study 2, largely female. Moderating effects of race/ethnicity, international student status, first generation college student status, social class and socioeconomic status, and other multicultural variables are not only likely, but expected when examining social biases and stereotypes. Future research should certainly be done to examine the present findings alongside multicultural variables, and could additionally include socially- or academically- relevant individual difference variables, such as personality, family support, attachment style, and academic ability.

A potential implication for future research on career decision-making in college students is social desirability of assessment responses. The present investigation found that even uncertain students harbor negative judgments toward their fellow uncertain students, and possibly themselves. This conclusion opens the door for potential social desirability playing out whenever students are asked to report their levels of academic major certainty or other related constructs. Researchers could work to develop methods to account for such bias. In the meantime, researchers and consumers must be aware of the potential for social desirability bias in measures assessing constructs that are subject to this social stigma.

An additional important direction for future research is to examine how these biases and stereotypes are actually playing out in interpersonal interactions among students. How do these internal judgments of social value translate to socially divisive behavior in practice? Who is most likely to engage with them and who is not? Finally, a natural deviation from the present findings would be an investigation into other contextual barriers within the college social environment,

but also contextual *supports* within that environment. Aspects of the college culture that may be beneficial to students as they navigate the career decision-making process would also be important for colleges and universities that seek to promote thoughtful, thorough career decision-making.

REFERENCES

Allen, N. B., & Badcock, P. B. (2003). The social risk hypothesis of depressed mood: evolutionary, psychosocial, and neurobiological perspectives. *Psychological bulletin, 129*, 887-913.

Ali, S. R., & McWhirter, E. H. (2006). Rural Appalachian youth's vocational/educational postsecondary aspirations. *Journal of Career Development, 33(2)*, 87-111.

Ali, S. R., McWhirter, E. H., & Chronister, K. M. (2005). Self-efficacy and vocational outcome expectations for adolescents of lower socioeconomic status: A pilot study. *Journal of Career Assessment, 13*, 40-58.

Ali, S. R., & Menke, K. A. (2013). Rural Latino youth career development: An application of social cognitive career theory. The Career Development Quarterly, 62, 175-186.

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*, 469-480.

Bandura, A. (1986). The explanatory and predictive scope of self-efficacy theory. *Journal of Social and Clinical Psychology, 4*, 359-373.

Baumeister, R. R., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117,* 497-529.

Baumeister, R.R., Masicampo, E. J., & Twenge, J. M. (2013). The social self. In *Handbook of Psychology* (2nd ed.). Irving B. Weiner, ed. Hoboken, NJ: John Wiley & Sons.

Betz, N. E. (2000). Self-efficacy theory as a basis for career assessment. *Journal of Career Assessment, 8,* 205-222.

Betz, N. E. (2004). Contributions of self-efficacy theory to career counseling: A personal perspective. *The Career Development Quarterly, 52,* 340-353.

Betz, N. E., & Hackett, G. (1981). The relationship of career-related self-efficacy expectation to perceived career options in college women and men. *Journal of Counseling Psychology, 28*, 399-410.

Betz, N. E., Hammond, M., & Multon, K. (2005). Reliability and validity of response continua for the CDSE. *Journal of Career Assessment*, 13, 131-149.

Betz, N. E., Klein, K., & Taylor, K. M. (1996). Evaluation of a short form of the Career Decision making Self-efficacy Scale. *Journal of Career Assessment, 4,* 47-57.

Betz, N. E. & Voyten, K. K. (1997). Efficacy and outcome expectations influence career exploration and decidedness. *The Career Development Quarterly, 46,* 179-189.

Bollen, A. & Hoyle, R. H. (1990). Perceived cohesion: A conceptual and empirical examination. *Social Forces, 69,* 479-504.

Brown, C., Glastetter-Fender, C., & Shelton, M. (2000). Psychosocial identity and career control in college student-athletes. *Journal of Vocational Behavior, 56,* 53-62.

Bush, G., Luu, P., & Posner, M. I. (2000). Cognitive and emotional influences in anterior cingulate cortex. *Trends in cognitive sciences, 4,* 215-222.

Byars-Winston, A. M. (2006). Racial ideology in predicting social cognitive career variables for Black undergraduates. *Journal of Vocational Behavior, 69,* 134-148.

Chen, Z., Williams, K. D., Fitness, J., & Newton, N. C. (2008). When Hurt Will Not Heal Exploring the Capacity to Relive Social and Physical Pain. *Psychological Science, 19*, 789-795.

Chin, W. W., Salisbury, W. M. D., Pearson, A. W., & Stollak, M. J. (1999). Perceived cohesion in small groups: Adapting and testing the Perceived Cohesion Scale in a small-group setting. *Small Group Research, 30,* 751-766.

Choi, B. Y., Park, H., Yang, E., Lee, S. K., Lee, Y., & Lee, S. M. (2012). Understanding career decision self-efficacy: A meta-analytic approach. *Journal of Career Development, 39,* 443-460.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112,* 155-159.

Constantine, M. G., Wallace, B. C., & Kindaichi, M. M. (2005). Examining contextual factors in the career decision status of African American adolescents. *Journal of Career Assessment, 13,* 307-319.

Creed, P. A., Patton, W., & Bartrum, D. (2004). Internal and external barriers, cognitive style, and the career development variables of focus and indecision. *Journal of Career Development, 30,* 277-294.

Creed, P. A., Patton, W., & Hood, M. (2010). Career development and personal functioning differences between work-bound and non-work bound students. *Journal of Vocational Behavior, 76,* 37-41.

Creed, P. A., & Yin, W. O. (2006). Reliability and validity of a Chinese version of the career decision-making difficulties questionnaire. *International Journal for Educational and Vocational Guidance, 6,* 47-63.

Creed, P. A., Yin, W. O., & Hood, M. (2009). Career decision-making, career barriers and occupational aspirations in Chinese adolescents. *International Journal for Educational and Vocational Guidance, 9,* 189-203.

Crocker, J., & Major, B. (1989). Social stigma and self-esteem: The self-protective properties of stigma. *Psychological Review, 4,* 608-630.

Deemer, E. D., Thoman, D. B., Chase, J. P., & Smith, J. L. (2014). Feeling the Threat Stereotype Threat as a Contextual Barrier to Women's Science Career Choice Intentions. *Journal of Career Development, 41*, 141-158.

Dennis, J. M., Phinney, J. S., & Chuateco, L. I. (2005). The role of motivation, parental support, and peer support in the academic success of ethnic minority first-generation college students. *Journal of College Student Development, 46,* 223-236.

Dik, B. J., Sargent, A. M., & Steger, M. F., (2008). Career development strivings: Assessing goals and motivation in career decision-making and planning. *Journal of Career Development, 35,* 23-41.

Duffy, R. D. (2010). Sense of control and career adaptability among undergraduate students. *Journal of Career Assessment, 18,* 420-430.

Duffy, R. D., Allan, B. A., & Dik, B. J. (2011). The presence of a calling and academic satisfaction: Examining potential mediators. *Journal of Vocational Behavior, 79,* 74-80.

Duffy, R. D., Diemer, M. A., & Jadidian, A. (2012). The development and initial validation of the Work Volition Scale-Student Version. *The Counseling Psychologist, 40,* 291-319.

Eisenberger, N. I., & Lieberman, M. D. (2005). Why it hurts to be left out: The neurocognitive overlap between physical and social pain. In *The social outcast: Ostracism, social exclusion, rejection, and bullying.* K. D. Williams, J. P. Forgas, & W. von Hippel, eds., (pp. 109 – 127). New York: Psychology Press.

Freeman, T. M., Anderman, L. H., & Jensen, J. M. (2007). Sense of belonging in college freshmen at the classroom and campus levels. *The Journal of Experimental Education, 75,* 203-220.

Gardner, W. L., Jefferis, V., & Knowles, M. L. (2009). Social snacking: The use of social symbols in sustaining subjective social connection. Unpublished manuscript, University of Georgia.

Garriott, P. O., & Flores, L. Y. (2013). The role of social cognitive factors in Mexican American students' educational goals and performance: A longitudinal analysis. *Journal of Latino/a Psychology, 1,* 85-94.

Gerber, J., & Wheeler, L. (2009). On being rejected: A meta-analysis of experimental research on rejection. *Perspectives on Psychological Science, 4,* 468-488.

Greenberg, J., Simon, S., Pyszczynski, T., Solomon, S., & Chatel, D. (1992). Terror management and tolerance: Does mortality salience always intensify negative reactions to others who threaten one's worldview? *Journal of Personality and Social Psychology, 63*, 212-220.

Guay, F., Ratelle, C. F., Senecal, C., Larose, S., & Deschenes, A. (2006). Distinguishing developmental from chronic career indecision: Self-efficacy, autonomy, and social support. *Journal of Career Assessment, 14,* 235-255.

Guo, T., & Spina, R. (2014). Regulatory focus affects predictions of the future. *Personality and Social Psychology Bulletin, 41*, 214-223.

Gushue, G. V., Clarke, C. P., Pantzer, K. M., & Scanlan, K. R. L. (2006). Self-efficacy, perceptions of barriers, vocational identity, and the career exploration behavior of Latino/a high school students. *The Career Development Quarterly, 54*, 307-317.

Haselton, M. G. & Nettle, D. (2006). The paranoid optimist: An integrative evolutionary model of cognitive biases. *Personality and Social Psychology Review, 10,* 47-66.

Haught, H. M., Rose, J., Geers, A., & Brown, J. A. (2015). Subjective social status and well-being: The role of referent abstraction. *The Journal of Social Psychology, 0,* 1-14.

Heatherton, T. F., & Polivy, J. (1991). Development and validation of a scale for measuring state self-esteem. *Journal of Personality and Social Psychology, 6,* 895-910.

Hogg, M. A. (2006). Social identity theory. In *Contemporary social psychological theories*. P. J. Burke, ed. Palo Alto, CA: Stanford University Press.

Hull-Blanks, E., Kurpius, S. E. R., Befort, C., Sollenberger, S., Nicpon, M. F., & Huser, L. (2005). Career goals and retention-related factors among college freshmen. *Journal of Career Development, 32,* 16-30.

Inda, M., Rodríguez, C., & Peña, J. V. (2013). Gender differences in applying social cognitive career theory in engineering students. *Journal of Vocational Behavior, 83,* 346-355.

Isik, E. (2013). Perceived social support and locus of control as the predictors of vocational outcome expectations. *Educational Sciences: Theory & Practice, 13,* 1426-1430.

Kim, M. S., & Seo, Y. S. (2014). Social cognitive predictors of academic interests and goals in South Korean engineering students. *Journal of Career Development, 41,* 526-546.

Lachman, M. E., & Weaver, S. L. (1998). The sense of control as a moderator of social class differences in heath and well-being. *Journal of Personality and Social Psychology, 74,* 763-773.

Lakin, J. L., Chartrand, T. L., & Arkin, R. M. (2008). I am too just like you: nonconscious mimicry as an automatic behavioral response to social exclusion. *Psychological Science, 19,* 816–822.

Larson, L. M., Toulouse, A. L., Ngumba, W. E., Fitzpatrick, L. A., & Heppner, P. P. (1994). The development and validation of Coping with Career Indecision. *Journal of Career Assessment, 2*, 81-110.

Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. Journal of *Journal of Personality and Social Psychology, 3,* 518-530.

Leary, M. R. (2005). Sociometer theory and the pursuit of relational value: Getting to the root of self-esteem. *European Review of Social Psychology, 16,* 75-111.

Leary, M. R. (2010). Affiliation, acceptance, and belonging: The pursuit of interpersonal connection. In *Handbook of Psychology* (2nd ed.). Irving B. Weiner, ed. Hoboken, NJ: John Wiley & Sons.

Leary, M. R., Twenge, J. M., & Quinlivan, E. (2006). Interpersonal rejection as a determinant of anger and aggression. *Personality and Social Psychology Review, 10,* 111 – 132.

Lease, S. H., & Dahlbeck, D. T. (2009). Parental influences, career decision-making attributions, and self-efficacy: Differences for men and women? *Journal of Career Development, 36*, 95-113.

Lent, R. W., Brown, S. D., Brenner, B., Chopra, S. B., Davis, T., Talleyrand, R., & Suthakaran, V. (2001). The role of contextual supports and barriers in the choice of math/science educational options: A test of social cognitive hypothesis. *Journal of Counseling Psychology, 48,* 474-483.

Lent, R. W., & Brown, S. D. (1996). Social cognitive approach to career development: An overview. *The Career Development Quarterly, 44,* 310-321.

Lent, R.W., Brown, S.D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior, 45,* 79-123.

Lent, R.W., Brown, S.D., & Hackett, G. (2000). Contextual supports and barriers to career choice: A social cognitive analysis. *Journal of Counseling Psychology, 47,* 36-49.

Lent, R.W., Brown, S.D., & Hackett, G. (2002). Social cognitive career theory. In *Career Choice and Development* (4th ed.). Duane Brown and Associates, eds. Jossy-Bass, A Wiley Company: San Francisco, CA.

Lent, R.W., Brown, S.D., Nota, L., & Soresi, S. (2003). Testing social cognitive interest and choice hypotheses across Holland types in Italian high school students. *Journal of Vocational Behavior, 62,* 101-118.

Lent, R. W., Paixap, M. P., Silva, J. T., & Leitao, L. M., (2010). Predicting occupational interests and choice aspirations in Portuguese high school students: A test of social cognitive career theory. *Journal of Vocational Behavior, 76,* 244-251.

Lindley, L. D. (2005). Perceived barriers to career development in the context of social cognitive career theory. *Journal of Career Assessment, 13,* 271-287.

Lopez, F. G., & Yi, S. A. (2006). Predictors of career indecision in three racial/ethnic groups of college women. *Journal of Career Development, 33,* 29-46.

Luzzo, D. A. (1992). Value of career decision-making self-efficacy in predicting career decision-making attitudes and skills. *Journal of Counseling Psychology, 40,* 194-199.

Luzzo, D. A., & McWhirter, E. H. (2001). Sex and ethnic differences in the perception of educational and career-related barriers and levels of coping efficacy. *Journal of Counseling & Development, 79,* 61-67.

Luzzo, D. A., McWhirter, E. H., & Hutcheson, K. G. (1997). Evaluating Career Decision-Making Factors Associated with Employment among First-Year College Students. *Journal of College Student Development, 38,* 166-72.

Ma, P. W., & Yeh, C. J. (2010). Individual and familial factors influencing the educational and career plans of Chinese immigrant youths. *The Career Development Quarterly, 48,* 230-245.

MacDonald, G., Saltzman, J. L., & Leary, M. R. (2003). Social approval and trait self-esteem. *Journal of Research in Personality, 37,* 23-40.

Maner, J. K., DeWall, C. N., Baumeister, R. F., & Schaller, M. (2007). Does social exclusion motivate interpersonal reconnection? Resolving the "porcupine problem." *Journal of Personality and Social Psychology, 92,* 42–55.

McCain, J. L., Jonason, P. K., Foster, J. D., & Campbell, W. K. (2015). The bifactor structure and the "dark nomological network" of the state self-esteem scale. *Personality and Individual Differences, 72,* 1-6.

McWhirter, E. H., Rasheed, S., & Crothers, M. (2000). Effects of high school career education on social cognitive variables. *Journal of Counseling Psychology, 47*, 330-341.

Metheny, J., & McWhirter, E. H. (2013). Contributions of social status and family support to college students' career decision-making self-efficacy and outcome expectations. *Journal of Career Assessment, 21,* 378–394.

Metz, A. J., Fouad, N., & Ihle-Helledy, K. (2009). Career aspirations and expectations of college students: Demographic and labor market comparisons. *Journal of Career Assessment, 17,* 155-171.

Millar, R., & Shevlin, M. (2007). The development and factor structure of a career locus of control scale for use with school pupils. *Journal of Career Development, 33*, 224-249.

Miller, A. D., & Rottinghaus, P. J. (2014). Career indecision, meaning in life, and anxiety: An existential framework. *Journal of Career Assessment, 22,* 233-247.

Moore, M. T., & Fresco, D. M. (2007). Depressive realism and attributional style: Implications for individuals at risk for depression. *Behavior Therapy, 38*, 144-154.

Myoshi, K. (2001). Depression associated with physical illness. *Japanese Medical Association Journal, 44,* 279–282.

Neuberg, S. L., Kenrick, D. T., & Schaller, M. (2010). Evolutionary social psychology. In S. T. Fiske, D. Gilbert, and G. Lindzey (Eds.), *Handbook of social psychology* (pp. 761-796). New York: John Wiley & Sons.

Pascarella, E. T., & Terenzini, P. T. (2005). *How College Affects Students, Volume 2, A Third Decade of Research*. San Francisco, CA: Jossey-Bass.

Patton, W., & Creed, P. (2007). Occupational aspirations and expectations of Australian adolescents. *Australian Journal of Career Development, 16,* 46-59.

Pesch, K. M. (2014). Occupational knowledge in college students: Examining relations to career certainty, career decision-making self-efficacy, and interest congruence. (Master's thesis.)

Pesch, K. M. (2015). *Academic Major Certainty Scale.* Unpublished test, Iowa State University. Ames, Iowa.

Pinel, J. P. (2011). *Biopsychology*. Boston, MA: Pearson.

Qualtrics (2015). Qualtrics. Provo, UT. Available from http://www.qualtrics.com.

Quimby, J. L., Wolfson, J. L., & Seyala, N. D. (2007). Social cognitive predictors of African American adolescents' career interests. *Journal of Career Development, 33*, 376-394.

Rainville, P. (2002). Brain mechanisms of pain affect and pain modulation. *Current Opinion in Neurobiology, 12*, 195 – 204.

Raque-Bogdan, T. L., Klingaman, E. A., Martin, H. M. and Lucas, M. S. (2013), Career-Related Parent Support and Career Barriers: An Investigation of Contextual Variables. *The Career Development Quarterly, 61*, 339–353.

Reese, R. J., & Miller, C. D. (2006). Effects of a university career development course on career decision-making self-efficacy. *Journal of Career Assessment, 14*, 252-266.

Robbins, S. B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, S. (2004). Do psychosocial and study skills factors predict college outcomes? A meta-analysis. *Psychological Bulletin, 130,* 261-288.

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Schmidt, C. K., Miles, J. R., Welsh, A. C. (2010). Perceived discrimination and social support: 35 the influences on career development and college adjustment of LGBT college students. *Journal of Career Development, 37*, 4-21.

Schmidt, C. K., & Nilsson, J. E. (2006). The effects of simultaneous developmental processes: Factors relating to the career development of lesbian, gay, and bisexual youth. *The Career Development Quarterly, 55*, 22-37.

Sharf, R. (2013). Advances in theories of career development. In *Handbook of Vocational Psychology* (4th ed.). W. B. Walsh, M. L. Savickas, & P. J. Hartung, eds. New York, NY: Routledge.

Shook, N. J., Fazio, R. H., & Vasey, M. W. (2007). Negativity bias in attitude learning: A possible indicator of vulnerability to emotional disorder? *Journal of Behavior Therapy and Experimental Psychiatry, 38,* 144-155.

Smith, H. M., & Betz, N. E. (2002). An examination of efficacy and esteem pathways to depression in young adulthood. *Journal of Counseling Psychology, 49,* 438-448.

Steele, C. M., Spencer, S. J., & Aronson, J. (2002). Contending with group image: The psychology of stereotype and social identity threat. *Advances in experimental social psychology, 34,* 379-440.

Steger, M. F., & Dik, B. J. (2009). If one is looking for meaning in life, does it help to find meaning in work? *Applied Psychology: Health and Well-Being, 1,* 303-320.

Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The Meaning in Life Questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology, 53,* 80-93.

Swanson, J. L., & Woitke, M. B. (1997). Theory into practice in career assessment for women: Assessment and interventions regarding perceived career barriers. *Journal of Career Assessment, 5,* 431-450.

Taylor, K. M. (1982). An investigation of vocational indecision in college students: Correlates and moderators. *Journal of Vocational Behavior, 21*, 318-329.

Taylor, K. M., & Betz, N. E. (1983). Applications of self-efficacy theory to the understanding and treatment of career indecision. Journal of Vocational Behavior, 22, 63-81.

Taylor, K. M., & Popma, J. (1990). An examination of the relationships among career decision-making self-efficacy, career salience, locus of control, and vocational indecision. *Journal of Vocational Behavior, 37,* 17-31.

Tian, L., Heppner, P. P., & Hou, Z. (2014). Problem solving appraisal and its relationship to career decision-making difficulties and psychological adjustment in China. *International Perspectives in Psychology: Research, Practice, Consultation, 3,* 19-36.

Trice, A. D., Haire, J. R., & Elliott, K. A. (1989). A career locus of control scale for undergraduate students. *Perceptual and Motor Skills, 69*, 555-561.

Twenge, J. M., Catanese, K. R., & Baumeister, R. F. (2003). Social exclusion and the deconstructed state: Time perception, meaninglessness, lethargy, lack of emotion, and self-awareness. *Journal of Personality and Social Psychology, 85,* 409-423.

Vangelisti, A. L., Young, S. L., Carpenter-Theune, K. E., & Alexander, A. L. (2005). Why does it hurt? The perceived causes of hurt feelings. *Communication Research, 32,* 443-477.

Warburton, W. A., Williams, K. D., & Cairns, D. R. (2006). When ostracism leads to aggression: The moderating effects of control deprivation. *Journal of Experimental Social Psychology, 42*, 213-220.

Williams, K. D. (1997). Social ostracism. In *Aversive interpersonal behaviors*. R. M. Kowalski (Ed.). New York: Plenum.

Williams, K. D. (2001). *Ostracism: The power of silence*. New York: Guilford Press.

Williams, K. D. (2007). Ostracism. *Annual Review of Psychology, 58,* 425-452.

Williams, K. D. (2009). Ostracism: A temporal need-threat model. *Advances in Experimental Social Psychology, 41,* 275-314.

Zadro, L., Williams, K. D., & Richardson, R. (2004). How low can you go? Ostracism by a computer is sufficient to lower self-reported levels of belonging, control, self-esteem, and meaningful existence. *Journal of Experimental Social Psychology, 40,* 560-567.

APPENDIX A

FICTIONAL STUDENT DESCRIPTIONS

Certain Student
Taylor is a sophomore at Iowa State majoring in Management and Spanish, and planning to pursue a career path in international business. Taylor feels very satisfied with these majors and has known since high school this career path is the best choice. These majors are consistent with all of Taylor's career interests, skills, and values.

Uncertain Student
Casey is a sophomore at Iowa State who is still Open Option. Casey is very unsure about which major will be the best choice, and has no ideas about what career path to pursue. Casey has considered majoring in Kinesiology, Spanish, Business, or Biology, but plans to keep exploring majors in hopes of finding one that is satisfying.

APPENDIX B

ACADEMIC MAJOR CERTAINTY SCALE
(Pesch, 2015)

Strongly disagree	Disagree	Somewhat disagree	Somewhat agree	Agree	Strongly Agree
1	2	3	4	5	6

1. I am completely certain about what major I want to graduate with.
2. I have some doubts about which major is right for me. (R)
3. I might be making a mistake with the major I'm considering. (R)
4. I definitely know which major is the best choice for me.

APPENDIX C

PARTICIPANT ESSAY INSTRUCTIONS

Condition A/B: For the next 5 minutes, please write a detailed essay about the academic major(s) you are considering and what specific career you hope to obtain with the major(s). Be specific about your career goals and the types of jobs you would like to have within that career. Continue writing until you receive further instructions from the Research Assistant. Please use the back of this sheet if you need more room to write.

Condition C: For the next 5 minutes, please write a detailed essay about yourself (e.g., your hobbies, friends, family, personality). Be specific and continue writing until you receive further instructions from the Research Assistant. Please use the back of this sheet if you need more room to write.

APPENDIX D

FICTIONAL PARTICIPANT ESSAYS
Conditions A & B

Participant A
I declared my psychology major the first semester I got to ISU, because I was fascinated by psychology in my high school class. Now that I've taken a bunch of classes in psych, I know for sure I want to be a counselor. I want to work with kids, families, and couples to help them live happier lives and all that. Since I'm only in the start of my sophomore year, I plan to start applying to grad schools in two years. I'll probably apply to a bunch of counseling master's programs, and maybe some doctorate programs. I'm really excited about my future as a counselor. I think I'd like to work in a setting where I can have a flexible schedule and work with lots of other counselors. I think eventually I will open my own private practice, so that's my ultimate career goal I guess.

Participant B
My major is kinesiology and I'm going to become an occupational therapist. I've been looking into being a travel occupational therapist lately. This is where you essentially fill in for a therapist that is on leave, or fill in at a place that really needs an extra hand for a temporary amount of time (3-6 months). This is all around the U.S., which would be awesome for seeing different cities and states. Some occupational therapists have said it's important to have experience before taking off on this career path, but others have told me I would do just fine as a new grad in other occupational therapy settings, like in a nursing home. I don't necessarily want to work in a nursing home, but I would be willing to do it for a while. I'm looking into becoming an OT hand therapist as well, but that takes 5 years of experience as a general OT before you can become certified.

Participant C
When I started college, I was planning to major in Accounting, it wasn't until my first college accounting class that I realized what I had in high school was bookkeeping. I just couldn't get excited about depreciation, amortization, or other accounting terms. I thought about social work, because I wanted to work with people, but then I heard that I would need a master's degree and the pay was low. But then I realized I love business, especially human resources. They don't have a human resources major here, so right now I'm doing management and getting mentored by one of the professors who used to work in HR. I love the classes so far and hope to get an internship next semester, so that when I graduate I will have an edge over my competition. I hope to one day be a Director of Human Resources at a large company.

Participant D
My major is mechanical engineering. I have always been mechanically inclined and have enjoyed repairing and building mechanical devices and systems. While performing these tasks, as a result of need or as a hobby, I have been quick to identify deficiencies in the various devices and engineering systems I have worked with. It seems fitting that this enjoyment could be increased if I were on the design end of the process. There are many disciplines within mechanical engineering and although I may have preferences and experience now, these preferences and experiences will by no means limit my pursuits when I graduate. On the contrary, I hope to be exposed to areas I currently have little experience. I see the first half of my working career will be to gain experience and develop preferences for the type of work I will choose to end my career with.

FICTIONAL PARTICIPANT ESSAYS
Condition C

Participant E

I don't have that much free time, but when I do I like to play tennis with my friends and sometimes do some knitting while I'm sitting around my apartment. I'll usually watch TV while I knit, and I really like watching comedies like The Office and more dramatic shows like Scandal. My family all lives a few hours away, so I don't get to see them very often, but my younger brother might come to ISU next year so I'd really enjoy that. My friends are all great here and I've met some really awesome people. We get along well. We're all goofy and outgoing, and we all are very kind to each other too. I can be quiet sometimes in front of people I don't know very well, but with these friends I've met I'm able to really be myself.

Participant F

My hobbies are hanging out with my friends, playing video games, watching sports…things like that. My friends are my great and they're from all over the place. After growing up in Iowa it's nice to meet people from other states. They're all really fun people to be around and we have a lot of the same interests. My family lives in Ames so I see them all the time. I have two sisters and one brother who are all older than me and starting families now, which is pretty cool. My parents have been really helpful since I've come to college. It's nice to have them nearby. My personality is normal I guess. I'm pretty easy going and optimistic. It's important to me to be friendly to everyone I meet. I generally get along with just about everyone.

Participant G

My favorite things to do when I'm at school is go to the ISU football games with my roommates, play sand volleyball while it's still warm out, and of course relax to Netflix shows with my roommates too. I love being at school where I can be independent and be around my friends all the time. My family is great, but I'm glad to have some distance from them and try living on my own. I don't have a ton of friends, but I have a few really good friends who are like my family now. They're all really caring people, but also smart and ambitious like me. My personality is kind of intense sometimes, but I'm also pretty funny and athletic and optimistic about the future. I like to surround myself with people who are happy and enthusiastic about life.

Participant H

My personality is kind of introverted, but I enjoy being around people who are more extraverted because they bring my outgoing side out. I have both quieter friends and outgoing friends, but everyone is fun to be around. I love video games and watching shows like Doctor Who and Family Guy, but I also like spending time outside when it's nice out – playing Frisbee or just doing homework outside. I'm an only child so being away from my parents was weird at first, but now I think I've adjusted to college. My parents are really supportive, probably because there's no one for them to focus on now that I'm at ISU. Other hobbies I have are going to the ISU football games when they're playing at home.

APPENDIX E

PARTICIPANT RANKING SHEET #1
(To be filled out by PARTICIPANT)

Ranking <u>FOR</u> Participant #_____: 1   2   3   4

               Participant #_____: 1   2   3   4

               Participant #_____: 1   2   3   4

               Participant #_____: 1   2   3   4

PARTICIPANT RANKING SHEET #2
(To be filled out by RESEARCH ASSISTANT)

Ranking <u>FROM</u>   Participant #_____: 1   2   3   4

               Participant #_____: 1   2   3   4

               Participant #_____: 1   2   3   4

               Participant #_____: 1   2   3   4

APPENDIX F

IRB APPROVAL SHEET

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:	6/5/2015		
To:	Kathryn M Pesch W216 Lagomarcino	**CC:**	Dr. Lisa Larson W216 Lagomarcino Hall
From:	Office for Responsible Research		
Title:	Career Discussions		
IRB ID:	15-334		
Approval Date:	6/4/2015	**Date for Continuing Review:**	6/1/2017
Submission Type:	New	**Review Type:**	Full Committee

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 <u>any</u> 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.