

DISSERTATION

MODERATORS OF EFFICACY FOR A COMPUTER-ASSISTED CAREER GUIDANCE SYSTEM
(CACGS) INTERVENTION

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ABSTRACT

MODERATORS OF EFFICACY FOR A COMPUTER-ASSISTED CAREER GUIDANCE SYSTEM (CACGS) INTERVENTION

Research investigating career intervention efficacy has inadequately investigated the identification of important client factors which might moderate the effects of various career interventions. The current study had two aims. First it examined the efficacy of a newly developed Computer-Assisted Career Guidance System (CACGS) used alone, and the same CACGS used in conjunction with a structured workshop intervention, as compared to a business-as-usual control group. Secondly, this study also investigated moderators for the efficacy of these career interventions (i.e., gender, minority status, SES, cognitive/emotional disability status, career locus of control, career decision-making readiness, and career needs).

Using a sample of 609 students from community colleges and a four-year university, main effects indicated that the CACGS plus workshop condition was effective in improving career decision-making self-efficacy, and outcome expectations strivings, as well as reducing career decision-making difficulties. Results from moderator analyses suggest that SES significantly moderated the relationship between treatment condition and career decision-making self-efficacy such that participants reporting lower levels of SES benefited more from the CACGS plus workshop condition. Career needs were also found to be a significant moderator for the relationship between treatment condition and the following outcomes: career decision-making difficulties and academic major satisfaction. The interaction was such that participants

reporting career needs congruent with the aims of the intervention had reduced decision-making difficulties and increased academic major satisfaction as compared with participants reporting incongruent career needs. No other significant moderator effects were found.

Consistent with past research, results of this study suggest that CACGS interventions may be more effective when paired with a face-to-face intervention component. The results also suggest that the efficacy of career interventions may not vary meaningfully across a range of different populations. Socioeconomic status and types of career needs may tend to be a significant client factors to consider in terms of career intervention efficacy. Implications for practice and recommendations for future research are offered.

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1 INTRODUCTION

Many individuals identify work as an important, and at times even the most important, source of meaning in their lives (Baum & Stewart, 1990). Clearly work is directly related to one's ability to provide financially, and also connects with personal well-being and self-image. Individuals who experience greater levels of work satisfaction are found to also enjoy increased overall life satisfaction (e.g., Bowling, Eschleman, & Wang, 2010). In the current global economic climate, there are likely more individuals needing assistance with navigating their career paths than perhaps ever before.

Numerous reviews of career intervention research have reached the conclusion that career counseling is generally effective (e.g., Spokane & Oliver, 1983; Pickering & Vacc, 1984; Oliver & Spokane, 1988; Whiston, Sexton, & Lasoff, 1998; Ryan, 1999; Whiston, Brecheisen, & Stephens, 2003). Multiple meta-analytic studies have empirically substantiated the effectiveness of career counseling and offered valuable information regarding treatment modality, treatment intensity, and other factors which may impact the benefit of career interventions for clients. For instance, Oliver and Spokane (1988) found that career class interventions yielded the largest effects for several different outcomes. Whiston, Sexton, and Lasoff (1998) examined studies published since Oliver and Spokane (1988) and used updated meta-analytic strategies to adjust individual effect-size estimates and give greater weight to larger samples. Ryan (1999), Brown and Ryan Krane (2000), and Brown et al. (2003), also conducted meta-analytic research and found that there are five specific components to career interventions that increase effect sizes significantly. Finally, Whiston, Brecheisen, and Stephens (2003) offered a more stringent analysis of treatment modalities only including studies with fairly rigorous treatment designs. However, even with the substantial amount of research establishing the effectiveness of career interventions, there are still several gaps in current knowledge on this important topic.

While establishing efficacy of any career intervention is obviously essential, *efficiency* is also an important consideration. Feasibility of administering the intervention to all who are in need can be dramatically impacted by the extent to which an intervention is efficient, both in

terms of time and financial considerations. Efficient career interventions can often be made more available to larger populations of individuals for less cost. Currently, Computer-Assisted Career Guidance Systems (CACGS) represent the most efficient modality of existing career intervention modalities (Whiston et al., 1998).

One common criticism of the career intervention literature focuses on the lack of research investigating the identification of important client factors that might moderate the effects of various career interventions (e.g., Fretz, 1981; Hinkleman & Luzzo, 1997; Brown & Ryan Krane, 2000; Fowkes & McWhirter, 2007; Whiston & Rahardja, 2008). While the aforementioned meta-analytic studies certainly provide valuable information to the field, as well as establishing an empirical link between career counseling and important career outcomes, they were not designed to specifically identify unique client factors which may moderate effect sizes. In addition, during meta-analytic study a problematic trend was discovered - there has been a marked decline in published career intervention outcome research over approximately the last fifteen to twenty years (Whiston, 2002). This trend is particularly troublesome when placed within the context of an increasing focus on establishing and providing empirically supported treatments in psychology.

Many reviewers conclude that although we know that career interventions are indeed effective in a general sense, we do not fully understand “how, why, and for whom” specifically, and it will prove to be fruitful and necessary for practice and future research to find out the answers to these questions (Brown & Ryan Krane, 2000, p. 740). The current study is focused on exploring the question of: “for whom” are specific career interventions effective? This is a critical question to address considering the amount of well-established research which indicates that gender, ethnicity, socioeconomic status and various other factors play significant roles in one’s career development (e.g., Gati, Osipow, & Givon, 1995; Hinkleman & Luzzo, 1997; Gloria & Hird, 1999; Feldt, Kokko, Kinnunen, & Pulkkinen, 2005; Blustein & Ellis, 2000). Therefore, the current study aims to (1) test the efficacy of the most efficient career intervention mode currently available - computer-assisted career guidance intervention; (2) examine the incremental effectiveness of supplementing the intervention with a brief, single-session workshop; and (3) investigate

the more sophisticated question of whether the effectiveness of these intervention strategies varies across demographic and career development status variables.

1.1 How Well do Career Interventions Work?

As noted above, numerous studies have documented the efficacy of career counseling. A basic review conducted by Pickering and Vacc (1984) analyzed 47 investigations of career counseling and student development from 1975 in an effort to identify effective career interventions. Only studies of college or community college students were included, and all studies had to include empirical methods of career intervention evaluation, and be published in refereed journals. The authors found that of the 47 studies reviewed, 34 investigated the interaction between a client attribute (e.g., career maturity, decision-making skills, or locus of control) and a career intervention. They found that only three studies explored the relationship of various demographic variables to career development, and concluded that this demonstrated a weakness in the literature.

Pickering and Vacc also noted that over half the investigations included in their analysis were of short-term interventions (less than five sessions), and 79% of these yielded positive gains. There were twelve self-help interventions, of which 67% yielded improvements. The fourteen remaining studies used long-term interventions (more than six sessions), and these appeared the most successful with 93% showing improvement after the intervention. In general, their results suggested that most of the included studies demonstrated a general degree of intervention effectiveness. They concluded that while short-term interventions were widely used, long-term interventions were somewhat more effective, and they suggested that self-help, short-term, and long-term (course) interventions should all be offered to students.

Spokane and Oliver (1983) conducted the first large scale meta-analysis of career intervention literature using 52 studies from 1950-1980 involving approximately 6,700 subjects. For inclusion in their analysis, a study had to use a career intervention which was compared to a control condition on at least one career-related outcome. Interventions included individual and group counseling, assessment interpretation, workshops, classes, self-help materials, and career

computer systems. The authors excluded studies with physically disabled participants, studies without a control group, psychotherapy studies, and educational counseling studies.

Overall, Spokane and Oliver (1983) found average effect sizes of .85 for clients receiving any modality of career intervention. The results indicated that the effects of group or class interventions were the largest ($d = 1.11$), individual counseling was next ($d = .87$), and then other types of interventions such as computer-assisted, self-directed, and career-education interventions had the smallest effect sizes ($d = .34$). Individual career counseling yielded the most client benefit per hour/session. Workshops and structured groups were found to be slightly more efficacious than unstructured group counseling and career computer systems. The authors were unable to identify any moderator effects of treatment beyond the influence of treatment intensity (number of hours and sessions).

In 1988, Oliver and Spokane added another nine studies published between 1980 and 1983 to their original data, and conducted another analysis of the factors potentially contributing to effect-size variability (Oliver & Spokane, 1988). The average effect size for treatment groups was .82, which reduced to .48 when study effect sizes were weighted by sample size (in order to give more weight to studies with larger samples). However, when one particularly large, and nonsignificant, outlier study was removed from the analysis the weighted effect size increased to .69.

The results of this update to their study yielded similar results. The largest unweighted effect size was 2.05 for class interventions; however, it was noted that classes also had the greatest number of hours and sessions of all the intervention types. Workshops followed with an effect size of .75, then individual counseling ($d = .74$), group counseling ($d = .62$), computer-assisted guidance programs ($d = .59$), and finally self-directed interventions ($d = .10$). In a multiple regression analysis, treatment intensity was the only variable found which accounted for significant variability in effect sizes. This seemed to suggest that length of treatment may be even more important than the type of intervention. From these findings, the authors came to the following implications for practice: career interventions are generally effective; increasing the number of

hours/sessions improves outcomes; individual counseling interventions seem to be the most effective intervention modality per hour (but also the most expensive); and workshops and structured group interventions were the least expensive (aside from counselor free interventions), but less effective per hour of treatment.

Whiston, Sexton, and Lasoff (1998) replicated and updated Oliver and Spokane's 1988 meta-analysis with studies published between 1983-1995. They incorporated recent advances in meta-analytic methodology into their analyses (Hedges & Olkin, 1985), to help reduce the tendency of bias for small sample sizes. The researchers used the same inclusion and exclusion criteria as Oliver and Spokane; 47 articles were included in the meta-analysis, with 4,660 participants. The mean number of sessions for participants in the included studies was 4.19, for an average of 7.50 hours. Whiston et al. (1998) used a hierarchical regression strategy which allowed the authors to investigate the effects of participant factors (e.g., type of client, age, gender) and treatment factors (e.g., intervention modality, treatment intensity) on effect size after controlling for study characteristics (e.g., number of participants, number of sessions) and methodology (e.g., sample size, attrition, method quality). The authors also used two correction procedures in calculating overall effect size estimates. They adjusted individual effect-size estimates to be less biased, and also adjusted overall effect sizes from larger samples to give greater weight to data originating from large samples (as it tends to be more reliable). Therefore, the effect sizes that they reported were expected to be more accurate estimates of intervention effectiveness than those found in Oliver and Spokane.

The overall effect size found in the Whiston et al. (1998) study was .45, which was consistent with Oliver and Spokane's (1988) weighted effect size of .48. Individual career counseling was found to have the largest effect size ($d = .75$), followed by group counseling ($d = .57$), computer interventions ($d = .41$), career workshops ($d = .22$), class interventions ($d = .15$), and self-directed interventions ($d = .11$). Therefore, when the biasing effects of sample size were accounted for with statistical analysis, individual and group counseling interventions continued

to demonstrate substantially positive effect sizes, while class interventions appeared to be less effective than originally found in Oliver and Spokane (1988).

The weighted hierarchical multiple regression analysis reported by Whiston et al (1998) also demonstrated that nearly all the variability in effect size could be attributed to factors of methodology and study characteristics. Treatment factors and participant characteristics did not account for a significant level of unique variability beyond the variance accounted for by study and methodological factors in any of the analyses. Their findings failed to replicate Oliver and Spokane's result that treatment intensity was the only significant predictor of the magnitude of effect size. The authors concluded that their nonspecific findings regarding the interactions of different variables predicting effect size supports suggestions for future research into moderators of efficacy.

A study by Ryan (1999) provided some insight into the question of the individual intervention factors contributing to overall intervention efficacy. Ryan conducted a series of seven meta-analyses that focused on career-choice outcomes and other outcomes like congruence, vocational identity, career maturity, and career decision-making self-efficacy. These various outcomes have been suggested to be related to an individual's ability to make satisfying career choices. This study employed similar statistical analysis methods to Whiston et al. (1998); however, unlike Whiston et al., Ryan (1999) included all the relevant studies from Oliver and Spokane (1983, 1988) in addition to recent studies. Overall Ryan included 62 studies including a total of 7,725 participants. Finally, Ryan also coded for the inclusion, in each treatment, of 18 specific career intervention components (such as written exercises, value clarification exercises, computer interventions, and modeling). The author entered these factors into the hierarchical regression analyses last to investigate the amount of unique variance accounted for by these particular intervention factors beyond that which was accounted for by study, method, participant, and treatment factors.

Gender data were reported in 73% of the studies in Ryan's (1999) meta-analysis; 57% of the participants were female, and 43% were male. Only 21% of the studies identified race

and ethnicity, but where this could be identified, 68% were White, Non-Hispanic, 21% were African American, 10% were Hispanic, 1% were Asian American, and less than 1% were of other race/ethnicity backgrounds. The average length of interventions was 7.49 sessions over about 5.36 weeks. These sessions were relatively equally dispersed across self-directed, group, class, and combined interventions (only 8% of studies used only individual counseling).

The weighted effect sizes across all the analyses ranged from .21 (for career decision-making self-efficacy beliefs) to .63 (for vocational identity) with an average effect size of .34. Consistent with prior meta-analyses, participant characteristics did not contribute to effect-size variability beyond the variance already accounted for by method and study characteristics. Also consistent with past meta-analyses, self-directed interventions ($d = .23$) seemed to be less effective than other modalities (individual, $d = .41$; class, $d = .43$; group, $d = .55$). The weighted least-squares regression analyses also offered additional findings of interest which were discussed in Brown and Ryan Krane (2000). A pattern became apparent in the data when this effect size was plotted against the number of sessions of treatment; the pattern showed that effect size peaked at four to five sessions (mean effect size = 1.26), and then dropped to an average effect size of .35 for interventions involving 12 or more sessions.

Finally, and perhaps most compellingly, specific intervention components were found to account for 2-38% of effect-size variability. The following five individual intervention components were found to contribute significantly to effect size in at least one of the analyses: written exercises, individualized interpretation and feedback, world of work information, modeling opportunities, and attention to building support for choices. Subsequently, in a review and further meta-analysis, Brown and Ryan Krane (2000) found that when more than one of these five individual components were combined it resulted in nearly linear increases in effect sizes. Interventions which did not include any of the five critical ingredients only yielded an average effect size of .22; adding one, two, and three critical ingredients yielded average effect sizes of .45, .61, and .99 respectively (no study in their analysis employed more than three). Thus, Brown and Ryan

Krane (2000) came to the conclusion that regardless of format, the efficacy of career choice interventions can be increased if at least three of these five critical ingredients are integrated into them.

A review conducted by Whiston (2002) applied the APA Division 17 Principles of Empirically Supported Interventions (PESI; Wampold, Lichtenberg, & Waehler, 2002) to determine if career interventions meet the criteria for empirically supported intervention. The PESI offer a comprehensive framework for evaluating career intervention efficacy. The PESI framework involves seven principles that should be considered when evaluating research; they are as follows: (1) level of specificity should be considered when evaluating outcomes; (2) level of specificity should not be restricted to diagnosis; (3) scientific evidence needs to be examined in its entirety and aggregated appropriately; (4) evidence for absolute and relative effectiveness needs to be presented; (5) causal attributions for specific ingredients should be made only if the evidence is persuasive; (6) outcomes should be assessed appropriately and broadly; and finally, (7) outcomes should be assessed locally and freedom of choice should be recognized (Wampold et al., 2002). Whiston (2002) suggests that the strength of the PESI framework lies in its facilitation of the examination of empirical support from a general viewpoint down to a level that is specifically relevant to practitioners. For instance, at a general level, evaluation questions for career interventions might include: “are career interventions effective?” while at a more specific level an assessment question could be, “what interventions work with which clients under what conditions?” (Whiston, 2002, p.233). After qualitatively analyzing all of the research available according to the seven principles of the PESI method, the authors concluded that career interventions are shown to be generally effective. They also found that while workshops, structured groups, and career classes were the most *efficient* career intervention method for serving the largest number of clients, the most effective modalities were individual career counseling and career classes.

Most recently, Whiston et al. (2003) conducted a meta-analysis in an attempt to make sense of the inconsistent effect sizes found in previous meta-analyses which ranged from .34 (Oliver & Spokane, 1988) to .82 (Ryan, 1999). The authors noted that characteristics of the

studies in prior meta-analyses seem to be impacting the variability in effect sizes, for when the effect sizes were weighted by sample size and outliers excluded, the effect sizes become more consistent. However, Whiston (2002) asserted that study characteristics and methodological factors should not be seen as the only explanation of effect-size variability. There is evidence that other factors, such as treatment modality, intervention components, and process factors, may influence efficacy. Therefore, Whiston et al. (2003) focused their study on the efficacy of various modalities of career interventions. They sought to eliminate the confounds of study differences by using only studies where participants were randomly assigned to treatment groups.

Whiston et al. (2003) included all studies from 1975-2000 which met this criteria; to be eligible for inclusion a study had to have compared two or more active career interventions (not just a treatment and control condition), used random assignment to treatment groups, and included the necessary statistics to calculate effect size. Ultimately 57 studies were included. These involved a total of 4,732 participants, 149 modality comparisons, and 736 outcome comparisons. The majority of the studies involved college students (68%), followed by high school (15%), and adults (13%). A few studies involved young participants (middle school 3%; elementary 1%). Ethnicity was not reported in 79% of the studies; therefore, examining effectiveness with different ethnic groups was not possible. The average length and time of career treatments was 5.10 sessions lasting 8.29 hours. Only 20 of the 57 studies reported any longitudinal follow-up assessment results. The most common outcome measures were information seeking, career maturity, and career choice options. In 49% of the studies, reliability estimates for outcome measures were not reported.

The authors found that many modality comparisons demonstrated nonsignificant results between different career intervention modalities; however, there were some significant differences. In general, interventions that did not involve a counselor (e.g., computerized interventions) were less effective than other modalities. Participants who used a computer-assisted career guidance system (CACGS) supplemented by counseling had better outcomes than those using only a CACGS. Consistent with Oliver and Spokane (1988) the results of this meta-analysis also

indicated that workshops and structured groups tended to have better outcomes than non-structured career counseling groups (mean difference effect size of $d+ = -.337$). Within modality analyses suggested that there was not a significant difference between various types of computerized interventions. This analysis did not find any significant effects for treatment intensity or research methodology. They also did not find significant moderating effects for age. The authors concluded that additional research is needed to analyze specific workshop content as well as client attributes. They suggested that future research should target relatively complex client variables (e.g., personality) for moderator analysis rather than fairly simplistic demographic moderators like age.

1.1.1 Summary. Research has demonstrated general efficacy of career interventions, with individual counseling and structured group therapy generally found to be the two most effective modalities (with the exception of Oliver and Spokane [1988] who found career classes to yield the largest effect sizes). Computerized interventions have fairly consistently been found to be slightly less effective; however, they have been found to be the most cost-efficient of the various intervention modalities. CACGS are more effective when combined with an in-person intervention (especially when offered after computer work). Self-directed interventions consistently yielded the lowest effect sizes, suggesting that participants tend to need structure and guidance from counselors.

There are some inconsistencies regarding the issue of treatment intensity in the extant research. Oliver and Spokane (1988) found this to be important to effect size, but this result was not replicated in Whiston, Sexton and Lasoff (1998). Pickering and Vacc (1984) concluded that long-term interventions yielded more successful outcomes than short-term interventions. Brown and Ryan Krane's (2000) results suggested that the optimum number of sessions is four to five (mean effect size = 1.26) with effect size dropping substantially with increased sessions (average effect size of .35 for interventions with twelve or more sessions).

Brown and Ryan Krane (2000) offered insights into specific components which significantly increase effect size, which provides helpful information to the process of delivering

efficacious career interventions, yet more research is needed to further substantiate these findings. These five components are incorporated into the career intervention involved in the current study; therefore, it offers the first investigation of a career intervention that includes all five components. Within these meta-analyses, very little evidence was accumulated to suggest specific significant moderating variables. However, there was a pervasive lack of demographic and client attribute data collection in existing career intervention research which prevented extensive analysis of this question. The current project was designed to attend this relatively unexamined area by using a detailed demographic form and other client attribute measures for moderator analysis.

Given the current economic turmoil, it is more important than ever to weigh efficacy against efficiency in career interventions. Striking a balance between these two factors is essential if the goal is to help as many people as possible, as much as possible, for as little cost as possible. Therefore, further research into the most efficient modality of career intervention available, CACGS, is warranted.

1.2 Balancing Effectiveness with Efficiency: Computer-Assisted Career Guidance Systems (CACGS)

Computer-Assisted Career Guidance Systems (CACGS) are interactive computer programs which can be operated independently by users to learn beneficial information for self-assessment and career exploration (Brown, 2003). Early developers, such as Donald E. Super, Martin Katz, and David Tiedeman, viewed this technology as a method to put their theories of career development, choice, and decision making to functional use (Harris-Bowlsbey & Sampson, 2001). Some of the earliest systems were developed in the late 1960s and early 1970s (U.S. Department of Health, Education and Welfare, 1969; Super, 1970). Modern comprehensive systems (e.g., SIGI PLUS, DISCOVER, and Career Information System) provide users with descriptions of occupations, education and training requirements, and self-assessment tools with results which help identify potential career matches (Bloch, 2006). CACGS offer several unique benefits: they can be used independently; they provide individualized feedback to large numbers of individuals; and they are available to broad portions of the U.S. (and other) populations. Currently, CACGS

are used as a component of career guidance in most high schools, colleges, and universities in the United States (Fowkes & McWhirter, 2007). This current level of widespread use increases the importance of understanding the effectiveness of computerized career guidance.

1.2.1 Overview of CACGS Research. Most of the existing CACGS research has generally tended to examine user satisfaction and/or CACGS effectiveness in improving career-related outcomes (Fowkes & McWhirter, 2007). Reviews of the literature have suggested that user satisfaction has been evaluated more frequently than career-related gains, and research has generally suggested that CACGS users are satisfied (e.g., Mau, 1999; Offer & Sampson, 1999; Peterson, Ryan-Jones, Sampson, Reardon, & Shahnasarian, 1994). Fowkes and McWhirter (2007) also found that the most common measures of career-related gains in CACGS research have been of career maturity, career decision-making skills, and career-related self-efficacy.

Several individual studies conducted with CACGS suggest that they are an effective career counseling intervention, but tend to be more effective when combined with face-to-face counseling (e.g., Gati, Saka, & Krausz, 2001; Eveland, Conyne, & Blakney, 1998; Marin & Splete, 1991; Niles, 1993)). The finding that CACGS are at least moderately effective, but enhanced when combined with face-to-face counseling (particularly when occurring *after* the computerized intervention) has been supported through meta-analysis as well (Whiston et al., 2003). Whiston, Sexton, and Lasoff's (1998) meta-analysis suggested that CACGS are the most cost-effective, or efficient, modality for career interventions although they do not tend to yield the same level of client gains as individual or structured group interventions.

CACGS have been demonstrated to reduce career decision-making difficulties (Gati et al., 2001), to enhance career decision commitment (Pinder & Fitzgerald, 1984), and to improve career decision-making self-efficacy (Fukuyama, Probert, Neimeyer, Nevill, & Metzler, 1988). It is unsurprising that CACGS are more effective when combined with in-person interventions given the critical ingredients conclusions offered by Brown and Ryan Krane (2000); CACGS interventions alone likely provide some, but not all, of the five critical components. In-person

interventions also offer the opportunity to develop a therapeutic relationship with a counselor, which is generally understood to be one of, if not the, most important contributor to positive therapeutic outcomes (Norcross, 2010).

Several researchers suggest that CACGS effectiveness may be influenced by the career development level or the career difficulties faced by the user. For instance, Gati et al. (2001) suggests that the effectiveness of a CACGS may depend upon the type of career difficulty faced by the user. In their study, the CACGS utilized had a significant effect in reducing difficulties related to a lack of, or inconsistent, information; however, they did not reduce difficulties related to the use of that information, such as external conflicts. A study by Hornyak (2007) found that participants who began with higher levels of vocational identity showed larger decreases in dysfunctional career thinking following the use of DISCOVER. Kivlighan, Johnston, Hogan, and Mauer (1994) similarly found that participants with more stable career goals showed the greatest gains in vocational identity after SIGI-Plus use.

Finally, some evidence suggests that CACGS effectiveness may vary across Holland Codes. Lenz, Reardon, and Sampson (1993) found that participants with higher scores in Social and Enterprising Holland Codes rated a CACGS lower on its ability to help them learn more about themselves and occupations. The authors suggested that individuals scoring highly on Social and Enterprising interest areas may particularly benefit from additional in-person interventions.

1.2.2 Critiques of CACGS Research. Despite encouraging results from the research findings, there continue to be several weaknesses which pervade CACGS outcome literature. For instance, there is a scarcity of data on the differential effects of CACGS across various populations. A study by Taber and Luzzo (1999) found that only 16 of 26 studies of DISCOVER reported participant sex, only 10 reported ethnicity, and none of them explored differential effects across ethnic or socioeconomic groups. This is a critical shortcoming to address, and doing so is one of the primary objectives of the current study.

A large number of studies also have focused on user satisfaction rather than career-related gains. This is particularly problematic given Mau's (1999) findings that user satisfaction was not correlated with more objective measures of intervention benefits. The author concluded that user satisfaction may not be a particularly meaningful outcome measure for CACGS; however, it may still provide information valuable to determining whether improvements are indicated for a specific CACGS.

Another weakness in the CACGS literature is that many studies have consisted of single-group designs which assess change over time (e.g., Gati et al., 2001; Kivlighan et al., 1994). Studies designed this way obviously do not allow researchers to rule out alternate explanations for change. Finally, the majority of CACGS research has been conducted with small samples of convenience, such as college students seeking career services (Hinkleman & Luzzo, 1997).

1.2.3 CACGS Concerns and Recommendations. While CACGS have grown in popularity over the last few decades, several concerns as well as recommendations for effective use have been addressed by researchers. A full analysis of the concerns with and recommendations for CACGS development and use is beyond the scope of this investigation. The following is a summary of the concerns and recommendations which directly relate to client attributes.

An article written by Offer and Sampson (1999) suggests that there are several factors that can limit a client's readiness for effective CACGS use. These factors include: lack of confidence; external barriers; inaccurate expectations of CACGS; dysfunctional career thoughts; lack of stable career goals; high Holland code scores in social or enterprising interests; certain mental health concerns; and language deficiencies. As discussed in Harris-Bowlsbey and Sampson (2005), Sampson (2004) suggested during a research symposium presentation that the repercussions of low readiness for CACGS use can include: negative self-appraisal of skills and interests; early discontinuation of CACGS-use; partial attainment and retention of fragments of information; impetuous career decision-making in an effort to avoid expending energy on exploring alternatives; extended and ceaseless information-seeking to delay making a career decision; deferring

responsibility for career decisions to others; and finally, a maladaptive appraisal of career opportunities where benefits are minimized and limitations are maximized.

Sampson (2004) also suggested that individuals with low readiness are more likely to avoid using or inappropriately use CACGS. Given this, they may require additional services from counselors to benefit from CACGS use. In an effort to prevent some of these concerns, the author suggests that screening can be used to identify individuals with a low level of readiness. An orientation process could also be employed to introduce individuals to a particular CACGS and help them to understand how to use the system to meet their needs. Finally, Sampson suggested that follow-up assessments may help to ensure the expected gains of using a CACGS, as well as uncover any concerns that can be addressed to improve the use of the system.

Two small studies conducted by Crowley (1992) offered several suggestions for CACGS-user satisfaction. The results indicated that users seem to be more satisfied if (a) the system provides 20 or more career matches; (b) the assessment process included in the CACGS seem to be relatively long and sophisticated (within reason); (c) users are offered information affirming the system's effectiveness or usefulness; (d) they are provided with positive and encouraging comments (such as "Samantha, the team at CASCAL wish you every good fortune in your career plans,"); and finally (e) that the results are strengths-based (p. 347).

1.2.4 Summary. While CACGS have been demonstrated to be a relatively effective form of career intervention, they are not as effective as face-to-face interventions like individual counseling and structured groups, and are more effective when combined with a face-to-face intervention. CACGS offer several unique benefits such as independent use, easy access, and affordability. However, there are several potential pitfalls for CACGS use, particularly regarding client "readiness." The concern around client readiness may suggest that CACGS are not as effective of an intervention for all types of clients, such as those facing significant barriers to their career paths, as these individuals may require interventions more uniquely tailored to their needs.

1.3 Do Career Interventions Work Better for Some than for Others?

The relative impact of career interventions on various populations is an important research question which to date has not been adequately explored. As previously mentioned, this is a problematic gap in the literature given the well-established research indicating that gender, ethnicity, socioeconomic status, and other client variables play significant roles in shaping one's career development (e.g., Gati et al., 1995; Hinkleman & Luzzo, 1997; Gloria & Hird, 1999; Feldt et al., 2005; Blustein & Ellis, 2000). While this research question has been posed by numerous researchers over the last three decades, there has still been very little formal investigation of moderators for career intervention efficacy. The current study aims to address this issue by testing the relative efficacy of a CACGS intervention, alone and supplemented by a brief workshop, across two categories of moderators: demographic variables and career-related psychological variables.

1.3.1 Demographic Moderators. Demographic moderators refer to specific client variables that may influence career intervention efficacy. For the purposes of this study, career intervention literature from the following demographic variables is reviewed: gender, race/ethnicity, socioeconomic status, and disability status.

Gender. Gender differences between males and females have been well established in the theory and research on career interests and aspirations (e.g., Metz, Fouad, & Ihle-Helledy, 2009; Lupart, Cannon, & Telfet, 2004; Helwig, 2001; Gottfredson, 1981; Looft, 1971). For instance, Holland-type (e.g., Metz et al., 2009), as well as specific career choice preferences (e.g., Lupart et al., 2004), have been found to vary significantly across gender. However, somewhat surprisingly, career intervention effectiveness research has infrequently examined gender as a moderator. In her meta-analysis, Ryan (1999) found 18 studies (out of 62) examining the moderating effects of gender on career intervention outcomes. Of these, only three reported significant differences between women and men (Amatea & Clark, 1984; Myers, Lindeman, Thompson, & Patrick, 1975; Wilson, 1987). The difference found in these studies was that women obtained

higher post-treatment career maturity scores than men. Unfortunately, participant gender was so infrequently reported in the primary investigations that reliable meta-analytic estimates of moderating effects could not be made.

Mau and Fernandes (2001) explored gender differences in the frequency of career counseling services use, and found no significant differences. However, they did find that women reported somewhat higher levels of satisfaction with career counseling than men. This finding was not consistent with the research of Healy (2001) who did not find any gender differences in satisfaction with either a brief career program or an in-depth individual counseling intervention. A series of studies on male attitudes towards career counseling found that men were more likely to report higher stigma associated with career counseling than women (Rochlen, Blazina, & Raghunathan, 2002).

Although the research available does not give strong indication for further investigation of gender as a moderating variable, theory suggests the potential for gender to have a moderating effect. Gottfredson (1981) developed a theory of circumscription and compromise which discusses the genesis of gender differences for career aspirations. The theory involves four developmental stages: orientation to size and power (approximately ages 3-5 years), orientation to sex roles (approximately ages 6-8 years), orientation to social valuation (approximately ages 9-13 years), and finally orientation to the internal unique self (approximately age 14 years and on). Considerable support has been found for the orientation to sex aspect of Gottfredson's Theory. For instance, Looft (1971) found that sex differences in occupational aspirations seem to develop early in childhood; the most frequent aspirations that boys expressed were football players and policemen, while the girls aspired to be nurses or teachers. This is described as an element of the socialization process where males and females begin to proscribe to occupations which are seen as appropriate for their gender. Thus, this theory predicts that career development and specific aspirations appear to vary somewhat across gender.

The few studies suggesting that there may be differences in satisfaction level and career maturity may suggest a small moderating effect of gender for some outcome variables. This,

combined with theory and the fact that there are so few studies examining this moderator of efficacy in studies of career interventions, indicates that it is worthwhile to examine this variable for the purposes of the current project.

Race/Ethnicity. The career development of racial and ethnic minority individuals is often impeded by social, structural, and institutional barriers (Gloria & Hird, 1999). Research has demonstrated that experiences of discrimination early in life are often associated with difficulties finding a strong vocational fit, and with higher levels of perceived marginalization even once established within a vocation (Cohn, 1997). The fact that race/ethnic minorities are over-represented in lower levels of SES suggest that low SES may have an adverse impact upon their career development as well. Researchers have also noted that socioeconomic status (SES) is an important variable moderating the effects of ethnicity on career development (Smith, 1983). Unfortunately, most studies on the career behavior of ethnic minorities have neglected to control for variability in SES; as a result the extent to which SES is contributing to career attributes and behaviors among members of minority groups is entirely unclear (Leung, 1995).

Brown and Ryan Krane (2000), in a review of career intervention literature, suggested that although much has been written about the unique career development needs of racial and ethnic minorities, as of 2000 there had been very little exploration of the effects of varying career interventions with these different groups. A later review of career intervention outcome literature by Whiston and Rahardja (2008), concluded that there is still little research on racial/ethnic differences in career intervention outcome or on the relative effectiveness of interventions designed specifically for racial/ethnic minority groups versus more traditional interventions. While there is theoretical literature and models for career counseling that have targeted these populations (e.g., Arthur & McMahon, 2005; Leong & Hartung, 1997), there is still a need for increased research directed toward gaining an understanding of the specific career service and intervention needs of racial/ethnic minority group members (Swanson & Gore, 2000).

Of the research that does exist on this topic, Luzzo (1993a) found ethnic differences in career decision-making self-efficacy beliefs, and Luzzo (1993b) found that college students from

several ethnic minority groups (African-American, Asian-American, Hispanic, and Filipino) were more likely to perceive their racial identity as a barrier to their career development. McWhirter and Hawley (1997) also found that as compared to their White peers, Mexican-American high school students reported more career barriers. However, Lopez and Sujin (2006) examined the contributions of career-related barriers, barrier-related coping beliefs, and career decision-making self-efficacy beliefs on the prediction of career indecision in African-American, Hispanic, and White female college students and found no racial/ethnic differences on most outcomes. The only significant difference found in their study was that African-American women perceived greater career barriers than either of the other two groups. It is not surprising that individuals proscribing to more than one minority group status (e.g., female and African-American) may experience even more difficulties and barriers in their career paths given the combination of discriminatory experiences they may face. The authors conjectured that their study may not have yielded more significant findings due to the fact that the majority of their sample were in their 3rd or 4th year of college at a major urban university; they suggested the possibility that minority students with less favorable scores on self-efficacy measures may not pursue college, or may discontinue much earlier.

A study by Carter, Scales, Juby, Collins, and Wan (2003) found that race correlated with the number of sessions of career counseling attended at a university career counseling center. White students were most likely to attend the highest number of sessions (10 or more); Asian and Hispanic students tended to attend 2-9 sessions, and Black students were more likely to attend only one session. Counselors also tended to rate Black clients as significantly more likely than other groups to make no significant progress towards their goals. Finally, the researchers also found that racial/ethnic minority groups tend to differ in their reasons for seeking career counseling. White clients seemed more willing to see the career center as a place for addressing psychological concerns than other groups (Asian, Black, and Hispanic clients). Asian, Black, and Hispanic students tended to seek counseling for academic concerns rather than for psychological issues. Similarly, an investigation of preferences for career services among students from

different racial and ethnic backgrounds, Shivy and Koehly (2002) found that minority and international students' perceptions of career services typically available on a college campus were different, and less accurate, than those of White students. The authors concluded that this indicated a need for clarification with students of color regarding the types of vocational services available.

To summarize, evidence suggests that there may be some differences in the approach to career counseling and perceptions of career counseling for racial/ethnic minority populations. Research and theory also both suggest that minority populations experience, and perceive themselves as experiencing, higher than average levels of barriers to their career choices and success. Beyond this rudimentary understanding, there is a significant lack of research exploring this variable as a moderator for traditional career intervention efficacy. Therefore, this is a highly important variable to address in the current project.

Socioeconomic Status. Social class is typically measured by self-identified social class, parental education/income, current income, and/or education level. Past research has linked it with various career constructs. For instance, Lindsay and Knox (1984) found that social class is connected with access to educational opportunities. Aries and Seider (2007) demonstrated a link with types of career aspirations. Finally, Blustein et al. (2002) suggested that social class is related to personal work satisfaction, levels of career adaptability, and self-image. However, as with other client variables, socioeconomic status has not been extensively researched in terms of its impact on career intervention efficacy.

Blustein et al. (2002) conducted a preliminary qualitative exploration of this topic with a sample of young adults in working-class occupations. They conducted interviews with 20 such individuals (10 women, 10 men) to examine the role of social class in the transition from school to work. The participants were divided into two groups based upon their families' socioeconomic status background (higher and lower). Their findings indicated that social class played an influential role in the participants school-to-work transition such that individuals from the higher SES group expressed greater interest in work as a source of personal satisfaction, higher levels of self-concept formulation, greater access to resources, and higher levels of career adaptability.

In 2000, a new scale for social identity called Differential Status Identity (Fouad & Brown, 2000; Brown, D'Agruma, Brown, Sia, & Yamini-Diouf, 2002) was introduced in the career development literature by Fouad and Brown (2000). According to Fouad and Brown, an individual's social status identity, or DSI, includes perceived access to economic resources, social prestige, and social power relative to others. DSI is purported to encapsulate personal and contextual factors which are shaped by one's cultural context and socialization experiences. In this way, DSI may be useful as a variable for understanding an individual's internalization of social status. Individuals who share the same income bracket may still be treated quite differently by others, have different opportunities, and different political beliefs; for instance, a plumber who earns close to \$150,000 annually may not identify as belonging to the same social group as a lawyer who earns a similar salary (Thompson & Subich, 2011). Thus, Differential Status Identity Scale was designed to assess an individual's subjective perception of social identity through three subscales: economic resources, social power, and social prestige.

The pertinence of DSI to career-related variables has been suggested and supported by recent research. For instance, a study by Thompson and Subich (2007) demonstrated support for the Differential Status Identity Scale as a new measure which may provide an alternative conceptualization of social status as a psychological variable. In a study examining differences in students' career aspirations and expectations based on gender and ethnicity (and compared to the U.S. workforce), Metz et al. (2009) found evidence that DSI may be related to discrepancies found to exist between the careers to which students aspired, and those they expected to pursue, and described this as an "aspiration-expectation discrepancy" (p. 157). Thompson and Subich (2006) found that greater access to economic resources, social prestige, and social power were positively linked with higher levels of career decision self-efficacy and career certainty; however, the relationship with career certainty was found to be fully mediated by career decision self-efficacy, suggesting that self-efficacy may be the factor through which career certainty occurs.

Finally, a relevant study by Thompson and Subich (2011) expanded research on the DSI by examining its potential "antecedents and outcomes" (p. 735). Variables which might act as a

support or barrier to an individual's perceived social status were identified as antecedents. DSI was then tested as a mediator of the relationship between these antecedents (i.e., self-reported race/ethnicity, social class, experiences with racism and classism, and primary caregiver support) and the following outcomes: career decision self-efficacy and career indecisiveness. The results indicated that in general the model fit the data well, but some paths (the relation of personal experiences with racism and classism) were unsupported. Higher levels of DSI were found to directly relate to lower levels of career indecision, and higher DSI scores were found to relate to higher levels of self-efficacy. The authors concluded that DSI may play a modest role in diverse college students' confidence and readiness to make career decisions.

SES has been demonstrated to relate to several notable career variables, such as aspirations, self-efficacy, and confidence. It also is suggested in theory, such as Super (1990) and Hotchkiss and Borow (1984), to be an important contextual factor to career development. Super (1990) suggests in his Life-Space, Life-Span approach to career development that an individual's career path is determined by parental SES (as well as mental ability, education, skills, personality characteristics, and opportunity exposure). Hotchkiss and Borow (1984), in a sociological approach to career development, suggest that occupational stratification based on race, gender, and SES is a factor of the structure of the U.S. economic system. Within this conceptualization, it is posited that institutions within the economic system often set up a series of rules (both formal and informal) for determining whether an individual is suited for certain positions. Individuals who do not adhere to certain specific norms for education, race, gender, social class, or other values are eliminated from consideration for high-salary prestigious positions.

In summary, despite theory and research connecting SES to career variables and development, little is actually known about the relationship of SES to career intervention efficacy. This client variable has also been infrequently investigated in isolation (with other client variables such as gender and ethnicity controlled). Therefore, this variable is of interest in the current project.

Disability Status. In recent years increasing attention has been given to the topic of career enhancement for individuals with disabilities; however, most studies have focused on exploring the career development of individuals with disabilities and relatively little research has specifically examined the impact of career counseling interventions with disabled individuals. The available research has demonstrated that disability tends to have an important impact upon career development.

Physical, visual, auditory, and learning disabilities have been found to impact some aspects of career development more than others. A study by Furlonger (1998), conducted in New Zealand, found that hearing impaired adolescents tended to have less career awareness than non-hearing impaired adolescents. Hitchings et al. (2001) found relatively comparable levels of career maturity in disabled and able-bodied college students. They also found that students with auditory, visual and physical disability were better able to describe the impact their disability has had upon their career development than those with a learning disability. Salomone and O'Connell (1998) qualitatively examined some aspects of career development with a sample of individuals with Multiple Sclerosis. Several themes emerged from the study, one being the definitions and meaning of work. From this study it appeared that this sample of disabled individuals described the meaning of work in terms similar to those typically reported (i.e., making a living and meeting vocational needs). These individuals also discussed the role that their disability has played in their lives. Commonly participants reported the ways in which their disability had disrupted their ability to be as productive or fulfill the required demands of their work lives.

While much less common, research has been conducted investigating the impacts of career interventions upon individuals with disabilities. Alston and Burkhead (1989) investigated the efficacy of a frequently used CACGS (ACT's DISCOVER) as a career choice intervention with individuals with physical disabilities. They found that it did not appear to be effective with this population and conjectured that for clients who face an extensive level of specific barriers to their career choices, CACGS alone may not be adequate to meet their needs. Rumrill, Rossler, and Cook (1998) tested the efficacy of two job placement strategies for 37 adults with Multiple

Sclerosis on self-efficacy, career maturity, and employment status. The strategies focused on career re-entry; one was membership on an “Accommodation Planning Team” and the other was giving the participant a “how to” job seeking guide (Rumrill et al., 1998, pp. 245-246). The researchers found both approaches to be equally effective and 11 of the 37 participants had re-entered the labor force at a 16-week follow-up.

A recent dissertation by Walker (2011) examined the relationship between career maturity, career decision self-efficacy, and self-advocacy of college students with and without disabilities. The results of the study indicated that students without disabilities had higher levels of career maturity and self-advocacy; however, the self-efficacy scores were similar across the two groups.

Summary. While there is relatively little formal investigation for the various demographic variables discussed here in terms of their potential moderating effects on career counseling interventions, research in other related areas suggests that these are important considerations to explore. For some of these variables, such as gender and disability status, this exploration will offer additional confirming or disconfirming evidence for the limited findings already available. For variables such as race/ethnicity and SES, the current project investigates possible moderating effects of these factors for career interventions.

1.3.2 Career-Related Psychological Moderators. Another important consideration for moderating effects on career intervention efficacy involves potential career-related psychological factors. These factors may include career development factors such as locus of control, career decision-making readiness, or the particulars of an individual’s career concerns. Both research and theory suggest that these factors are important to consider when evaluating the career counseling needs of clients (e.g., Super, 1990; Lent, Brown, & Hackett, 1994; Holland, 1985). Researchers also have suggested several considerations that may limit client readiness for effective CACGS use (Offer & Sampson, 1999). However, there is currently a dearth of research

formally investigating these variables as moderators for career intervention efficacy. The following is a summary of the moderator research that is available on career needs, career developmental level, and career locus of control.

Career Needs. A study by Gati et al. (2001) investigated the levels of career decision-making difficulties reported by a sample of 417 young adults who used a CACGS, and the authors evaluated the effectiveness of the CACGS to reduce their difficulties. Career decision-making difficulties were found to vary according to the stage of career development of the participants. Those at an early “pre-screening” stage were shown to have higher levels of career decision-making difficulties than those in a “choice stage” (p. 301). The CACGS were found to be generally effective in reducing the participants’ difficulties, and particularly effective for reducing difficulties relating to lack of information. However, the CACGS were not particularly helpful for difficulties relating to external conflicts or barriers. Therefore, the authors concluded that CACGS may be more beneficial for clients with particular career needs/difficulties than for others, and may not be very helpful for individuals struggling significantly with external conflicts and barriers.

Career Developmental Level. Most research available on career development examines the impact of interventions upon various outcome measures, or the predictors of constructs such as career decision-making readiness, career maturity, vocational identity, or self-efficacy. Very few studies have examined these constructs as potential predictors for other career-related outcomes. However, the few that have explored this question have uncovered some interesting results. For instance, research suggests that career maturity is an important predictor for outcomes like successful transitions into employment and career indecision (e.g., Patton, Creed, & Muller, 2002; Obana, 2008).

There also have been a few studies examining potential career developmental moderators for career intervention efficacy. One such study by Hornyak (2007) found that individuals with higher initial levels of vocational identity showed a reduction in dysfunctional (or negative/self-defeating) career thoughts after CACGS use than those with lower levels of vocational identity.

Similarly, Kivlighan et al. (1994) found that study participants who had more stable career goals going into a CACGS intervention showed the greatest gains in subsequent vocational identity measures.

The evidence on this topic is clearly lacking; however, career theory (Super, 1990; Holland, 1985) and research suggests the potential for these constructs to yield some level of moderating effects for the efficacy of a career intervention. For the purposes of the current study, the construct of career decision-making readiness (as a construct closely related to career maturity) was selected for examination.

Career Locus of Control. A link between career indecision and external locus of control has been discussed by several researchers (e.g., Fuqua, Blum, & Hartman, 1988; Taylor, 1982; Woodbury, 1999). Others have revealed that college students with an internal locus of control are more likely to exhibit attitudes and skills congruent with higher levels of career development (Blustein, 1987; Luzzo, 1993a; Taylor, 1982). It is suggested that individuals who face more barriers to their career development may experience an external career locus of control and thus greater career decision-making concerns. A study by Lease (2004) explored racial and academic type group differences on career locus of control and work-related knowledge. They found that African-American students reported greater work knowledge, but a more external locus of control than White students. They also found that an external locus of control was associated with more decision-making difficulties. According to Lease (2004) external career locus of control is a significant predictor for lower career maturity, decreased career exploration, and decreased confidence in career decision-making tasks.

One investigation explored potential predictive relationships between the following variables: career locus of control, career certainty/indecision, motivational level, and attributional style (Johnson, 2007). The study yielded non-significant results for any predictive relationships between career locus of control and career certainty/indecision, or motivation. However, the author did find a relationship for locus of control and attributional style (perception of failures or successes) such that an external locus of control predicted an external attributional style. Finally,

Luzzo and Ward (1995) found that locus of control is a statistically significant predictor of congruence between aspirations and current occupations among college students; however, the authors indicated that the practical significance of this relationship may be lacking as locus of control only accounted for 10% of the variance.

Clearly, more research is needed to explore the potential moderating effects of career locus of control, particularly upon career intervention efficacy. There is a strong theoretical rationale for the consideration of this variable, and yet the research demonstrating its predictive power is meager. Therefore, career locus of control was selected as a moderator in the current project.

Summary. The scarcity of research available regarding the moderating effects of various career-related psychological factors makes it difficult to hypothesize the potential impacts of these factors upon career intervention outcomes. However, theory and available related research, suggest that they are worth exploring in more depth. For the purposes of the current investigation, the career-related psychological variables of career locus of control, career decision-making readiness, and career needs are selected for the analysis of moderating effects.

1.4 The Current Study

1.4.1 Overview. The current study seeks to explore the question: for whom are career interventions more or less effective? The methodology in the present study involves a randomized trial comparing a CACGS delivered with and without an in-person workshop, with a business-as-usual control group, involving participants from community colleges and a four-year research university. The outcome variables chosen for investigation in the current study are: career optimism, career adaptability, career locus of control, academic major satisfaction, career decision-making difficulties, career developmental strivings self-efficacy, career decision-making self-efficacy, and career confidence (these outcome measures will be described in more detail a later section). The moderators chosen for examination include demographic moderators (gender, race/ethnicity, SES, and disability status) as well as career-related psychological moderators (career needs, career decision-making readiness, and career locus of control).

1.4.2 Hypotheses. For the purposes of this study, eight hypotheses are offered based on the review of the existing literature on career interventions. These hypotheses are organized into two primary sections: main effects and moderator effects.

Main Effects. As previously discussed, past research has suggested that CACGS are a generally effective career intervention modality when used alone, but tend to be more effective when they are paired with an in-person career intervention component (e.g., Whiston et al., 2003; Gati et al., 2001). Therefore, the following hypothesis regarding the main effects of the career interventions included in the current study is offered:

Hypothesis One: It is expected that both the CACGS only and CACGS plus workshop conditions will yield significant effects on outcome variables relative to the control group, with the CACGS plus workshop condition yielding the largest effects.

Moderator Effects. Research into moderating effects for career intervention efficacy is limited. The following moderators were chosen for examination in this study based on the existing research that suggests they may have a role to play in moderating career intervention efficacy: gender, ethnicity/race, disability status, socioeconomic status, career locus of control, career decision-making readiness, and career needs.

Gender. Extant research on gender as a moderator has generally not demonstrated significant results; however, there has been research demonstrating a moderating effect for gender such that women exhibited higher levels of career maturity than men as a result of career interventions (Amatea & Clark, 1984; Myers et al., 1975; Wilson, 1987). For the current study, career decision-making readiness was used as a close proxy for career maturity. Based upon these findings, the following hypothesis regarding the moderating effect for gender is offered:

Hypothesis Two: It is expected that gender will not moderate intervention efficacy except on the outcome of career decision-making readiness (a close proxy for career maturity). A moderating effect for gender is expected such that participants who report identifying as female are

predicted to benefit more from the interventions in terms of the outcome measure career decision-making readiness than participants who report identifying as male.

Ethnic/Racial Minority Status, Disability Status, and Socioeconomic Status. Research regarding the career development of ethnic/racial minorities, individuals with disabilities, and individuals from lower levels of SES suggest that these individuals tend to experience more external barriers to their career development than individuals from an ethnic/racial majority group, individuals with no disabilities, and individuals from higher levels of SES (e.g., Gloria & Hird, 1999; Alston & Burkhead, 1989; Fouad & Brown, 2000). Research has also suggested that CACGS are not as effective in contributing to client gains for individuals who have substantial external barriers to their career development (e.g., Gati et al., 2001; Alston & Burkhead, 1989). Therefore, the following hypotheses for the moderating effects for ethnic/racial minorities, individuals with disabilities, and individuals reporting a lower level of SES are offered:

Hypothesis Three: A moderating effect for race/ethnicity is expected such that participants who do not report being members of a racial/ethnic minority group are predicted to benefit more from the interventions than participants who report being members of a racial/ethnic minority group.

Hypothesis Four: A moderating effect for disability status is expected such that participants who do not report having a disability are predicted to benefit more from the interventions than participants who report having a disability.

Hypothesis Five: A moderating effect for socioeconomic status is expected such that participants who report a higher level of SES are expected to benefit more from the interventions than participants who report lower levels of SES.

Career Locus of Control. Past research regarding career locus of control suggests that individuals with an external locus of control tend to struggle more with career decisions, and

exhibit a lower level of career maturity, than individuals with a more internal locus of control (e.g., Lease, 2004). Research also suggests that individuals with lower levels of career maturity do not benefit as much from CACGS interventions as individuals with higher levels of career maturity (e.g., Patton et al., 2002; Obana, 2008). Thus, the following hypothesis for the moderating effect of career locus of control is offered:

Hypothesis Six: A moderating effect for career locus of control is expected such that individuals with a more internal locus of control prior to the intervention period are expected to benefit more from the intervention than those with a more external locus of control prior to the intervention period.

Career Decision-Making Readiness. As previously noted, evidence suggests that individuals with lower levels of career maturity do not benefit as much from CACGS career interventions as individuals with higher levels of career maturity (e.g., Patton et al., 2002; Obana, 2008). For the purposes of this study, career decision-making readiness was examined for moderator analysis as a close proxy for career maturity. Given these past findings for the moderating effect of career maturity on career intervention efficacy, the following hypothesis is offered for career decision-making readiness:

Hypothesis Seven: A moderating effect is expected such that individuals with higher levels of career decision-making readiness prior to the intervention period are expected to benefit more from the intervention than those who have lower levels of career decision-making readiness prior to the intervention period.

Career Needs. Finally, past research has suggested that CACGS efficacy may vary across differing career needs (Gati et al., 2001). The interventions developed for this study were designed to directly address the following: clarification of career-related interests, needs, values,

and/or abilities; providing more information about careers for which there is an interest; and developing strategies for career selection based upon fit. Thus, the following hypothesis for career needs is offered:

Hypothesis Eight: A moderating effect for career needs is expected such that individuals who indicated needing more help clarifying career-related interests, needs, values, and/or abilities; more information about careers in which they are interested; and/or developing a strategy to select a career from those that fit them are predicted to benefit more from the interventions than participants who selected needing help developing a specific plan for a job within their career field; interest in help for professional development/career management; and/or “other.”

2 METHOD

2.1 Participants

Participants were recruited from both local community colleges and a four-year university. In order to be eligible for inclusion, participants had to be students from one of the participating community colleges, or in the psychology research pool for the four-year university. Participants from the community colleges were recruited via e-mail listservs, through classrooms with instructor assistance, and using flyers and posters. Community college participants were all offered a \$20 incentive, and the opportunity to win one of ten \$100 rewards from a raffle. Some students were also awarded extra credit, at the discretion of individual instructors at their institutions, for completing their participation. All students were encouraged to participate, and students who were trying to make educational or career-related decisions were especially encouraged. There were no exclusion criteria.

Students from the four-year university were recruited through a psychology research pool. These participants were able to fulfill mandatory research requirements for their psychology course by participating. It was not permissible to also offer a monetary incentive for these participants within the research pool, so they were not paid the \$20 incentive nor offered the \$100 reward.

In total, 658 students adequately completed both the pre- and post-intervention surveys for inclusion in the current study. A total of 347 participants recruited from local Colorado community colleges participated in the intervention conditions and adequately completed both the pre- and post-intervention surveys. Recruitment from the community colleges occurred in two waves - the first beginning the Spring semester of 2011 (114 students), and the second occurring in Fall 2011 (233 students). Attrition rates from the initial pre-intervention survey to post-intervention survey for these two waves were at approximately 30%. Finally, 400 students were recruited at the four-year university, and 311 of them adequately completed their participation requirements for inclusion in data analysis.

Ultimately data from 609 participants was included in the analyses (after the deletion of outliers). This final sample consisted of 73% females ($n = 442$) and 26% males ($n = 158$). One participant identified their gender as "other," and demographic data for gender was missing for the remaining 1% of participants ($n = 8$). The age range for participants was 17-60 years old, with a mean age of 25 and a median age of 19. Racial/ethnic demographics for the sample were as follows: 73% Caucasian or European ($n = 445$), 1% African American ($n = 7$), 1% American Indian or Alaskan Native ($n = 5$), 3% Asian or Pacific Islander ($n = 20$), 8% Hispanic or Central/South American ($n = 47$), 9% identified as multiracial ($n = 56$), and 1% identified as "other." Demographic data for race/ethnicity was missing for the remaining 3% of participants in the sample ($n = 21$).

In terms of socioeconomic status, 8% of participants reported being from lower SES ($n = 46$), 19% from lower-middle SES ($n = 115$), 36% from middle SES ($n = 221$), 19% from upper-middle SES ($n = 115$), and 1% from upper SES ($n = 8$). Demographic data for SES was missing for the remaining 17% of participants in the sample ($n = 104$). Disability status data for the final sample was as follows: 74% ($n = 453$) reported having no disabilities, 2% ($n = 13$) reported having a physical disability, and 6% ($n = 39$) reported having a cognitive/emotional disability. Demographic data for disability status was missing for the remaining 17% of participants in the sample ($n = 104$). This amount of data was missing for SES and disability status due to an error that occurred with the demographic form. The items were unintentionally omitted from the demographic form at the outset of the study and were added during the first wave of data collection.

2.2 Intervention Conditions

2.2.1 V-WAN. The Virtual Workforce Assessment Network (V-WAN) is a CACGS developed to utilize empirically-supported assessments of the career-related domains of career interests (The O*NET Interest Profiler) and needs/values (The O*NET Work Importance Profiler). The V-WAN also includes optional assessments of Work Styles and Skills/Abilities; however, these assessments are still in development and thus were not required of participants for the purposes of this study. The V-WAN was designed to use the user's assessment results to populate

a list of potential career matches generated from the O*NET. The V-WAN also links users to world-of-work information through both the O*NET and Occupational Outlook Handbook. Finally, it also links users to specific Plans of Study which describe the educational programs available at their particular school which might lead them onto their career path of interest. The following is a summary of the two assessments utilized on the V-WAN for the current study, as well as a description of the world-of-work information and Plans of Study resources offered to users.

Interests: The O*NET Interest Profiler. . The O*NET Interest Profiler is a self-assessment tool produced and funded by the O*NET project of the U.S. Department of Labor, Employment and Training Administration. It was developed to help individuals discover the types of work activities and occupations that they would enjoy and find exciting. Based on Holland's (1985) RIASEC model, the Interest Profiler (IP) measures six types of occupational interests which help to inform job seekers of the types of career they may enjoy and find most engaging. Consistent with Holland, the six types of occupational interests measured by the IP are: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. The O*NET Interest Profiler has been demonstrated by research to have sound internal consistency and test-retest reliability as well as structural and convergent validity (Rounds et al., 1999).

Work Values: The O*NET Work Importance Profiler. . The O*NET Work Importance Profiler (WIP) was also produced and funded by the O*NET project of the U.S. Department of Labor, Employment and Training Administration. This assessment allows individuals to identify values that are important to them. The theoretical rationale for the development of the WIP stems from the Theory of Work Adjustment (TWA) first conceptualized by Dawis, England, and Lofquist (1964). The WIP was developed as a tool to help individuals explore their own needs and values in order to make more informed career decisions. The WIP uses a forced-choice format which requires users to rank values multiple times in order to establish a consistent prioritization of these values. The assessment offers users scores on six categories, similar to the Interest

Profiler. The six categories as follows: achievement, recognition, relationships, independence, support, and working conditions. The WIP has also been demonstrated to have sound psychometric properties (McCloy et al., 1999).

World of Work Information. . The V-WAN links users to the O*NET for every career match which is generated with their assessment results. The O*NET and Occupational Outlook Handbook are both national databases of career information which provide overviews of typical career activities, qualifications, projections, salary, and many other helpful topics. Since the V-WAN utilizes two of the O*NET's assessments (the IP and WIP) these results also map directly onto the information offered by the O*NET on these constructs.

Plans of Study. . In a collaborative effort with the community colleges involved in the project, Plans of Study were developed for each school's academic programs. These educational plans were then linked through the V-WAN to all of the occupational match options which might be generated from the assessment results and job match functions. These Plans of Study include hyperlinks to the academic program of interest, potential career paths for that educational track, tuition information, potential salary information, professional organizations, supportive services offered by the college, and suggestions for further educational tracks (such as a bachelors or graduate degree).

When a career match did not have a directly corresponding Plan of Study for a school program, indirect or general Plans of Study were linked. Indirect links are to related educational programs which may be of interest. General Plans of Study involved information about the general career area of interest, the potential for a more generalized track within their institution, and information for learning more on the O*NET. These linkages were developed by a collaboration between the community colleges and the V-WAN research team.

2.2.2 Single-Session Workshop. The career workshop component of the current study was developing using the empirical findings of Ryan (1999), Brown and Ryan Krane (2000). Their findings regarding the specific intervention components that contributed to significant increases in effect sizes informed the types of components chosen for the workshop. The workshop

was also designed to allow for a certain level of flexibility in terms of meeting participants in their current career developmental stage. For instance, there are elements and activities which were created to be of use for both individuals just beginning their career search, as well as those who are more decided.

The workshop was developed so that, when combined with the V-WAN CACGS intervention, all five critical ingredients would be delivered to participants. The participants receive world-of-work information, individualized feedback, written activities, are prompted to consider the building of support for choices during the activities, and are exposed to modeling from the workshop facilitators. The workshop was also developed to clarify the V-WAN website features and results, and to allow participants to begin developing an action plan for moving forward in their career process.

The workshop, after initial development stages, was piloted three times. The first time was with other graduate and undergraduate research assistants to gain feedback and assess the timing and flow of the activities. The next two pilots were with groups of 25 undergraduate psychology students from the psychology research pool. These students were asked to supply feedback at the end of their participation, and this feedback was examined and incorporated when feasible and practical. Finally, an expert evaluator was also asked to provide his feedback on the workshop, and final changes were incorporated.

Ultimately, the workshop is a 90-minute interactive workshop designed to be run by one or two facilitators. It was designed for groups of approximately 25, but can be modified for the facilitation of smaller group sizes as well. It involves the following components: Introduction/Ice Breaker, modeling and discussion of a career development model (designed for this project), clarification and discussion of V-WAN website, assessment results and resource links - including the Plans of Study (this segment also allows for modeling opportunities by the facilitators), and finally several written activities designed to consider self-knowledge, weigh choices, and develop goals.

2.3 Workshop Facilitators

The 90-minute career workshops were facilitated by the counseling psychology graduate students working on the V-WAN research team. Four facilitators, all white women at various points in their training in a counseling psychology PhD program, participated in the study. Two of the more advanced facilitators (in their 3rd and 4th years at the time) were the primary developers of the workshop. These facilitators piloted the workshop three times (once with a panel of their colleagues, and twice with groups of 25 students from the psychology research pool) in order to receive and incorporate feedback to improve the utility and effectiveness of the workshop. These two students then co-facilitated 12 workshops during the first round of data collection at the community colleges.

The other two graduate students facilitators were trained by the developers of the workshop. These facilitators were exposed to the workshop as participants in the panel, were given all workshop materials, met several times with the developers, observed multiple workshops, and then were given the opportunity to co-facilitate workshops with the developers. After that point they were then allowed to facilitate with one another, or on their own.

2.4 Instruments

The framework offered by Whiston (2001) was used in the selection of outcome measures for the current project. This framework provides four domains for consideration: Content, Source, Focus, and Time Orientation. The Content domain refers to the types of outcome measures that are selected. Whiston (2001) suggests that multiple types of assessment should be used for a comprehensive examination, and offers several category recommendations for outcome measures: career knowledge and skills, career behaviors, sentiments and beliefs, and effective role functioning. Measures fitting within each of these categories were selected and are detailed below.

The Source domain refers to the source of the data. Whiston (2001) again suggests that a variety of options should be implemented. For the purposes of this project both self-report

(outcome measures) and institutional/archival data (GPA/Retention Rates) were collected; however, the institutional/archival data is longitudinal and was not available in time for the present examination.

The Focus domain involves examining both general and specific information. Again, both of these are examined in the current study (general - GPA and retention; Specific - self-report measures). Finally, the Time Orientation domain suggests examining both macro and micro-outcomes (or short-term and long-term goals). This current project satisfies this suggestion by collecting GPA and retention rates (macro) and self-report data (micro). Additionally, self-report data will be collected longitudinally in order to determine any delayed effects for the intervention, and to examine the extent to which post-intervention gains are maintained over time.

2.4.1 Outcome Measures. This section discusses the various measures used in the current study, and gives a brief summary of their content and psychometric properties (if applicable).

Career Decision-Making Self-Efficacy. . We used the short form of the Career Decision-Making Self-Efficacy scale (originally developed by Betz, Harmon, and Borgen, 1996) with a 5-level response continuum (compared with a 10-level continuum in the original measure) tested by Betz, Hammond, and Multon (2005). This scale, consisting of 25 items, is designed to assess individuals' confidence in their ability to successfully complete tasks involved in making career decisions. For example, participants were asked to indicate their confidence in their ability to make a plan of their goals for the next five years. Cronbach's α for this scale's scores was .96 both at Time One (before the intervention) and at Time Two (after the intervention).

Career Optimism. . An 11-item subscale of the Career Futures Inventory (Rottinghaus, Day, & Borgen, 2005) was used to assess participants' career optimism. This subscale measures individuals' optimistic beliefs regarding their future career development. Example items include, "I get excited when I think about my career" and "I am unsure of my future career success." This scale has demonstrated temporal stability (test-retest reliability of .85 for a three week time interval) as well as high construct validity through its correlations with numerous scales

such as the Big Five personality, generalized problem-solving, and vocational self-efficacy (Rottinghaus et al., 2005). Cronbach's α for this scale's scores at Time One and Time Two was .92 and .90, respectively.

Career Adaptability. . An 11-item subscale of the Career Futures Inventory (Rottinghaus et al., 2005) was used to assess participants' career adaptability. Career adaptability can be defined as individuals' self-assessments of their capacity to plan and make adjustments in the face of career developments and changing work responsibilities. Example items include, "I am good at adapting to new work settings" and "I will adjust easily to shifting demands at work." This instrument has demonstrated test-retest reliability of .63 for a three week time interval as well as high construct validity through its correlations with scales such as Big Five personality, interests, generalized problem-solving, and skills confidence. Cronbach's α for this scale's scores was .82 both at Time One and at Time Two.

Career Locus of Control. . A career locus of control scale developed by Millar and Shevlin (2007) was used to measure the extent to which participants feel a sense of responsibility and control over their career development. This 20-item scale is composed of four dimensions: Internality, Luck, Helplessness, and Powerful Others. Participants are asked to indicate the extent to which they agree with statements such as, "If I am to get the job I want, I will have to do well and try hard" and "Luck is the most important factor in determining whether I get the job I want." The internal reliability of this scale's scores at Time One and Time Two was .91 and .93, respectively.

Academic Major Satisfaction. . We used a 6-item measure developed and validated by Nauta (2007) to gauge participants' overall satisfaction with their academic major. Example items include "I often wish I hadn't gotten into this major" and "I feel good about the major I selected." Nauta (2007) found that this scale successfully differentiated between those who remained in their majors and those who changed majors over the course of one year and over the course of two years. Additionally, AMS scores were positively related to career decision

self-efficacy and negatively related to career choice anxiety, providing evidence of construct validity. Cronbach's α for this scale's scores was .91 both at Time One and Time Two.

Career Decision-Making Difficulties Questionnaire (CDDQ). . We used 22 items from the Career Decision-Making Difficulties Questionnaire (Gati, Krausz, & Osipow, 1996) to assess the extent to which participants experience difficulties in career decision-making. Participants were assessed along the following two dimensions: lack of readiness and lack of information. Participants were asked to indicate how well statements described them on a scale of 1 (does not describe me) to 9 (describes me well). An example "lack of readiness" item was "I know that I have to choose a career, but I don't have the motivation to make the decision now." An example "lack of information" item was "I find it difficult to make a career decision because I don't know what steps I have to take." Cronbach's α for this scale's scores was .94 both at Time One and at Time Two.

The "lack of readiness" dimension of the CDDQ was used alone to measure the construct of career decision-making readiness. Cronbach's α for this scale's scores was .69 at Time One, and .68 at Time Two.

Career Development Strivings Self-Efficacy. . The Career Development Strivings Self-Efficacy scale, developed by Dik, Sargent, and Steger (2008), was used to measure individuals' goals and motivation in career decision-making and planning. Participants wrote down at least three career-related goals. They then rated their self-efficacy, outcome expectations, and sense of calling in relation to each goal. More specifically, for each goal, they responded to the following three questions using a 5-point scale from 1 (not true at all) to 5 (this is completely true): (1) I am confident that I will attain this goal (self-efficacy); (2) I am confident that reaching this goal will help lead me to a successful career (outcome expectations); and (3) I am pursuing this goal because of a sense of calling (sense of calling). The ratings of the three career-related goals are then summed to form a score for each rating criteria across the three goals.

This scale also has yielded strong convergent and discriminant validity evidence (Dik et al., 2008). At Time One, Cronbach's α values for self-efficacy, outcome expectations, and sense

of calling was .82, .72, and .72, respectively. At Time Two, Cronbach's α values for self-efficacy, outcome expectations, and sense of calling were .72, .76, and .81, respectively.

2.4.2 Moderator Measures. A Demographic Form was developed that asked participants to report gender, age, race/ethnicity, academic level, SES (subjective and objective), career needs, and disability status (see Appendix A). This form was given to participants along with the pre-intervention survey. The information from this form was used for analysis with the following moderators: race/ethnicity, gender, disability status, SES, and career needs.

In regards to the career-related psychological variables examined for the current study, two different scales were used. Career decision-making readiness was assessed using the Lack of Readiness subscale of the aforementioned Career Decision-Making Difficulties Questionnaire (Gati et al., 1996). This subscale consists of three different domains of readiness: lack of motivation, general indecisiveness, and dysfunctional beliefs. Participants' career locus of control was assessed using the Career Locus of Control Scale (Millar & Shevlin, 2007). As stated above, this 20-item scale is composed of four dimensions: Internality, Luck, Helplessness, and Powerful Others.

2.5 Procedures

All students were randomly assigned to one of three treatment groups. Random assignment was achieved by consecutively placing participants into the three treatment groups (1,2,3...1,2,3) based upon the order of the sign-up e-mails received from them (a process which was assumed to be random). Participants were notified of the participation tasks required of them, and were assigned an ID number.

There was a "business as usual" control group who, after consenting, filled out the demographic form and pre-intervention survey. Approximately 1 - 1.5 months later, they filled out the post-measure (at the same time as the other two treatment groups). The second treatment group filled out the demographic form and pre-measure at Time One, and then were instructed to take several online assessments from the V-WAN online assessment network. Instructions for utilizing and exploring the results of their assessments were included. The participants in this group were

encouraged to explore their Plans of Study, and research their potential career matches on the resource links offered (O*NET and OOH). Approximately 2-3 weeks after receiving the V-WAN links and information, participants completed a post-intervention survey. The third treatment group fulfilled all the same requirements as the second, in approximately the same time interval, but in addition they were also required to attend the 90-minute career workshop prior to taking the first post-intervention survey. Follow-up data will be collected from participants for the next year and a half; however, this data was not included in the current study.

2.5.1 Missing Data. Cases that had missing data on four or more of the dependent variables were not retained in the analysis so that all analyses could be carried out across a core data set with values in all of the dependent variables. Cases with missing data on three or fewer of the dependent variables were retained. On this basis, the sample size was reduced to 658 cases at both time points.

Based upon the recommendations of Schafer and Graham (2002) for handling missing data, it was determined that the imputation of missing data would likely be more accurate than replacement by mean values or by pro-rated values. Thus, cases with missing data on one to three dependent variables underwent imputation of missing data based on Expectation-Maximization (EM) algorithm. EM is a strategy for determining the maximum-likelihood estimate of the parameters of an underlying distribution from a set of data when there are missing values (Dempster, Laird, & Rubin, 1977). The process of missing value imputation uses information from scales that have been completed to predict the values that would have appeared had the participant completed a missing scale. EM (like other data imputation methods) assumes that the data is missing at random (MAR). However, MAR is not directly testable without an independent means of establishing the scores that were missing, such as gathering follow up data from nonrespondents (Glynn, Laird, & Rubin, 1993; Graham & Donaldson, 1993). Data missing completely at random (MCAR) is testable with Little's test (and data found to be MCAR is also MAR).

Little's test was conducted and it indicated that the data was not missing completely at random (MCAR): Time One, $\chi^2(42) = 94.713, p < .001$; Time Two, $\chi^2(40) = 66.992, p < .001$.

This result suggests a note of caution for assuming MAR. However, Schafer and Graham (2002) posit that one would need to have a theoretical model predicting a very strong departure from MAR to violate this assumption to a point where data imputation would not be an appropriate method for handling missing data. Also, an erroneous assumption of MAR has not been found to markedly affect estimates of missing data, and EM has been shown to be robust against typical violations of this assumption (Collins, Schafer, & Kam, 2001). Therefore, a general condition of the data missing at random (MAR) was assumed, and missing values based on EM algorithm were imputed on one to three dependent variables for 99 cases at Time One and 173 cases at Time Two.

2.5.2 Power Analysis. In order to evaluate the statistical power of the sample of 658 cases, the G-Power 3 software package was employed (Faul, Erdfelder, Lang, & Buchner, 2007). The statistical power of the sample was computed for the detection of effects for a predictor with a weak effect size ($f^2 = .02$) in a model containing six independent variables (including interactions). This computation was appropriate for the more complex models in the study. By extension, power levels for single independent variables that are embedded in simpler models will be higher. Based on the assumptions stated above, at an α level of .05 for rejection of the Null Hypothesis, the power level attained by this sample was .95. Thus, the sample provided adequate power for the detection of weak effects.

2.6 Statistical Analyses

2.6.1 Multivariate Analysis of Variance (MANCOVA). MANCOVA was used to examine the main effects of the treatment groups across the various dependent variables while controlling for pre-intervention outcome measure scores. MANCOVA was chosen as the preferred analysis due to its ability to account for correlations between multiple dependent variables without inflating Type I errors (Tabachnick & Fidell, 2007). MANCOVA allowed for comparison of a general main effect for highly correlated career-related variables.

The three strivings variables included as outcome measures in this study (self-efficacy strivings, outcome expectation strivings, and calling strivings) represent a measurement strategy

that is distinct from the other six outcome measures. Thus, two MANCOVA models were run: a main model including career decision-making self-efficacy, career locus of control, academic major satisfaction, career optimism, career decision-making difficulties, and career adaptability; and a strivings model including career self-efficacy strivings, calling strivings, and outcome expectation strivings.

2.6.2 Hierarchical Multiple Regression (HMR). Hierarchical multiple regression was used to test for moderator and interaction effects for all nine dependent variables. Hierarchical regression is the recommended analysis for the examination of moderators according to (Frazier, Tix, & Barron, 2004) based upon its ability to analyze continuous moderators without requiring a median split, and the flexibility of coding options for categorical variables. The independent variable (treatment condition) was dummy-coded into two pairs (V-WAN only condition compared to Control and V-WAN plus workshop condition compared to Control), and both pairs were entered into the model. Categorical moderators were also dummy-coded, and continuous moderators were centered. In hierarchical regression, predictors are entered sequentially into the model. For the purposes of this study, the hierarchical regression models were entered as follows: Step One: Time One Pre-Intervention Scores, Step Two: Dummy-Coded Treatment Condition, Step Three: Moderator Variable (either Dummy-Coded or Centered), and Step Four: Interaction Term.

3.1 Analysis of Main Effects (MANCOVA)

3.1.1 Testing of Assumptions. The accuracy of MANCOVA results depends on satisfying several assumptions about the data, including absence of outliers, linearity of bivariate relationships, multivariate normality, and homogeneity of variance-covariance matrices. Tests of these assumptions are described below.

First, univariate outliers were identified through box plots and stem and leaf diagrams generated for all variables for both Time One and Time Two. In accordance with the method recommended by Tabachnick and Fidell (2007), univariate outliers were assigned a raw score on the offending case that was one unit larger or smaller than the next most extreme score. Multivariate outliers were identified using Mahalanobis Distance with $p < .001$ as recommended by Tabachnick and Fidell (2007). Forty-nine outliers were detected and removed, which resulted in a final sample size of 609 participants, and improved rates of significance in the data. Thus, the final analysis was run excluding these multivariate outliers. Descriptive statistics for each of the dependent variables for the final sample can be seen in Table 1.

Second, linearity was assessed for each MANCOVA through visual inspection of bivariate scatterplots for all possible dependent variable pairings, as recommended by Tabachnick and Fidell (2007). The assumption of bivariate linearity appeared to be maintained reasonably well for all pairings of variables.

MANCOVA assumes that the dependent variable is approximately normally distributed, although this procedure is robust to moderate violations of this assumption (Fidell & Tabachnick, 2003). In order to detect meaningful levels of skew and kurtosis in samples containing more than 300 cases, a visual inspection of the data is necessary. In samples of this size, formal inferential tests will indicate significant skew and kurtosis even when the magnitude of skew and kurtosis is very small. In order to inspect the data, distributions were plotted against the normal distribution, and Q-Q plots were constructed. Levels of skew and kurtosis were acceptable for most of the dependent variables. However, deviations from the normal distribution were noted for Self-Efficacy

Strivings, Academic Major Satisfaction, Outcome Expectation Strivings, and Calling Strivings at both Time One and Two. The departure from normality for these variables arose from bimodality in the distribution of the scores: in addition to the typical mode found near the mean of the distribution, a second mode near the top of the range was found. Departures from normality due to bimodality would not have been resolved by the variable transformations that address negative and positive skew. Hence, scores were not transformed, as to do so would not have increased the normality of the distribution and would introduce difficulties in interpreting transformed scores. MANCOVA is considered robust to departures from normality as long as the degrees of freedom for the error term in the omnibus test is greater than 20 (Tabachnick & Fidell, 2007). In this case, degrees of freedom for the error term in the omnibus test for the main MANCOVA was 595 and 601 for the strivings MANCOVA, suggesting that any departures from multivariate normality were not likely to bias the results.

Finally, Box's *M* was used to test for the homogeneity of variance-covariance matrices. Box's *M* was non-significant for the main MANCOVA ($p = .206$); however, Box's *M* for the strivings MANCOVA was significant ($p = .027$). It is important to note that Box's *M* is considered to be overly stringent in analyses with large samples and approximately equal cell sizes (Tabachnick & Fidell, 2007) such as the current study. However, to attempt to account for this potential concern, the relatively conservative Pillai's trace statistic was used for the estimation of the omnibus *F* statistic for the strivings MANCOVA as it is more robust to the violation of homogeneity of variance-covariance assumption (Tabachnick & Fidell, 2007).

3.1.2 Results of MANCOVA Analysis. Two separate MANCOVA models were run: a main model, and a strivings model. The main model included the following variables: career decision-making self-efficacy, career decision-making difficulties, career optimism, career locus of control, career adaptability, and academic major satisfaction. The strivings model included all three strivings variables: self-efficacy, outcome expectations, and calling strivings. The variables

were separated into two models due to the strivings variables using a different measurement strategy than the other six outcome variables. For correlations of the nine outcome measures see Table 2.

Main MANCOVA. . An initial MANCOVA controlling for Time One pre-intervention scores, examined career decision-making self-efficacy, career decision-making difficulties, career optimism, career adaptability, career locus of control, and academic major satisfaction as dependent variables (DVs), and treatment condition as the independent variable (see Table 3). The results showed a significant multivariate effect for the effect of treatment condition on the DV's described above ($p = .001$).

A Bonferroni correction to control the familywise error rate was applied and p was set at a value of .008 for univariate analyses. At the univariate level, treatment condition significantly predicted Time Two scores for career decision-making self-efficacy ($p = .000$) and career decision-making difficulties ($p = .008$). Using pair-wise comparisons to further delineate the univariate results, it was found that there was a significant difference between the control group and V-WAN plus workshop group for career decision-making self-efficacy ($p = .000$) such that treatment three participants had significantly higher career decision-making self-efficacy than controls. There was also a significant difference between the control and V-WAN plus workshop group for career decision-making difficulties ($p = .008$) such that participants from the V-WAN plus workshop group had significantly lower career decision-making difficulties. The differences between the control and V-WAN only group, as well as the V-WAN only and V-WAN plus workshop group, were non-significant.

Career Strivings MANCOVA. . A second MANCOVA controlling for Time One pre-intervention scores examined self-efficacy strivings, outcome expectation strivings, and calling strivings as dependent variables, and treatment condition as the independent variable (see Table 4). The results showed a significant multivariate effect for the effect of treatment condition on the DVs described above ($p = .002$).

A Bonferroni correction to control the familywise error rate was applied and p was set at a value of ($p = .01$). At the univariate level, treatment condition significantly predicted Time Two scores for outcome expectation strivings ($p = .001$). Using pair-wise comparisons to further delineate the univariate results, it was found that there was a significant difference between the V-WAN only group and V-WAN plus workshop group for outcome expectation strivings ($p = .001$) such that participants from the V-WAN plus workshop group had significantly higher outcome expectation strivings than participants from the V-WAN only group. The differences between the control and V-WAN only group, as well as the control and V-WAN plus workshop group, were non-significant.

3.2 Moderator Analysis (Hierarchical Multiple Regression)

3.2.1 Testing of Assumptions. The accuracy of multiple regression, including hierarchical regression, rests on several assumptions, including absence of outliers, adequate scale reliability, multivariate normality, linearity of bivariate relationships, homogeneity of variance-covariance matrices, and absence of multicollinearity. Many of these (absence of outliers, multivariate normality) are analogous to the MANCOVA assumptions and will not be repeated here. Tests of other HR assumptions are described below.

Univariate and multivariate outliers were handled in the same manner as discussed previously in the MANCOVA testing of assumptions section. Univariate outliers were handles by assigning a raw score one unit larger or smaller than the next most extreme score. Multivariate outliers were identified using Mahalanobis Distance with $p < .001$ and forty-nine outliers were detected and removed. After the removal of outliers, the final sample size was 609.

Multiple regression assumes that the dependent variable is approximately normally distributed, although this procedure is robust to moderate violations of this assumption (Fidell & Tabachnick, 2003). In order to detect meaningful levels of skew and kurtosis in samples containing more than 300 cases, a visual inspection of the data is necessary. In samples of this size, formal inferential tests will indicate significant skew and kurtosis even when the magnitude of skew and kurtosis is very small. In order to inspect the data, distributions were plotted against the

normal distribution, and Q-Q plots were constructed. Levels of skew and kurtosis were acceptable for most of the dependent variables. However, deviations from the normal distribution were noted for Self-Efficacy Strivings, Academic Major Satisfaction, Outcome Expectation Strivings, and Calling Strivings at both Time One and Two. The departure from normality for these variables arose from bimodality in the distribution of the scores: in addition to the typical mode found near the mean of the distribution, a second mode near the top of the range was found. Departures from normality due to bimodality would not have been resolved by the variable transformations that address negative and positive skew. Hence, scores were not transformed, as to do so would not have increased the normality of the distribution and would introduce difficulties in interpreting transformed scores.

Reliability is a sample characteristic, in the sense that measures that are found to have high levels of internal consistency in one sample may not do so in another. To the extent that measures have low levels of internal consistency in a sample, correlations computed with these variables may be attenuated. Therefore, it is critical to assess the internal consistency reliability of the measures in the present sample. The reliability statistics reported below are based upon Cronbach's α computed for the Time One scores (similar levels of reliability were found at Time Two). For most scales, the α levels were very high ($\alpha > .9$), although somewhat lower levels of reliability were found for the measure of Adaptability ($\alpha = .82$) and the Strivings scales ($\alpha = .72$). These levels of reliability are considered adequate for the measurement of psychological attitudes. The levels of internal consistency reliability attained by these scales suggest that measurement error is not likely to attenuate the strength of correlations between variables.

There was no indication of excessive collinearity in the regression analyses. The parameter estimates were reasonable (none were in excess of 1 or close to 1). The residual variance was also distributed fairly evenly and randomly across predicted levels of the dependent variable; therefore there were no concerns with the assumptions of homoscedasticity or linearity.

3.2.2 Results of Hierarchical Multiple Regression. A total of 62 different regression models were run to examine the potential interaction effects of gender, minority status, race/ethnicity,

cognitive/emotional disability, career needs, SES, and career locus of control with the relationship between treatment condition and career decision-making self-efficacy, career decision-making difficulties, career optimism, career adaptability, career locus of control, academic major satisfaction, self-efficacy strivings, outcome expectation strivings, and calling strivings. (Note: Given that career locus of control served as both a moderator and a dependent variable, this variable was only examined as a moderator with the other 8 dependant variables.) Significant interactions were found for the following moderator relationships: SES as a moderator for career decision-making self-efficacy and treatment condition, career needs as a moderator for career decision-making difficulties and treatment condition, as well as career needs as a moderator for academic major satisfaction and treatment condition. The results for the interactions of all other moderator analyses were non-significant for all the outcome variables.

Moderating Effect of Gender. . The potential moderating effect of gender on the relationship between treatment condition and all ten dependant variables was examined. Gender (female vs. male) was dummy coded with female as the reference group and male as the comparison group. Results for interaction effects were non-significant indicating that gender was not a significant moderator for the relationship between treatment condition and career decision-making self-efficacy (see Table 5), career decision-making difficulties (see Table 6), career optimism (see Table 7), career adaptability (see Table 8), career locus of control (see Table 9), academic major satisfaction (see Table 10), career decision-making readiness (see Table 11), self-efficacy strivings (see Table 12), outcome expectation strivings (see Table 13), or calling strivings (see Table 14). These results were contrary to the aspect of *H2* which posed that gender would significant moderate the relationship between treatment condition and career decision-making readiness. The findings supported the hypothesis that gender would not significantly moderate the other dependant variables.

Moderating Effect of Racial/Ethnic Minority Status. . Minority status was dummy-coded with participants who self-identified as being from a racial/ethnic minority group serving as the reference group, and those participants who self-identified as being White Non-Hispanic

serving as the comparison group. Results for interaction effects from all ten models were non-significant indicating that minority status was not a significant moderator for the relationship between treatment condition and career decision-making self-efficacy (see Table 15), career decision-making difficulties (see Table 16), career optimism (see Table 17), career adaptability (see Table 18), career locus of control (see Table 19), academic major satisfaction (see Table 20), self-efficacy strivings (see Table 21), outcome expectation strivings (see Table 22), or calling strivings (see Table 23). *H3* postulated that minority status would moderate the relationship between treatment condition and the dependant variables such that those belonging to a non-majority racial/ethnic group would not benefit as much from the interventions. This hypothesis was not supported by the results.

Moderating Effect of Cognitive/Emotional Disabilities. . Given the small sample size of individuals who reported a physical disability in the study ($n = 13$), only those individuals who reported a cognitive or emotional disability ($n = 39$) were included in the moderator analysis. Examples of cognitive/emotional disabilities reported by participants included Asperger's Syndrome, Attention-Deficit Hyperactivity Disorder, Dyslexia, Bi-polar, Anxiety Disorders, Schizoaffective Disorder, and others. Disability status was dummy-coded with those who did not report having any disability serving as the reference group, and those who reported a cognitive/emotional disability serving as the comparison group. Results for interaction effects from all ten models were non-significant indicating that cognitive/emotional disability did not significantly moderate the relationship between treatment condition and career decision-making self-efficacy (see Table 24), career decision-making difficulties (see Table 25), career optimism (see Table 26), career adaptability (see Table 27), career locus of control (see Table 28), academic major satisfaction (see Table 29), self-efficacy strivings (see Table 30), outcome expectation strivings (see Table 31), or calling strivings (see Table 32). *H4*, which proposed that disability status would significantly moderate the relationship between treatment condition and the dependant variables such that those with a disability would not benefit as much from the interventions, was not supported by the findings.

Moderating Effect of Socioeconomic Status. . The potential moderating effect of SES on the relationship between treatment condition and all nine dependent variables was examined. SES is a continuous moderator, thus the variable was centered prior to including it in the analysis. Results for the moderating effect of SES on the relationship between treatment condition and career decision making self-efficacy were significant ($R^2 = .527$, $\Delta R^2 = .009$, $\Delta F(2, 498) = 4.478$, $p = .012$, see Table 33).

Predicted values for career decision-making self-efficacy were plotted for low (-1 SD from the mean) medium (at the mean) and high (+1 SD from the mean) SES for each of the three treatment conditions to explore the significant interaction effects. The interaction was such that the career decision-making self-efficacy for those participants in the workshop group increased the most, as compared with controls, for those participants reporting a lower subjective SES (as seen in Figure 1). As participant SES increased, the relative benefit of the workshop on scores of career decision-making self-efficacy decreased. It is important to note that while statistically significant, the variance accounted for by this interaction effect in the overall regression model was quite small ($\Delta R^2 = .009$), and reflects a mean score change (control group as compared to workshop group) of .29 points in career decision-making self-efficacy (on a five point scale) for low SES participants, .15 points for medium SES participants, and .01 points for high SES participants.

A post-hoc ANOVA was conducted with SES as a potential predictor for Time One career decision-making self-efficacy to determine if career decision-making self-efficacy significantly varied across SES prior to the study interventions. Only eight participants reported a level five SES (upper class); therefore, data from participants who endorsed a level five SES was combined with data from participants who endorsed a level four SES (upper-middle class) for the purposes of the analysis. This resulted in the following sample size for each level of SES one through four/five respectively: $n = 46$; $n = 115$; $n = 221$; $n = 123$. Results of the ANOVA were non-significant ($F(3, 501) = 1.69$, $p = .169$) suggesting that SES was not a significant predictor of pre-intervention career decision-making self-efficacy. However, it is noteworthy that the means of

the career decision-making self-efficacy of the various levels of SES did seem to follow a general trend of increasing as SES increased (ranging from 3.69 at level one SES to 3.81 at level four/five SES).

Interactions for SES as a moderator were non-significant for career decision-making difficulties (see Table 34), career optimism (see Table 35), career adaptability (see Table 36), career locus of control (see Table 37), academic major satisfaction (see Table 38), self-efficacy strivings (see Table 39), outcome expectation strivings (see Table 40), and calling strivings (see Table 41). The results of both the significant and non-significant interactions for SES as a moderator failed to support *H5*. *H5* postulated that participants reporting lower SES would not benefit as much from the career interventions as those reporting higher SES.

Moderating Effect of Career Locus of Control. . Career locus of control is a continuous moderator, thus the variable was centered prior to including it in the analysis. Results for interaction effects from all nine models were non-significant indicating that career locus of control was not a significant moderator for the relationship between treatment condition and career decision-making self-efficacy (see Table 42), career decision-making difficulties (see Table 43), career optimism (see Table 44), career adaptability (see Table 45), academic major satisfaction (see Table 46), self-efficacy strivings (see Table 47), outcome expectation strivings (see Table 48), or calling strivings (see Table 49). *H6* posed that career locus of control would moderate the relationship between treatment condition and the dependant variables such that those with a more external locus of control would not benefit as much from the interventions. This hypothesis was not supported by the findings.

Moderating Effect of Career Decision-Making Readiness. . Career decision-making readiness is also a continuous moderator, thus the variable was centered prior to including it in the analysis. Results for interaction effects from all eight models were non-significant indicating that career decision-making readiness was not a significant moderator for the relationship between treatment condition and career decision-making self-efficacy (see Table 50), career optimism (see Table 51), career adaptability (see Table 52), career locus of control (see Table 53),

academic major satisfaction (see Table 54), self-efficacy strivings (see Table 55), outcome expectation strivings (see Table 56), or calling strivings (see Table 57). Career decision-making difficulties was not included as a dependant variable in the analysis of career decision-making as a moderator due to the fact that the scale used for career decision-making readiness was a subscale of the Career Decision-Making Difficulties Questionnaire. *H7* postulated that individuals with lower career decision-making readiness at Time One would not benefit as much from the treatment interventions that those individuals who were higher in career decision-making readiness. The findings did not support this hypothesis.

Moderating Effect of Career Needs. . The potential moderating effect of career needs on the relationship between treatment condition and all nine dependent variables was examined. In accordance with *H8* career needs was coded into two categories. Participants who indicated they needed more help with one or more of the following: clarifying career-related interests, needs, values, and/or abilities; more information about career in which they are interested; and/or developing a strategy to select a career from those that fit them were coded as the comparison group. Participants who indicated that they only needed help with one of more of the following: developing a specific plan for a job within their career field; interest in help for professional development/career management; and/or other were coded as the reference group.

Results for the moderating effect of career needs on the relationship between treatment condition and career decision-making difficulties was significant ($R^2 = .629$, $\Delta R^2 = .005$, $\Delta F(2, 602) = 3.977$, $p = .019$, see Table 59). To examine the significant interaction effect, predicted values for career decision-making difficulties were plotted for incongruent and congruent career needs for each of the three treatment conditions.

The interaction was such that the career decision-making difficulties of those participants with congruent needs decreased significantly for those in the workshop condition as compared to the V-WAN only condition (as seen in Figure 2). It is important to note that while statistically

significant, the variance accounted for by this interaction effect in the overall regression model was quite small ($\Delta R^2 = .005$), and reflects a mean score change of .66 points (on a five point scale) between these two groups.

Results for the moderating effect of career needs on the relationship between treatment condition and academic major satisfaction was also significant ($R^2 = .552$, $\Delta R^2 = .005$, $\Delta F(2, 602) = 3.532$, $p = .030$, see Table 63). To explore the significant interaction effect, predicted values for academic major satisfaction were plotted for incongruent and congruent career needs for each of the three treatment conditions.

The interaction was such that the academic major satisfaction of participants with congruent needs was significantly increased by the workshop condition as compared to the V-WAN only condition (as seen in Figure 3). It is important to note that while statistically significant, the variance accounted for by this interaction effect in the overall regression model was quite small ($\Delta R^2 = .005$), and reflects a mean score change of .25 points (on a five-point scale) between these two groups.

Interactions for career needs as a moderator were non-significant for career decision-making self-efficacy (see Table 58), career optimism (see Table 60), career adaptability (see Table 61), career locus of control (see Table 62), self-efficacy strivings (see Table 64), outcome expectation strivings (see Table 65), and calling strivings (see Table 66).

These results partially support *H8*, which postulated that participants who reported career needs that were congruent with the focus of the career interventions would benefit more from the interventions. However, it appears that this result only held true for the workshop condition in comparison with the V-WAN only condition, and only for two of the dependent variables (career decision-making difficulties and academic major satisfaction), rather than for all dependent variables for both career intervention conditions as compared with the control group.

4 DISCUSSION

This study had two major goals. First, the study attempted to examine the efficacy of a CACGS career intervention, and a combination CACGS plus in-person workshop career intervention, for improving multiple career-related dependent variables. Second, the study aimed to explore the question of whether these interventions are more effective for some participants than for others by examining moderator effects for various groups.

4.1 Main Effects

Hypotheses related to the study's first goal received mixed support. Results suggested that the V-WAN plus workshop group improved career decision-making self-efficacy as well as career decision-making difficulties for participants as compared with the control group. The V-WAN plus workshop group also had significantly improved outcome expectation strivings (the expectation that achieving one's personal career goals will lead to a successful career) above that of the V-WAN only group. This supported Hypothesis One's postulation that the V-WAN plus workshop group would be more effective in improving career outcomes than the V-WAN only group. However, the V-WAN only group was not found to significantly improve scores relative to the control group on any of the nine dependent variables, so this aspect of Hypothesis One was not supported by the findings. It is important to note that while there were statistically significant results for career decision-making self-efficacy, career decision-making difficulties, and outcome expectation strivings with the V-WAN plus workshop group, the effect sizes were quite small (range of partial eta-squared was .02 - .03). This reflected a mean score change of .15 - .21 points on a five-point scale.

These results seem to suggest that an in-person career intervention used to explain CACGS results and further develop career decision-making and action planning may help participants feel more self-efficacious and experience fewer decision-making difficulties. It also seems to improve participant outcome expectation strivings toward positive career outcomes. The V-WAN only group did not seem to demonstrate positive effects from the CACGS intervention. It may be that students had encountered some aspects of the intervention previously (e.g., interest inventories

are commonly used in schools), or that the complexity of the resources and information offered in the computerized format may take more time to synthesize than the study design was able to investigate. It also is logical to conjecture that the workshop may have helped this process of synthesizing V-WAN results, thus improving some scores.

The CACGS developed for this study was a prototype and at times suffered from typical programming glitches and limitations to the usability and presentation of results. Programming glitches were identified and resolved as efficiently and effectively as possible by the research team, and participants were notified that the program was a work in progress and that their feedback on any issues they encountered would be highly valued and incorporated into future updates to the system. However, given that there were occasions when the usability of the program suffered due to glitches, it is possible that these types of errors could have somewhat diminished the satisfaction of the V-WAN users. It may also have caused users to be less likely to spend additional time with the program exploring their assessment results and accessing the resources available to them. Past research on CACGS has generally found them to be an effective modality of career intervention (e.g., Whiston et al., 2003; Gati et al., 2001; Fukuyama et al., 1988). Given that the V-WAN offered assessments, feedback, and world of work resources that are similar to other popular CACGS on the market, problems with the usability of the system may offer one explanation for why the V-WAN only condition did not yield significant positive effects for any of the outcome measures.

However, it also is important to note that many common pitfalls for CACGS research were avoided in this study. For instance, common criticisms of CACGS literature are that very few studies examine differential effects of CACGS across various populations; many studies have examined user satisfaction rather than career-related gains; and finally, many studies consist of single group designs with no control group (Gati et al., 2001; Taber & Luzzo, 1999; Kivlighan et al., 1994). This study investigated multiple career-related outcomes, employed a control group, and examined the data for differential effects for various participant factors. Thus, it is possible that the results of this study, which suggest that the CACGS only condition was not effective in

producing gains in any of the nine outcomes measures, are not a factor of flaws in the V-WAN system but an indication that more rigorous research is needed into the efficacy of CACGS only interventions. Nevertheless, this possibility should certainly be considered within the context of past research conducted on CACGS efficacy that has included a control group for comparison and examined career-related gains. These similarly rigorous study designs have typically demonstrated CACGS to be generally effective in yielding career-related client gains (e.g., Fukuyama et al., 1988; Pinder & Fitzgerald, 1984).

As previously discussed, Ryan (1999), as well as Brown and Ryan Krane (2000), conducted research into critical ingredients which most effect the success of career interventions. The current study incorporated all five of the critical ingredients identified by Brown and Ryan (world of work information, individualized feedback and interpretation, modeling, written exercises, and attention to building support for choices) into the V-WAN plus workshop group. The V-WAN only group incorporated two of these five critical ingredients: world of work information and individualized feedback and interpretation (in a computerized format), while the V-WAN plus workshop condition incorporated all five. The results of this study seem to suggest that incorporating all five critical ingredients may be more beneficial than only including two of the ingredients, particularly when they are incorporated into an in-person intervention format. However, given that this study did not specifically examine the added benefit of these various components to effect sizes, it can only be speculated that it is possible these critical ingredients may have had an impact on the intervention efficacy of the V-WAN plus workshop condition. Students may have benefitted from the components of the workshop which provided modeling for career developmental process and decision-making, allowed them to explore their experiences with peers, and then prompted action planning and building support for choices through written career activities. Finally, the V-WAN plus workshop condition also provided for the possibility of a therapeutic alliance with the workshop facilitators, which has been demonstrated as a centrally important aspect to intervention efficacy (Norcross, 2010). The additional critical-ingredient

components, as well as the opportunity for a therapeutic alliance, may provide an explanation for why the V-WAN plus workshop condition yielded significant career-related client gains.

4.2 Moderator Effects

Hypotheses related to the study's second goal also received mixed support. Out of 63 regression models, only three yielded significant moderator effects. These were for SES moderating the relationship between career decision-making self-efficacy and treatment group (such that participants reporting a lower level of SES benefitted more from the V-WAN plus workshop condition than those reporting a higher level of SES), and for career needs moderating the relationship between treatment group and the following dependant variables: career decision-making difficulties and academic major satisfaction (such that those with congruent career needs benefitted more from the V-WAN plus workshop condition than those with incongruent needs). The effect sizes for these significant moderator effects were relatively small; however, Chaplin (1991) suggests that effect sizes for interactions are typically small. According to Cohen (1988) a small effect size in multiple regression is considered to be an R^2 value of .02. The significant moderator effect sizes in the current study ranged from .005 to .01, somewhat smaller than Cohen's parameter for small effect sizes.

One explanation for why SES might have moderated the relationship between treatment condition and career decision-making self-efficacy is that perhaps individuals from a lower SES may have found the information covered in the workshop empowering for their decision-making process. It may have helped them to recognize options available to them in a way that the V-WAN only intervention did not. Also, perhaps there was more need for the career intervention for individuals from lower SES backgrounds. In the post-hoc ANOVA, SES was not found to be a significant predictor of pre-intervention career decision-making self-efficacy; however, the general trend for the career decision-making self-efficacy means (increasing as SES increased) seem to provide partial support to this explanation. This would be consistent with past research that suggests greater access to economic resources, social prestige, and social power are positively correlated with higher levels of career decision self-efficacy, and that higher levels of Differential

Status Identity (a measure of an individual's social status identity) are directly related to higher levels of decision self-efficacy (Thompson & Subich, 2006; Thompson & Subich, 2011). Thus, synthesis of the V-WAN results, exposure to the workshop activities (focused around modeling, building support for choices, and action-planning), as well as the opportunity to develop a therapeutic alliance with the workshop facilitators, may have helped to increase career decision-making self-efficacy for those participants from a lower SES above and beyond the impact it had for those participants from a higher level of SES.

The significant moderation effects for career needs suggest that individuals with more congruent needs benefitted more from the workshop intervention that was designed to address those needs. Likely this reflects that individuals reporting needs around career decision-making were more likely to be helped with their career decision-making difficulties with the workshop. The intervention may also have helped to confirm for some participants that the academic major they chose is a good fit for their interests and values, thus generating higher levels of academic major satisfaction. This suggests that the interventions utilized in the current study may have been more beneficial for certain participants who were reporting specific types of career needs. This is consistent with research by Gati et al. (2001), who suggested that the effectiveness of a CACGS may depend upon the type of career difficulty faced by the user.

The fact that results were non-significant for the vast majority of the moderator analyses can be interpreted as an encouraging outcome for the current project. This suggests that the efficacy of career interventions may not vary meaningfully across a range of different populations. In the current study this held true for gender, race/ethnicity and cognitive/emotional disability status as well as for the psychological moderators of career locus of control and career decision-making readiness. However, given the small effect sizes of the results, it is difficult to draw strong conclusions regarding the efficacy of career interventions across diverse populations. In addition, it is important to note that since physical disability was not eligible to be included in the analysis due to the small sample size, no conclusions can be drawn regarding its role as a potential moderator. Cognitive/emotional disability status also had a small sample size ($n = 39$), thus the

non-significant results for this potential moderator should be interpreted with that caveat taken into consideration. Despite the limited conclusions which can be drawn, the results do still have practical implications for the relative ability of a structured workshop format of career intervention to improve career decision-making self-efficacy, outcome expectation strivings, and career decision-making difficulties across various populations in a relatively equitable manner.

4.3 Limitations

The current study was considered to be an important initial step into the investigation of moderator effects of career intervention efficacy due to the dearth of information available on this topic. Given that, the alpha level for significance in the regression analyses was not adjusted to account for the number of regression analyses being run. Therefore, an important limitation of this study is the potential for a Type I error in the results, or in other words, an increased risk that the statistically significant interaction effects were found simply due to chance.

The sample used in this study consisted of students who volunteered to participate, not from a clinical sample of individuals with documented career concerns. While students with career concerns were especially encouraged to participate, participants were not screened or excluded if they did not report any current career concerns. Thus, some of these students likely volunteered due to interest in the study topic or need for the career interventions, but it is also likely that many volunteered for the sake of the incentives (extra credit, potentially winning the drawing, required research credit fulfillment) or just for the sake of helping with research. It is possible that the results of the study may have been more significant and relevant with a sample of individuals known to be struggling with career concerns. Perhaps recruiting participants reporting career concerns from a career counseling center or from student advising would provide such a sample. Unfortunately for the purposes of this study, recruiting such a sample was not feasible. However, an important result in a meta-analysis suggested that effect sizes for research with client and non-client samples were similar; therefore, client and non-client participants did not seem to differ in terms of their response to various career interventions (Whiston et al., 1998). Research has also suggested that college students as a whole generally tend to indicate a need for

help with career decision-making difficulties (e.g., Fouad et al., 2006; Gati et al., 1996). Thus, while using a random sample of students rather than a clinical sample of career counseling clients may be a limitation of the current study, past research suggests that the impact of this limitation may ultimately be quite minimal.

Another limitation of this study was its time constraints. In order to retain participants in the study, the workshop was necessarily created to be as efficient as possible. A wide-range of information was covered in the 90 minute session. Given the time constraints and structured group format, it was challenging to address individual concerns with career assessment results in a detailed manner. Given evidence suggesting that individualized feedback is a critical ingredient to successful career interventions, it is reasonable to suggest that the opportunity to include a more in-depth and individualized in-person component may have yielded even more substantial results than the workshop design used for this study (Brown & Ryan Krane, 2000).

Missing data was another limitation for the current study. In addition to the missing data for dependent variables, there was also missing demographic data. Participants who did not provide certain demographic information were not able to be included in the moderator analyses. This resulted in slightly uneven sample sizes for each of the moderators of interest. This data was missing due to an oversight during the data collection process where the demographic survey was not an obvious enough link for participants to follow during the survey process. The mistake was rectified as soon as it was realized, but some participants did not fill out all of the demographic information.

One final limitation of the current study is the generalizability of the sample. While a sizeable sample was collected from various community colleges and a four-year university in Colorado, the sample was ultimately quite homogenous in terms of race/ethnicity with the majority of participants being White Non-Hispanic individuals. The sample was reasonably representative of the demographics of the area from which students were recruited; however, a more diverse sample may have enriched the findings of the research. The sample size for the moderator physical disability was not large enough to be reasonable to include in the regression analysis;

and thus had to be excluded from the results. This is not surprising given the relatively low base rates for physical disability in the general population (6.2% of the U.S. population for individuals aged 16-64; U.S. Census Bureau, 2003).

4.4 Future Directions

One possibility for future research would be to conduct a similar study with a sizeable sample of individuals who are reporting career concerns. Despite the aforementioned meta-analytic results suggesting that client and non-client samples respond similarly to interventions, there continues to be a concern that the majority of career intervention research has been conducted with samples of college students and small convenience samples (Whiston et al., 1998). Thus, future studies with large samples of career counseling clients are still indicated. Participants recruited through college career counseling centers, counseling centers, academic advising, or community career counseling agencies might be screened to determine eligibility in the study based on the particular career concerns they are reporting. This might yield a study focused more effectively with a population in need of the interventions offered, and provide an opportunity to determine if the interventions would be more effective for individuals reporting these concerns. Given the significant moderator effects of career needs for the current study, this might suggest that individuals reporting that they need help with specific career needs may find the career interventions more useful.

Given the criticisms of CACGS efficacy research, and the results of this study suggesting that the CACGS only intervention was not effective, more research employing rigorous research designs with CACGS is encouraged to fully support this intervention modality's effectiveness when not paired with a face-to-face intervention. Another area of focus for future research should include investigating moderator effects with a CACGS system that has already been found efficacious in promoting career-related gains. Replication of the moderators examined in the current study is indicated given the lack of research into this area. As indicated by the results in this study, and that of Gati et al. (2001), screening for participant career needs may help researchers to recruit a sample of participants best suited to CACGS use.

Future research aiming to recruit a more diverse sample also would be useful. The sample should aim to be diverse not only in terms of race/ethnicity, but in terms of other moderators examined in this study such as disability status and SES. Additionally, other moderators not examined in the current project may also be useful to explore such as individuals identifying as LGBT, or individuals reporting a strong religious affiliation or commitment (particularly in relation to perceiving career as a calling). For instance, in terms of religion and calling, a study by Hernandez, Foley, and Beitin (2011) suggests that individuals who experience a strong sense of spiritual calling to their work may have a unique career decision-making process and require career counseling interventions that incorporate religion and spirituality into that process. In regard to sexual orientation and transgender status, research into these important identity variables has suggested that sexual orientation and transgender status play an important role in career-related barriers (Parnell, Lease, & Green, 2012; Schmidt, Miles, & Welsh, 2011), career aspirations (Fisher, Gushue, & Cerrone, 2011), career decision-making process (Schneider & Dimitto, 2010; Budge, Tebbe, & Howard, 2010). It would be of interest to determine if fairly typical styles of career intervention, such as CACGS and structured workshops, would be as beneficial to individuals who perceive their career to be a calling, or to individuals who identify as LGBT.

At the conclusion of this study there is a continued lack of knowledge regarding individuals with physical disabilities and how this influences the efficacy of career interventions (given that this population had to be excluded from the statistical analysis due to the small sample size). The difficulties inherent in recruiting an adequately sized sample of individuals from a relatively small population make quantitative research challenging to conduct. However, a qualitative study focused on gathering information relevant to the career intervention needs of this population may be more pragmatic and beneficial. Such a study might gather a small sample of individuals with physical disabilities who have engaged in career counseling interventions, such as CACGS or other modalities, and explore their subjective experience of these approaches in terms of the interventions' abilities to meet their career needs and benefit their career development. This approach could also help to target future exploration of the career intervention needs of other

special populations such as transgendered individuals. Unfortunately psychological studies often fail to recruit large enough samples of transgendered individuals to conduct meaningful quantitative analyses (Schneider & Dimito, 2010). Qualitative designs may provide an opportunity to continue to collect relevant and beneficial information regarding these populations' career intervention needs which can help to provide guidelines and suggestions for practitioners.

Given the results of this study which suggest that SES is a significant moderator for career intervention efficacy on career decision-making self-efficacy, future research focused on better understanding the role of this variable is warranted. The Differential Status Identity (Fouad & Brown, 2000; Brown et al., 2002) variable may be a fascinating construct to examine in the context of career intervention efficacy given the research suggesting that it predicts career decision-making self-efficacy and career certainty. The current study also did not isolate SES by controlling for race/ethnicity, which was suggested as a potential concern for research into race/ethnicity and SES as moderator variables given the over-representation of minorities in lower levels of SES (Leung, 1995). Future research investigating each of these moderators (SES and race/ethnicity), while controlling for its related counterpart, is also warranted.

Research into other career-related psychological moderators is also needed. For instance, additional research examining the interaction between Holland Codes and career intervention efficacy is warranted based on the findings of Lenz et al. (1993) who found that individuals with Social and Enterprising interests rated a CACGS as lower in its ability to help them learn about themselves and occupational options. It may be beneficial to determine if Holland Codes actually moderate CACGS efficacy with career-related gains, or if they only impact user satisfaction with CACGS. Career maturity, which has been suggested to be a significant predictor for outcomes like career indecision and successful employment transitions, would be another variable for which moderator analysis is warranted (e.g., Patton et al., 2002; Obana, 2008). Finally, preliminary investigation with vocational identity has suggested that it may play a role in moderating CACGS intervention efficacy (e.g., Hornyak, 2007; Kivlighan et al., 1994). Further rigorous

evaluation of vocational identity as a moderator of career intervention efficacy with other career-related outcome measures is suggested to establish the role this client variable plays in moderating efficacy for career interventions.

Finally, additional investigations into the process of career interventions, as suggested by Brown and Ryan Krane (2000), continues to be indicated. The current investigation demonstrated that including a structured workshop seemed to benefit participants beyond engagement with the V-WAN only. However, there continues to be a lack of understanding regarding which components were the most beneficial, as well as how and why these components increased certain career-related gains. Research investigating mediator effects of career-related gains, and continued research into critical intervention ingredients, may help to increase understanding of this process for the field.

4.5 Implications for Practice

This research demonstrated that a CACGS intervention paired with a 90-minute structured workshop was effective in improving several career outcomes for a sample of community college and four-year university students. Results suggested that the V-WAN alone was not an efficacious intervention for this sample of students, and that the addition of the 90-minute structured workshop which synthesized results, demonstrated resources for learning world of work information, as well as provided opportunities for modeling, peer discussion, building support for choices, and action-planning written activities, improved students' self-efficacy, outcome expectation strivings, and reduced their decision-making difficulties. The CACGS plus in-person structured workshop is an intervention format that could very easily be incorporated into classes or orientations at the college level. Perhaps career counseling centers could reach more students by offering assessment interpretation groups to students, or even requiring that students attend a career counseling orientation group at the outset of their college careers.

This research also suggests that a fairly generalized intervention format did not result in lower efficacy for the disadvantaged groups examined in this study. In fact, this study suggested that the CACGS plus structured workshop format benefitted those with lower SES even

more than those with higher SES. This encouraging finding suggests that CACGS plus structured workshop career intervention formats, which tend to be a less expensive treatment modality, can be efficacious for individuals who may not be able to access or afford one-on-one career counseling services. Community career counseling providers could cut costs to clients by providing structured workshop groups. School or college career counseling settings may also be able to provide benefit to a diverse student body with a CACGS plus structured workshop format.

The results of this study also suggest that it is important to consider the specific types of career needs clients are facing. In practice, clients could be screened using a simple question about their specific career needs (similar to the item used to assess career needs in this study), and then provided an intervention strategy best suited for their particular needs. For example, if a client reports that she or he needs more information about career options, self-exploration, and action-planning, an intervention similar to the combined CACGS and structured workshop used in the current study may be indicated. However, if a client is in a different stage of her or his career path and having difficulties adjusting to work climate, dealing with interpersonal challenges in the workplace, or looking for ways to advance in their current career, a different career intervention focus may be indicated. For practitioners working to provide services to broad groups of individuals (e.g., in a school setting), or to individuals with limited resources (e.g., in a community mental health setting), a structured workshop intervention seems to encompass an ideal balance of efficacy and cost efficiency. Therefore, in these settings it may be most effective to reserve individual career counseling for those individuals who prefer it, can afford it, and/or have career needs that may not be addressed by a CACGS plus structured workshop format.

4.6 Conclusions

The current study aimed to examine the efficacy of a CACGS only and a CACGS plus workshop career intervention. It also aimed to determine whether certain variables (e.g., gender, race/ethnicity, SES, career needs) might moderate the efficacy of these interventions. The results of the current study suggest that an in-person career intervention is beneficial as compared to a CACGS only career intervention. This is true for a population of participants that was not

selected for career concerns, and was even more true for those students who reported career concerns that were congruent with the aims of the intervention. This suggests that CACGS paired with in-person career interventions, even in a time-limited structured group format, can be beneficial for increasing career decision-making self-efficacy, career decision-making difficulties, and outcome expectation strivings. The results of the current project also suggest that SES may play a significant role in the efficacy of career interventions. Finally, the other moderators examined in this study did not seem to have a major impact on intervention efficacy. Future research recommendations include investigating additional moderators for career intervention efficacy, conducting career intervention research with more diverse samples, using qualitative research to explore the career intervention needs of special populations, and further examining the process of career intervention efficacy.

TABLES

Table 1

Descriptive Statistics

Variable	n	M	SD	Minimum	Maximum
Career Decision-Making Self-Efficacy	609	3.79	0.58	2.20	5.00
Career Decision-Making Difficulties	609	3.78	1.36	1.05	7.50
Career Optimism	609	3.57	0.66	2.00	5.00
Career Adaptability	609	4.05	0.47	2.80	5.00
Career Locus of Control	609	5.05	0.61	3.55	6.00
Academic Major Satisfaction	609	3.64	0.65	1.67	4.83
Career Decision-Making Readiness	609	4.02	0.05	1.09	7.09
Self-Efficacy Strivings	609	4.09	0.60	2.20	5.00
Outcome Expectation Strivings	609	4.18	0.60	2.40	5.00
Calling Strivings	609	3.69	0.81	1.20	5.00

Table 2

Intercorrelations

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Career Decision-Making Self-Efficacy	1									
2. Career Decision-Making Difficulties	-.62**	1								
3. Career Optimism	.69**	-.72**	1							
4. Career Adaptability	.61**	-.46**	.48**	1						
5. Career Locus of Control	.41**	-.51**	.43**	.49**	1					
6. Academic Major Satisfaction	.42**	-.55**	.58**	.28**	.31**	1				
7. Career Decision-Making Readiness	-.49**	.84**	-.49**	-.42**	-.44**	-.38**	1			
8. Self-Efficacy Strivings	.55**	-.43**	.50**	.48**	.38**	.31**	-.35**	1		
9. Outcome Expectation Strivings	.51**	-.34**	.47**	.44**	.36**	.33**	-.19**	.72**	1	
10. Calling Strivings	.42**	-.25**	.44**	.27**	.20**	.25**	-.09*	.55**	.63**	1

*Note:**Correlation is significant at $p < .05$ (2-tailed). **Correlation is significant at $p < .01$ (2-tailed)

Table 3

Treatment Condition Effects from Main MANCOVA Analysis

Measure	Control Group			VWAN Only Group			VWAN + Workshop			η_p^2	F (df = 2, 609)	P
	Mean	SD	n = 242	Mean	SD	n = 213	Mean	SD	n = 153			
Career Decision-Making Self-Efficacy ^a	3.74	0.62	3.76	0.58	0.52	3.90	0.52	0.03	10.11	.000		
Career Decision-Making Difficulties ^b	3.86	1.42	3.81	1.37	1.25	3.61	1.25	0.02	4.83	.008		
Career Optimism	3.54	0.71	3.56	0.65	0.61	3.63	0.61	0.01	2.82	.060		
Career Adaptability	4.03	0.48	4.05	0.47	0.45	4.10	0.45	0.01	1.96	.141		
Career Locus of Control	5.09	0.59	5.02	0.61	0.61	5.04	0.61	0.01	2.04	.131		
Academic Major Satisfaction	3.65	0.62	3.63	0.68	0.66	3.65	0.66	0.00	0.26	.774		

^a The VWAN + Workshop group had significantly higher Career Decision-Making Self-Efficacy scores at Time Two as compared with the Control group ($p = .000$).

^b The VWAN + Workshop group had significantly lower Career Decision-Making Difficulties score at Time Two as compared with the Control group ($p = .008$).

Table 4

Treatment Condition Effects from Strivings MANCOVA Analysis

Measure	Control Group n = 242		VWAN Only Group n = 213		VWAN + Workshop n = 154		η_p^2	F (df = 2, 609)	P
	Mean	SD	Mean	SD	Mean	SD			
Self-Efficacy Strivings	4.09	0.63	4.04	0.59	4.19	0.57	.01	3.62	.027
Outcome Expectation Strivings ^a	4.18	0.59	4.10	0.61	4.31	0.60	.02	7.02	.001
Calling Strivings	3.62	0.86	3.70	0.77	3.77	0.79	.01	2.32	.099

^a The VWAN + Workshop group has significantly higher Outcome Expectation Strivings scores at Time Two as compared with the VWAN Only group ($p = .001$).

Table 5

Moderating Effects of Gender on Relationships Between Career Decision-Making Self-Efficacy and Treatment Condition

Step and Predictor Variable	B	β	SEB	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Decision-Making Self-Efficacy	.750***	.752	.027	(.697, .803)	755.742	(1, 598)	.000	.558	.558
Step 2									
Treatment 2 vs. 1	.005	.004	.042	(-.078, .087)					
Treatment 3 vs. 1	.152**	.115	.046	(.062, .243)	261.774	(3, 596)	.001	.569	.010
Step 3									
Gender	.020	.015	.054	(-.087, .127)	196.027	(4, 595)	.833	.569	.000
Step 4									
Gender x Treatment 2 vs. 1	.007	.003	.082	(-.154, .169)					
Gender x Treatment 3 vs. 1	-.059	-.025	.090	(-.235, .118)	130.468	(6, 593)	.749	.569	.000

Note: N = 600. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 6

Moderating Effects of Gender on Relationships Between Career Decision-Making Difficulties and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Decision-Making Difficulties	.753***	.790	.024	(.706, .800)	979.954	(1, 598)	.000	.621	.621
Step 2									
Treatment 2 vs. 1	.023	.008	.092	(-.158, .203)					
Treatment 3 vs. 1	-.177	-.057	.101	(-.376, .021)	331.715	(3, 596)	.031	.625	.004
Step 3									
Gender	.271*	.088	.119	(.038, .504)	253.824	(4, 595)	.004	.631	.005
Step 4									
Gender x Treatment 2 vs. 1	-.080	-.016	.179	(-.432, .271)					
Gender x Treatment 3 vs. 1	-.096	-.017	.196	(-.481, .289)	168.789	(6, 593)	.854	.631	.000

Note: N = 600. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 7

Moderating Effects of Gender on Relationships Between Career Optimism and Treatment Condition

Step and Predictor Variable	<i>B</i>	β	<i>SE B</i>	95% <i>CI</i>	<i>F</i>	ΔF	<i>P</i>	<i>R</i> ²	ΔR^2
Step 1									
T1 Career Optimism	.753***	.824	.022	(.710, .795)	1223.230	(1, 598)	.000	.672	.672
Step 2									
Treatment 2 vs. 1	.003	.002	.042	(-.080, .085)					
Treatment 3 vs. 1	.086	.056	.046	(-.005, .176)	411.380	(3, 596)	.086	.674	.003
Step 3									
Gender	.041	.027	.054	(-.065, .147)	308.033	(4, 595)	.885	.674	.000
Step 4									
Gender x Treatment 2 vs. 1	-.068	-.029	.082	(-.228, .093)					
Gender x Treatment 3 vs. 1	-.055	-.020	.089	(-.230, .121)	205.064	(6, 593)	.678	.675	.000

Note: N = 600. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 8

Moderating Effects of Gender on Relationships Between Career Adaptability and Treatment Condition

Step and Predictor Variable	<i>B</i>	β	<i>SE B</i>	95% <i>CI</i>	<i>F</i>	ΔF	<i>P</i>	<i>R</i> ²	ΔR^2
Step 1									
T1 Career Adaptability	.637***	.618	.033	(.571, .703)	363.167	(1, 598)	.000	.378	.378
Step 2									
Treatment 2 vs. 1	-.003	-.003	.040	(-.083, .076)					
Treatment 3 vs. 1	.058	.055	.044	(-.029, .145)	121.880	(3, 596)	.318	.380	.002
Step 3									
Gender	.005	.005	.052	(-.098, .108)	91.419	(4, 595)	.526	.381	.000
Step 4									
Gender x Treatment 2 vs. 1	.056	.034	.079	(-.099, .210)					
Gender x Treatment 3 vs. 1	-.008	-.004	.086	(-.178, .161)	60.922	(6, 593)	.715	.381	.001

Note: N = 600. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 9

Moderating Effects of Gender on Relationships Between Career Locus of Control and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Locus of Control	.827***	.727	.032	(.764, .891)	690.973	(1, 598)	.000	.536	.536
Step 2									
Treatment 2 vs. 1	-.054	-.043	.046	(-.144, .036)					
Treatment 3 vs. 1	-.022	-.016	.050	(-.120, .076)	233.430	(3, 596)	.068	.540	.004
Step 3									
Gender	.057	.042	.060	(-.060, .175)	175.087	(4, 595)	.451	.541	.000
Step 4									
Gender x Treatment 2 vs. 1	-.111	-.051	.089	(-.285, .064)					
Gender x Treatment 3 vs. 1	-.200*	-.080	.097	(-.391, -.009)	117.941	(6, 593)	.110	.544	.003

Note: N = 600. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 10

Moderating Effects of Gender on Relationships Between Academic Major Satisfaction and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Academic Major Satisfaction	.533***	.732	.020	(.493, .574)	705.764	(1, 598)	.000	.541	.541
Step 2									
Treatment 2 vs. 1	-.005	-.003	.049	(-.100, .091)					
Treatment 3 vs. 1	.017	.011	.054	(-.088, .122)	234.996	(3, 596)	.695	.542	.001
Step 3									
Gender	.015	.010	.063	(-.109, .138)	176.558	(4, 595)	.292	.543	.001
Step 4									
Gender x Treatment 2 vs. 1	-.116	-.050	.095	(-.302, .070)					
Gender x Treatment 3 vs. 1	-.078	-.029	.104	(-.282, .125)	117.887	(6, 593)	.453	.544	.001

Note: N = 600. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 11

Moderating Effects of Gender on Relationships Between Career Decision-Making Readiness and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Decision-Making Readiness	.690***	.727	.027	(.637, .742)	662.564	(1, 598)	.000	.526	.526
Step 2									
Treatment 2 vs. 1	.062	.027	.085	(-.104, .229)					
Treatment 3 vs. 1	-.037	-.014	.093	(-.219, .146)	221.852	(3, 596)	.291	.528	.002
Step 3									
Gender	.204	.081	.109	(-.011, .419)	167.734	(4, 595)	.080	.530	.002
Step 4									
Gender x Treatment 2 vs. 1	-.092	-.023	.165	(-.417, .232)					
Gender x Treatment 3 vs. 1	-.200	-.044	.181	(-.554, .155)	111.887	(6, 593)	.538	.531	.001

Note: N = 600. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 12

Moderating Effects of Gender on Relationships Between Self-Efficacy Strivings and Treatment Condition

Step and Predictor Variable	<i>B</i>	β	<i>SE B</i>	95% <i>CI</i>	<i>F</i>	ΔF	<i>P</i>	<i>R</i> ²	ΔR^2
Step 1									
T1 Self-Efficacy Strivings	.416***	.469	.032	(.353, .480)	164.381	(1, 598)	.000	.216	.216
Step 2									
Treatment 2 vs. 1	-.032	-.025	.059	(-.148, .084)					
Treatment 3 vs. 1	.114	.082	.065	(-.014, .241)	57.523	(3, 596)	.033	.225	.009
Step 3									
Gender	.015	.011	.076	(-.135, .165)	43.071	(4, 595)	.945	.225	.000
Step 4									
Gender x Treatment 2 vs. 1	-.033	-.015	.115	(-.259, .192)					
Gender x Treatment 3 vs. 1	-.031	-.012	.126	(-.277, .216)	28.640	(6, 593)	.949	.225	.000

Note: N = 600. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 13

Moderating Effects of Gender on Relationships Between Outcome Expectation Strivings and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Outcome Expectation Strivings	.395***	.443	.033	(.331, .459)	148.306	(1, 598)	.000	.199	.199
Step 2									
Treatment 2 vs. 1	-.103	-.082	.059	(-.219, .013)					
Treatment 3 vs. 1	.129*	.093	.065	(.002, .256)	54.260	(3, 596)	.003	.215	.016
Step 3									
Gender	-.035	-.026	.076	(-.185, .115)	41.008	(4, 595)	.274	.216	.002
Step 4									
Gender x Treatment 2 vs. 1	.027	.012	.115	(-.199, .253)					
Gender x Treatment 3 vs. 1	-.115	-.047	.126	(-.362, .132)	27.516	(6, 593)	.531	.218	.002

Note: N = 600. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 14

Moderating Effects of Gender on Relationships Between Calling Strivings and Treatment Condition

Step and Predictor Variable	<i>B</i>	β	<i>SE B</i>	95% <i>CI</i>	<i>F</i>	ΔF	<i>P</i>	<i>R</i> ²	ΔR^2
Step 1									
T1 Calling Strivings	.458***	.524	.030	(.403, .522)	232.342	(1, 598)	.000	.529	.280
Step 2									
Treatment 2 vs. 1	.019	.011	.065	(-.064, .190)					
Treatment 3 vs. 1	.134	.073	.071	(-.018, .261)	78.583	(3, 596)	.223	.532	.283
Step 3									
Gender	-.159*	-.087	.064	(-.253, -.004)	60.261	(4, 595)	.044	.537	.288
Step 4									
Gender x Treatment 2 vs. 1	.150	.052	.147	(-.138, .438)					
Gender x Treatment 3 vs. 1	-.078	-.024	.160	(-.393, .237)	40.508	(6, 593)	.368	.539	.291

Note: N = 600. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 15

*Moderating Effects of Racial/Ethnic Minority Status on Relationships Between Career Decision-Making Self-Efficacy and Treatment**Condition*

Step and Predictor Variable	B	β	SEB	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Decision-Making Self-Efficacy	.744***	.746	.027	(.690, .797)	715.604	(1, 586)	.000	.550	.550
Step 2									
Treatment 2 vs. 1	-.087	-.072	.074	(-.231, .058)					
Treatment 3 vs. 1	.159	.120	.084	(-.006, .324)	248.090	(3, 584)	.001	.560	.011
Step 3									
Racial/Ethnic Minority Status	-.083	-.062	.058	(-.196, .030)	186.510	(4, 583)	.248	.561	.001
Step 4									
Minority Status x Treatment 2 vs. 1	.128	.098	.085	(-.039, .294)					
Minority Status x Treatment 3 vs. 1	-.021	-.015	.096	(-.209, .166)	125.100	(6, 581)	.211	.564	.002

Note: N = 588. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 16

*Moderating Effects of Racial/Ethnic Minority Status on Relationships Between Career Decision-Making Difficulties and Treatment**Condition*

Step and Predictor Variable	<i>B</i>	β	<i>SE B</i>	95% <i>CI</i>	<i>F</i>	ΔF	<i>P</i>	<i>R</i> ²	ΔR^2
Step 1									
T1 Career Decision-Making Difficulties	.760***	.795	.024	(.712, .808)	956.018	(1, 586)	.000	.620	.620
Step 2									
Treatment 2 vs. 1	.067	.023	.161	(-.250, .384)					
Treatment 3 vs. 1	-.289	-.092	.184	(-.651, .073)	325.752	(3, 584)	.010	.626	.006
Step 3									
Racial/Ethnic Minority Status	.113	.035	.127	(-.136, .361)	244.792	(4, 583)	.247	.627	.001
Step 4									
Minority Status x Treatment 2 vs. 1	-.090	-.029	.186	(-.455, .276)					
Minority Status x Treatment 3 vs. 1	.054	.016	.210	(-.358, .465)	162.849	(6, 581)	.787	.627	.000

Note: N = 588. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 17

Moderating Effects of Racial/Ethnic Minority Status on Relationships Between Career Optimism and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Optimism	.755***	.826	.022	(.712, .797)	1212.614	(1, 586)	.000	.674	.674
Step 2									
Treatment 2 vs. 1	-.023	-.017	.073	(-.167, .120)					
Treatment 3 vs. 1	.085	.055	.084	(-.079, .249)	407.987	(3, 584)	.081	.677	.003
Step 3									
Racial/Ethnic Minority Status	-.003	-.002	.057	(-.116, .109)	305.467	(4, 583)	.984	.677	.000
Step 4									
Minority Status x Treatment 2 vs. 1	.018	.012	.084	(-.147, .183)					
Minority Status x Treatment 3 vs. 1	-.011	-.006	.095	(-.197, .176)	202.994	(6, 581)	.954	.677	.000

Note: N = 588. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 18

Moderating Effects of Racial/Ethnic Minority Status on Relationships Between Career Adaptability and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Adaptability	.635***	.616	.034	(.568, .701)	353.445	(1, 586)	.000	.376	.376
Step 2									
Treatment 2 vs. 1	-.021	-.022	.070	(-.159, .117)					
Treatment 3 vs. 1	.144	.135	.080	(-.014, .302)	118.801	(3, 584)	.274	.379	.003
Step 3									
Racial/Ethnic Minority Status	-.002	-.002	.055	(-.110, .107)	89.013	(4, 583)	.687	.379	.000
Step 4									
Minority Status x Treatment 2 vs. 1	.036	.035	.081	(-.123, .196)					
Minority Status x Treatment 3 vs. 1	-.108	-.093	.091	(-.288, .071)	59.797	(6, 581)	.294	.382	.003

Note: N = 588. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 19

Moderating Effects of Racial/Ethnic Minority Status on Relationships Between Career Locus of Control and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Locus of Control	.831***	.729	.032	(.767, .894)	677.545	(1, 586)	.000	.536	.536
Step 2									
Treatment 2 vs. 1	-.078	-.061	.080	(-.235, .080)					
Treatment 3 vs. 1	-.128	-.091	.091	(-.307, .052)	229.091	(3, 584)	.062	.541	.004
Step 3									
Racial/Ethnic Minority Status	-.020	-.014	.063	(-.143, .103)	171.547	(4, 583)	.837	.541	.000
Step 4									
Minority Status x Treatment 2 vs. 1	-.009	-.006	.092	(-.190, .173)					
Minority Status x Treatment 3 vs. 1	.063	.041	.104	(-.142, .267)	114.153	(6, 581)	.779	.541	.000

Note: N = 588. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 20

Moderating Effects of Racial/Ethnic Minority Status on Relationships Between Academic Major Satisfaction and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Academic Major Satisfaction	.542***	.744	.020	(.502, .581)	677.545	(1, 586)	.000	.536	.536
Step 2									
Treatment 2 vs. 1	-.021	-.015	.084	(-.186, .145)					
Treatment 3 vs. 1	-.023	-.015	.096	(-.212, .166)	229.091	(3, 584)	.062	.541	.004
Step 3									
Racial/Ethnic Minority Status	-.128	-.084	.066	(-.257, .001)	171.547	(4, 583)	.837	.541	.000
Step 4									
Minority Status x Treatment 2 vs. 1	-.020	-.013	.097	(-.210, .170)					
Minority Status x Treatment 3 vs. 1	.041	.025	.109	(-.174, .255)	114.153	(6, 581)	.779	.541	.000

Note: N = 588. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 21

Moderating Effects of Racial/Ethnic Minority Status on Relationships Between Self-Efficacy Strivings and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Self-Efficacy Strivings	.421***	.472	.033	(.357, .485)	162.854	(1, 586)	.000	.217	.217
Step 2									
Treatment 2 vs. 1	-.067	-.053	.103	(-.268, .134)					
Treatment 3 vs. 1	.006	.004	.117	(-.224, .235)	56.931	(3, 584)	.037	.226	.009
Step 3									
Racial/Ethnic Minority Status	-.040	-.029	.080	(-.198, .117)	42.631	(4, 583)	.892	.226	.000
Step 4									
Minority Status x Treatment 2 vs. 1	.044	.032	.118	(-.188, .275)					
Minority Status x Treatment 3 vs. 1	.135	.089	.133	(-.126, .396)	28.545	(6, 581)	.598	.228	.001

Note: N = 588. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 22

Moderating Effects of Racial/Ethnic Minority Status on Relationships Between Outcome Expectation Strivings and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Outcome Expectation Strivings	.397***	.451	.032	(.333, .461)	146.572	(1, 586)	.000	.200	.200
Step 2									
Treatment 2 vs. 1	-.142	-.113	.102	(-.342, .058)					
Treatment 3 vs. 1	-.037	-.027	.116	(-.265, .192)	53.673	(3, 584)	.003	.216	.016
Step 3									
Racial/Ethnic Minority Status	-.037	-.026	.080	(-.194, .120)	40.358	(4, 583)	.462	.217	.001
Step 4									
Minority Status x Treatment 2 vs. 1	.080	.059	.117	(-.151, .310)					
Minority Status x Treatment 3 vs. 1	.197	.131	.132	(-.063, .457)	27.285	(6, 581)	.331	.220	.003

Note: N = 588. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 23

Moderating Effects of Racial/Ethnic Minority Status on Relationships Between Calling Strivings and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Calling Strivings	.465***	.534	.031	(.405, .525)	228.673	(1, 586)	.000	.281	.281
Step 2									
Treatment 2 vs. 1	-.008	-.005	.132	(-.268, .251)					
Treatment 3 vs. 1	.001	.001	.151	(-.295, .297)	77.487	(3, 584)	.194	.285	.004
Step 3									
Racial/Ethnic Minority Status	-.180	-.095	.103	(-.383, .023)	58.851	(4, 583)	.123	.288	.003
Step 4									
Minority Status x Treatment 2 vs. 1	.110	.060	.152	(-.188, .409)					
Minority Status x Treatment 3 vs. 1	.166	.081	.171	(-.171, .502)	39.348	(6, 581)	.588	.289	.001

Note: N = 588. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 24

*Moderating Effects of Cognitive/Emotional Disability on Relationships Between Career Decision-Making Self-Efficacy and Treatment**Condition*

Step and Predictor Variable	B	β	SEB	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Decision-Making Self-Efficacy	.730***	.723	.032	(.668, .793)	518.361	(1, 492)	.000	.514	.514
Step 2									
Treatment 2 vs. 1	.002	.001	.043	(-.083, .086)					
Treatment 3 vs. 1	.133**	.103	.046	(.042, .224)	178.387	(3, 490)	.011	.523	.009
Step 3									
Cognitive/Emotional Disability	.097	.047	.117	(-.132, .327)	134.079	(4, 489)	.301	.524	.001
Step 4									
Cog/Emo Disability x Treatment 2 vs. 1	.001	.000	.152	(-.299, .300)					
Cog/Emo Disability x Treatment 3 vs. 1	-.128	-.030	.179	(-.479, .223)	89.260	(6, 487)	.709	.525	.001

Note: N = 492. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 25

*Moderating Effects of Cognitive/Emotional Disability on Relationships Between Career Decision-Making Difficulties and Treatment**Condition*

Step and Predictor Variable	<i>B</i>	β	<i>SE B</i>	95% <i>CI</i>	<i>F</i>	ΔF	<i>P</i>	<i>R</i> ²	ΔR^2
Step 1									
T1 Career Decision-Making Difficulties	.743***	.783	.027	(.690, .797)	741.547	(1, 492)	.000	.602	.602
Step 2									
Treatment 2 vs. 1	.014	.005	.091	(-.165, .193)					
Treatment 3 vs. 1	-.221*	-.074	.099	(-.416, -.027)	251.772	(3, 490)	.036	.608	.005
Step 3									
Cognitive/Emotional Disability	-.127	-.026	.249	(-.616, .362)	189.383	(4, 489)	.225	.609	.001
Step 4									
Cog/Emo Disability x Treatment 2 vs. 1	-.097	-.014	.324	(-.733, .539)					
Cog/Emo Disability x Treatment 3 vs. 1	.008	.001	.379	(-.738, .753)	125.791	(6, 487)	.938	.609	.000

Note: N = 492. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 26

Moderating Effects of Cognitive/Emotional Disability on Relationships Between Career Optimism and Treatment Condition

Step and Predictor Variable	<i>B</i>	β	<i>SE B</i>	95% <i>CI</i>	<i>F</i>	ΔF	<i>P</i>	<i>R</i> ²	ΔR^2
Step 1									
T1 Career Optimism	.749***	.821	.024	(.702, .796)	977.099	(1, 492)	.000	.666	.666
Step 2									
Treatment 2 vs. 1	-.018	-.013	.041	(-.099, .063)					
Treatment 3 vs. 1	.053	.036	.044	(-.034, .141)	326.868	(3, 490)	.287	.668	.002
Step 3									
Cognitive/Emotional Disability	.068	.028	.113	(-.153, .289)	249.344	(4, 489)	.013	.672	.004
Step 4									
Cog/Emo Disability x Treatment 2 vs. 1	.141	.041	.147	(-.147, .429)					
Cog/Emo Disability x Treatment 3 vs. 1	.106	.022	.172	(-.231, .444)	166.029	(6, 487)	.622	.673	.001

Note: N = 492. CI = confidence interval. DF = degrees of freedom. **p* < .05, ***p* < .01, ****p* < .001.

Table 27

Moderating Effects of Cognitive/Emotional Disability on Relationships Between Career Adaptability and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Adaptability	.645***	.607	.038	(.570, .721)	289.800	(1, 492)	.000	.372	.372
Step 2									
Treatment 2 vs. 1	.015	.016	.040	(-.063, .093)					
Treatment 3 vs. 1	.048	.046	.043	(-.037, .132)	96.683	(3, 490)	.638	.373	.001
Step 3									
Cognitive/Emotional Disability	.174	.103	.108	(-.039, .387)	72.402	(4, 489)	.757	.373	.000
Step 4									
Cog/Emo Disability x Treatment 2 vs. 1	-.231	-.095	.141	(-.509, .046)					
Cog/Emo Disability x Treatment 3 vs. 1	-.217	-.064	.166	(-.542, .109)	48.865	(6, 487)	.225	.377	.004

Note: N = 492. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 28

Moderating Effects of Cognitive/Emotional Disability on Relationships Between Career Locus of Control and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Locus of Control	.812***	.704	.037	(.740, .884)	512.041	(1, 492)	.000	.511	.511
Step 2									
Treatment 2 vs. 1	-.072	-.057	.047	(-.164, .019)					
Treatment 3 vs. 1	-.114*	-.082	.050	(-.212, -.015)	174.875	(3, 490)	.028	.518	.007
Step 3									
Cognitive/Emotional Disability	.152	.068	.127	(-.097, .402)	130.898	(4, 489)	.887	.518	.000
Step 4									
Cog/Emo Disability x Treatment 2 vs. 1	-.285	-.088	.165	(-.610, .039)					
Cog/Emo Disability x Treatment 3 vs. 1	-.056	-.012	.194	(-.436, .325)	88.095	(6, 487)	.181	.521	.003

Note: N = 492. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 29

Moderating Effects of Cognitive/Emotional Disability on Relationships Between Academic Major Satisfaction and Treatment Condition

Step and Predictor Variable	<i>B</i>	β	<i>SE B</i>	95% <i>CI</i>	<i>F</i>	ΔF	<i>P</i>	<i>R</i> ²	ΔR^2
Step 1									
T1 Academic Major Satisfaction	.534***	.736	.022	(.490, .578)	579.817	(1, 492)	.000	.542	.542
Step 2									
Treatment 2 vs. 1	-.008	-.006	.049	(-.104, .088)					
Treatment 3 vs. 1	.041	.028	.053	(-.062, .145)	193.576	(3, 490)	.473	.543	.001
Step 3									
Cognitive/Emotional Disability	.151	.062	.133	(-.109, .412)	145.153	(4, 489)	.484	.544	.000
Step 4									
Cog/Emo Disability x Treatment 2 vs. 1	-.204	-.059	.173	(-.544, .136)					
Cog/Emo Disability x Treatment 3 vs. 1	-.030	-.006	.203	(-.429, .369)	96.977	(6, 487)	.437	.545	.002

Note: N = 492. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 30

Moderating Effects of Cognitive/Emotional Disability on Relationships Between Self-Efficacy Strivings and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Self-Efficacy Strivings	.424***	.482	.035	(.355, .493)	140.874	(1, 492)	.000	.223	.223
Step 2									
Treatment 2 vs. 1	-.062	-.050	.057	(-.175, .050)					
Treatment 3 vs. 1	.095	.070	.062	(-.026, .216)	49.447	(3, 490)	.045	.233	.010
Step 3									
Cognitive/Emotional Disability	.164	.075	.155	(-.141, .470)	39.359	(4, 489)	.008	.244	.011
Step 4									
Cog/Emo Disability x Treatment 2 vs. 1	.088	.028	.203	(-.310, .487)					
Cog/Emo Disability x Treatment 3 vs. 1	.127	.029	.239	(-.343, .596)	26.202	(6, 487)	.852	.245	.000

Note: N = 492. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 31

Moderating Effects of Cognitive/Emotional Disability on Relationships Between Outcome Expectation Strivings and Treatment Condition

Step and Predictor Variable	<i>B</i>	β	<i>SE B</i>	95% <i>CI</i>	<i>F</i>	ΔF	<i>P</i>	<i>R</i> ²	ΔR^2
Step 1									
T1 Outcome Expectation Strivings	.377***	.429	.036	(.307, .447)	110.245	(1, 492)	.000	.184	.184
Step 2									
Treatment 2 vs. 1	-.104	-.086	.057	(-.216, .008)					
Treatment 3 vs. 1	.084	.064	.061	(-.036, .205)	40.635	(3, 490)	.007	.200	.016
Step 3									
Cognitive/Emotional Disability	.254	.119	.155	(-.050, .559)	31.998	(4, 489)	.025	.208	.008
Step 4									
Cog/Emo Disability x Treatment 2 vs. 1	-.112	-.036	.202	(-.509, .285)					
Cog/Emo Disability x Treatment 3 vs. 1	-.038	-.009	.238	(-.505, .429)	21.313	(6, 487)	.850	.209	.001

Note: N = 492. CI = confidence interval. DF = degrees of freedom. **p* < .05, ***p* < .01, ****p* < .001.

Table 32

Moderating Effects of Cognitive/Emotional Disability on Relationships Between Calling Strivings and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Calling Strivings	.444***	.510	.034	(.377, .511)	169.011	(1, 492)	.000	.256	.256
Step 2									
Treatment 2 vs. 1	.035	.021	.075	(-.113, .183)					
Treatment 3 vs. 1	.095	.053	.081	(-.064, .255)	56.985	(3, 490)	.377	.259	.003
Step 3									
Cognitive/Emotional Disability	-.114	-.039	.206	(-.518, .290)	42.829	(4, 489)	.468	.260	.001
Step 4									
Cog/Emo Disability x Treatment 2 vs. 1	.353	.083	.268	(-.172, .879)					
Cog/Emo Disability x Treatment 3 vs. 1	.161	.027	.315	(-.458, .780)	28.835	(6, 487)	.412	.263	.003

Note: N = 492. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 33

Moderating Effects of Socioeconomic Status on Relationships Between Career Decision-Making Self-Efficacy and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Decision-Making Self-Efficacy	.729***	.726	.031	(.667, .790)	520.969	(1, 503)	.000	.509	.509
Step 2									
Treatment 2 vs. 1	.013	.011	.040	(-.066, .092)					
Treatment 3 vs. 1	.149**	.117	.044	(.062, .236)	179.556	(3, 501)	.008	.518	.009
Step 3									
Socioeconomic Status	.027	.044	.029	(-.030, .083)	134.705	(4, 500)	.442	.519	.001
Step 4									
Socioeconomic Status x Treatment 2 vs. 1	-.025	-.025	.042	(-.109, .058)					
Socioeconomic Status x Treatment 3 vs. 1	-.141**	-.114	.048	(-.236, -.046)	92.545	(6, 498)	.012	.527	.009

Note: N = 505. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 34

Moderating Effects of Socioeconomic Status on Relationships Between Career Decision-Making Difficulties and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Decision-Making Difficulties	0.744***	.783	.027	(.691, .797)	752.188	(1, 503)	.000	.599	.599
Step 2									
Treatment 2 vs. 1	-.010	-.004	.086	(-.179, .159)					
Treatment 3 vs. 1	-.249**	-.083	.095	(-.437, -.062)	255.813	(3, 501)	.027	.605	.006
Step 3									
Socioeconomic Status	.072	.051	.062	(-.049, .194)	193.695	(4, 500)	.062	.608	.003
Step 4									
Socioeconomic Status x Treatment 2 vs. 1	-.023	-.010	.091	(-.202, .155)					
Socioeconomic Status x Treatment 3 vs. 1	.044	.015	.103	(-.159, .247)	128.785	(6, 498)	.818	.608	.000

Note: N = 505. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 35

Moderating Effects of Socioeconomic Status on Relationships Between Career Optimism and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Optimism	.753***	.823	.024	(.707, .800)	1000.822	(1, 503)	.000	.666	.666
Step 2									
Treatment 2 vs. 1	-.009	-.006	.039	(-.085, .068)					
Treatment 3 vs. 1	.077	.052	.043	(-.007, .161)	335.592	(3, 501)	.191	.668	.002
Step 3									
Socioeconomic Status	.002	.003	.028	(-.053, .057)	251.274	(4, 500)	.740	.668	.000
Step 4									
Socioeconomic Status x Treatment 2 vs. 1	.019	.016	.041	(-.062, .100)					
Socioeconomic Status x Treatment 3 vs. 1	-.064	-.045	.047	(-.156, .028)	168.412	(6, 498)	.211	.670	.002

Note: N = 505. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 36

Moderating Effects of Socioeconomic Status on Relationships Between Career Adaptability and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Adaptability	.657***	.615	.038	(.583, .732)	299.585	(1, 503)	.000	.373	.373
Step 2									
Treatment 2 vs. 1	.004	.004	.038	(-.070, .077)					
Treatment 3 vs. 1	.049	.047	.042	(-.033, .130)	100.023	(3, 501)	.592	.375	.001
Step 3									
Socioeconomic Status	-.021	-.042	.027	(-.074, .032)	75.481	(4, 500)	.216	.376	.002
Step 4									
Socioeconomic Status x Treatment 2 vs. 1	.021	.026	.040	(-.057, .099)					
Socioeconomic Status x Treatment 3 vs. 1	-.036	-.036	.045	(-.125, .052)	50.529	(6, 498)	.465	.378	.002

Note: N = 505. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 37

Moderating Effects of Socioeconomic Status on Relationships Between Career Locus of Control and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Locus of Control	.833***	.722	.035	(.763, .902)	548.200	(1, 503)	.000	.521	.521
Step 2									
Treatment 2 vs. 1	-.097*	-.076	.044	(-.182, -.011)					
Treatment 3 vs. 1	-.088	-.063	.048	(-.182, .006)	186.821	(3, 501)	.032	.528	.007
Step 3									
Socioeconomic Status	-.054	-.081	.031	(-.115, .008)	143.013	(4, 500)	.015	.534	.006
Step 4									
Socioeconomic Status x Treatment 2 vs. 1	.054	.049	.046	(-.037, .144)					
Socioeconomic Status x Treatment 3 vs. 1	-.065	-.048	.052	(-.168, .038)	96.704	(6, 498)	.088	.538	.005

Note: N = 505. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 38

Moderating Effects of Socioeconomic Status on Relationships Between Academic Major Satisfaction and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Academic Major Satisfaction	.539***	.736	.022	(.495, .583)	587.461	(1, 503)	.000	.539	.539
Step 2									
Treatment 2 vs. 1	-.018	-.013	.047	(-.110, .073)					
Treatment 3 vs. 1	.047	.031	.052	(-.054, .148)	195.742	(3, 501)	.616	.540	.001
Step 3									
Socioeconomic Status	-.012	-.017	.033	(-.078, .054)	147.247	(4, 500)	.246	.541	.001
Step 4									
Socioeconomic Status x Treatment 2 vs. 1	.013	.011	.049	(-.084, .109)					
Socioeconomic Status x Treatment 3 vs. 1	-.076	-.052	.056	(-.187, .034)	98.728	(6, 498)	.269	.543	.002

Note: N = 505. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 39

Moderating Effects of Socioeconomic Status on Relationships Between Self-Efficacy Strivings and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Self-Efficacy Strivings	.410***	.467	.035	(.342, .478)	138.702	(1, 503)	.000	.216	.216
Step 2									
Treatment 2 vs. 1	-.036	-.029	.054	(-.143, .071)					
Treatment 3 vs. 1	.090	.067	.060	(-.028, .208)	48.594	(3, 501)	.051	.225	.009
Step 3									
Socioeconomic Status	.016	.025	.039	(-.060, .092)	36.402	(4, 500)	.765	.226	.000
Step 4									
Socioeconomic Status x Treatment 2 vs. 1	-.065	-.061	.057	(-.178, .047)					
Socioeconomic Status x Treatment 3 vs. 1	.064	.048	.065	(-.064, .192)	24.979	(6, 498)	.154	.231	.006

Note: N = 505. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 40

Moderating Effects of Socioeconomic Status on Relationships Between Outcome Expectation Strivings and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Outcome Expectation Strivings	.370***	.422	.035	(.301, .439)	108.646	(1, 503)	.000	.178	.178
Step 2									
Treatment 2 vs. 1	-.088	-.073	.054	(-.194, .019)					
Treatment 3 vs. 1	.080	.061	.060	(-.037, .197)	39.739	(3, 501)	.011	.192	.015
Step 3									
Socioeconomic Status	-.008	-.013	.039	(-.084, .068)	29.818	(4, 500)	.626	.193	.000
Step 4									
Socioeconomic Status x Treatment 2 vs. 1	-.039	-.037	.057	(-.151, .073)					
Socioeconomic Status x Treatment 3 vs. 1	.041	.032	.065	(-.087, .169)	20.097	(6, 498)	.487	.195	.002

Note: N = 505. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 41

Moderating Effects of Socioeconomic Status on Relationships Between Calling Strivings and Treatment Condition

Step and Predictor Variable	B	β	SEB	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Calling Strivings	.445***	.510	.034	(.379, .511)	171.615	(1, 503)	.000	.254	.254
Step 2									
Treatment 2 vs. 1	.079	.048	.071	(-.061, .219)					
Treatment 3 vs. 1	.080	.044	.078	(-.073, .234)	57.835	(3, 501)	.384	.257	.003
Step 3									
Socioeconomic Status	-.041	-.048	.051	(-.141, .059)	43.333	(4, 500)	.719	.257	.000
Step 4									
Socioeconomic Status x Treatment 2 vs. 1	-.022	-.016	.075	(-.170, .125)					
Socioeconomic Status x Treatment 3 vs. 1	.163	.092	.086	(-.005, .331)	29.891	(6, 498)	.084	.265	.007

Note: N = 505. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 42

Moderating Effects of Career Locus of Control on Relationships Between Career Decision-Making Self-Efficacy and Treatment Condition

Step and Predictor Variable	B	β	SEB	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Decision-Making Self-Efficacy	.716***	.719	.028	(.660, .772)	765.318	765.318	.000	.558	.558
Step 2									
Treatment 2 vs. 1	.018	.015	.036	(-.052, .088)					
Treatment 3 vs. 1	.143***	.108	.039	(.066, .220)	265.338	7.347	.001	.568	.010
Step 3									
Career Locus of Control	.087	.080	.046	(-.003, .178)	204.046	9.277	.002	.575	.007
Step 4									
Career Locus of Control x Treatment 2 vs. 1	.040	.022	.066	(-.089, .170)					
Career Locus of Control x Treatment 3 vs. 1	-.030	-.013	.076	(-.180, .119)	135.923	.437	.646	.575	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 43

Moderating Effects of Career Locus of Control on Relationships Between Career Decision-Making Difficulties and Treatment Condition

Step and Predictor Variable	<i>B</i>	<i>SE B</i>	95% <i>CI</i>	<i>F</i>	ΔF	<i>P</i>	<i>R</i> ²	ΔR^2
Step 1								
T1 Career Decision-Making Difficulties	.709***	.026	(.658, .760)	988.400	988.400	.000	.620	.620
Step 2								
Treatment 2 vs. 1	-.034	.078	(-.187, .118)					
Treatment 3 vs. 1	-.228**	.085	(-.395, -.060)	334.566	3.529	.030	.624	.004
Step 3								
Career Locus of Control	-.373***	.101	(-.572, -.174)	263.175	19.053	.000	.635	.012
Step 4								
Career Locus of Control x Treatment 2 vs. 1	.209	.144	(-.074, .491)					
Career Locus of Control x Treatment 3 vs. 1	-.007	.165	(-.332, .318)	176.046	1.288	.277	.637	.002

Note: N = 609. CI = confidence interval. DF = degrees of freedom. **p* < .05, ***p* < .01, ****p* < .001.

Table 44

Moderating Effects of Career Locus of Control on Relationships Between Career Optimism and Treatment Condition

Step and Predictor Variable	B	β	SEB	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Optimism	.740***	.810	.023	(.694, .785)	1266.792	1266.792	.000	.676	.676
Step 2									
Treatment 2 vs. 1	-.006	-.004	.036	(-.076, .064)					
Treatment 3 vs. 1	.066	.043	.039	(-.010, .143)	425.126	2.067	.127	.678	.002
Step 3									
Career Locus of Control	.016	.013	.046	(-.075, .107)	319.925	2.069	.151	.679	.001
Step 4									
Career Locus of Control x Treatment 2 vs. 1	.062	.030	.066	(-.067, .191)					
Career Locus of Control x Treatment 3 vs. 1	.034	.013	.076	(-.115, .183)	213.049	.454	.635	.680	.000

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 45

Moderating Effects of Career Locus of Control on Relationships Between Career Adaptability and Treatment Condition

Step and Predictor Variable	B	β	SEB	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Adaptability	.563***	.549	.036	(.492, .634)	377.852	377.852	.000	.384	.384
Step 2									
Treatment 2 vs. 1	.020	.021	.034	(-.046, .087)					
Treatment 3 vs. 1	.061	.057	.037	(-.012, .134)	126.955	1.312	.270	.386	.003
Step 3									
Career Locus of Control	.128**	.146	.044	(.040, .215)	103.842	21.560	.000	.407	.021
Step 4									
Career Locus of Control x Treatment 2 vs. 1	.047	.033	.063	(-.076, .170)					
Career Locus of Control x Treatment 3 vs. 1	-.008	-.005	.072	(-.150, .133)	69.220	.393	.675	.408	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 46

Moderating Effects of Career Locus of Control on Relationships Between Academic Major Satisfaction and Treatment Condition

Step and Predictor Variable	B	β	SEB	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Academic Major Satisfaction	.526***	.722	.021	(.485, .568)	717.913	717.913	.000	.542	.542
Step 2									
Treatment 2 vs. 1	-.020	-.015	.042	(-.102, .062)					
Treatment 3 vs. 1	.000	.000	.046	(-.090, .089)	238.745	.158	.854	.542	.000
Step 3									
Career Locus of Control	.010	.008	.053	(-.095, .114)	179.981	2.231	.136	.544	.002
Step 4									
Career Locus of Control x Treatment 2 vs. 1	.058	.029	.076	(-.092, .208)					
Career Locus of Control x Treatment 3 vs. 1	.098	.088	.088	(-.076, .271)	120.079	.670	.512	.545	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 47

Moderating Effects of Career Locus of Control on Relationships Between Self-Efficacy Strivings and Treatment Condition

Step and Predictor Variable	B	β	SEB	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Self-Efficacy Strivings	.358***	.407	.032	(.295, .421)	169.185	169.185	.000	.218	.000
Step 2									
Treatment 2 vs. 1	-.021	-.017	.048	(-.117, .074)					
Treatment 3 vs. 1	.119*	.086	.053	(.015, .224)	59.178	3.482	.031	.227	.031
Step 3									
Career Locus of Control	.303***	.268	.062	(.182, .425)	57.641	41.226	.000	.276	.000
Step 4									
Career Locus of Control x Treatment 2 vs. 1	-.109	-.058	.090	(-.285, .067)					
Career Locus of Control x Treatment 3 vs. 1	-.006	-.003	.103	(-.209, .196)	38.688	.843	.431	.278	.431

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 48

Moderating Effects of Career Locus of Control on Relationships Between Outcome Expectation Strivings and Treatment Condition

Step and Predictor Variable	B	β	SEB	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Outcome Expectation Strivings	.335***	.376	.033	(.271, .400)	149.576	149.576	.000	.198	.198
Step 2									
Treatment 2 vs. 1	-.065	-.051	.049	(-.161, .031)					
Treatment 3 vs. 1	.126*	.091	.054	(.020, .232)	54.618	5.926	.003	.213	.015
Step 3									
Career Locus of Control	.257***	.227	.063	(.134, .380)	53.232	38.827	.000	.261	.048
Step 4									
Career Locus of Control x Treatment 2 vs. 1	-.019	-.010	.091	(-.197, .160)					
Career Locus of Control x Treatment 3 vs. 1	.046	.019	.105	(-.160, .251)	35.454	.185	.831	.261	.000

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 49

Moderating Effects of Career Locus of Control on Relationships Between Calling Strivings and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Calling Strivings	.440***	.504	.031	(.380, .500)	230.854	230.854	.000	.276	.276
Step 2									
Treatment 2 vs. 1	.087	.051	.064	(-.039, .214)					
Treatment 3 vs. 1	.156*	.083	.071	(.017, .294)	78.545	2.008	.135	.280	.005
Step 3									
Career Locus of Control	.198*	.130	.081	(.038, .357)	64.783	17.190	.000	.300	.020
Step 4									
Career Locus of Control x Treatment 2 vs. 1	.001	.000	.119	(-.234, .235)					
Career Locus of Control x Treatment 3 vs. 1	.094	.029	.137	(-.175, .363)	43.178	.278	.757	.301	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 50

Moderating Effects of Career Decision-Making Readiness on Relationships Between Career Decision-Making Self-Efficacy and Treatment Condition

Step and Predictor Variable	B	β	SEB	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Decision-Making Self-Efficacy	.703***	.706	.029	(.645, .761)	765.318	(1, 607)	.000	.558	.558
Step 2									
Treatment 2 vs. 1	-.116	-.096	.124	(-.360, .128)					
Treatment 3 vs. 1	-.017	-.013	.139	(-.291, .257)	265.338	(3, 605)	.001	.568	.010
Step 3									
Career Decision-Making Readiness	-.073**	-.149	.022	(-.116, -.030)	205.660	(4, 604)	.001	.577	.008
Step 4									
CDMR x Treatment 2 vs. 1	.033	.118	.030	(-.026, .093)					
CDMR x Treatment 3 vs. 1	.042	.134	.033	(-.024, .107)	137.414	(6, 602)	.381	.578	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 51

Moderating Effects of Career Decision-Making Readiness on Relationships Between Career Optimism and Treatment Condition

Step and Predictor Variable	B	β	SEB	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Optimism	.724***	.793	.024	(.677, .771)	1266.792	(1, 607)	.000	.676	.676
Step 2									
Treatment 2 vs. 1	.000	.000	.124	(-.243, .242)			.127	.678	.002
Treatment 3 vs. 1	-.049	-.032	.139	(-.321, .224)	425.126	(3, 605)			
Step 3									
Career Decision-Making Readiness	-.048*	-.085	.022	(-.091, -.004)	324.273	(4, 604)	.006	.682	.004
Step 4									
CDMR x Treatment 2 vs. 1	.000	-.002	.030	(-.060, .058)					
CDMR x Treatment 3 vs. 1	.030	.084	.033	(-.036, .095)	215.999	(6, 602)	.602	.683	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 52

Moderating Effects of Career Decision-Making Readiness on Relationships Between Career Adaptability and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Adaptability	.571***	.556	.035	(.503, .639)	377.852	(1, 607)	.000	.384	.384
Step 2									
Treatment 2 vs. 1	-.060	-.061	.118	(-.291, .171)			.270	.386	.003
Treatment 3 vs. 1	-.017	-.016	.132	(-.276, .242)	126.955	(3, 605)			
Step 3									
Career Decision-Making Readiness	-.082***	-.209	.021	(-.123, -.042)	106.365	(4, 604)	.000	.413	.027
Step 4									
CDMR x Treatment 2 vs. 1	.019	.085	.029	(-.037, .076)					
CDMR x Treatment 3 vs. 1	.022	.087	.032	(-.041, .084)	70.857	(6, 602)	.726	.414	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 53

Moderating Effects of Career Decision-Making Readiness on Relationships Between Career Locus of Control and Treatment Condition

Step and Predictor Variable	<i>B</i>	β	<i>SEB</i>	95% <i>CI</i>	<i>F</i>	ΔF	<i>P</i>	<i>R</i> ²	ΔR^2
Step 1									
T1 Career Locus of Control	.771***	.678	.034	(.704, .837)	698.075	(1, 607)	.000	.528	.528
Step 2									
Treatment 2 vs. 1	.080	.063	.134	(-.182, .343)			.066	.533	.005
Treatment 3 vs. 1	.079	.057	.150	(-.215, .374)	235.840	(3, 605)			
Step 3									
Career Decision-Making Readiness	-.038	-.074	.023	(-.084, .008)	185.499	(4, 604)	.000	.541	.539
Step 4									
CDMR x Treatment 2 vs. 1	-.041	-.138	.033	(-.105, .023)					
CDMR x Treatment 3 vs. 1	-.036	-.113	.036	(-.107, .034)	123.946	(6, 602)	.396	.543	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. **p* < .05, ***p* < .01, ****p* < .001.

Table 54

Moderating Effects of Career Decision-Making Readiness on Relationships Between Academic Major Satisfaction and Treatment Condition

Step and Predictor Variable	<i>B</i>	β	<i>SEB</i>	95% <i>CI</i>	<i>F</i>	ΔF	<i>P</i>	<i>R</i> ²	ΔR^2
Step 1									
T1 Academic Major Satisfaction	.520***	.714	.022	(.477, .563)	717.913	(1, 607)	.000	.542	.542
Step 2									
Treatment 2 vs. 1	.118	.087	.144	(-.166, .402)			.854	.542	.000
Treatment 3 vs. 1	.151	.101	.162	(-.167, .470)	238.745	(3, 605)			
Step 3									
Career Decision-Making Readiness	-.008	-.015	.025	(-.057, .041)	180.615	(4, 604)	.066	.545	.003
Step 4									
CDMR x Treatment 2 vs. 1	-.035	-.111	.035	(-.104, .034)					
CDMR x Treatment 3 vs. 1	-.038	-.109	.039	(-.114, .039)	120.509	(6, 602)	.507	.546	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 55

Moderating Effects of Career Decision-Making Readiness on Relationships Between Self-Efficacy Strivings and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Self-Efficacy Strivings	.379***	.431	.033	(.315, .443)	169.185	(1, 607)	.000	.218	.218
Step 2									
Treatment 2 vs. 1	-.410*	-.325	.172	(-.748, -.073)			.031	.227	.009
Treatment 3 vs. 1	-.048	-.035	.193	(-.428, .331)	59.178	(3, 605)			
Step 3									
Career Decision-Making Readiness	-.121***	-.237	.030	(-.179, -.063)	49.557	(4, 604)	.000	.247	.020
Step 4									
CDMR x Treatment 2 vs. 1	.096*	.324	.042	(.014, .178)					
CDMR x Treatment 3 vs. 1	.043	.134	.046	(-.048, .134)	34.097	(6, 602)	.072	.254	.007

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 56

*Moderating Effects of Career Decision-Making Readiness on Relationships Between Outcome Expectation Strivings and Treatment**Condition*

Step and Predictor Variable	<i>B</i>	β	<i>SE B</i>	95% <i>CI</i>	<i>F</i>	ΔF	<i>P</i>	<i>R</i> ²	ΔR^2
Step 1									
T1 Outcome Expectation Strivings	.386***	.433	.033	(.322, .450)	149.576	(1, 607)	.000	.198	.198
Step 2									
Treatment 2 vs. 1	-.217	-.215	.176	(-.616, .073)			.003	.213	.015
Treatment 3 vs. 1	.243	.175	.197	(-.145, .630)	54.618	(3, 605)			
Step 3									
Career Decision-Making Readiness	-.049	-.096	.030	(-.10, .010)	42.318	(4, 604)	.035	.219	.006
Step 4									
CDMR x Treatment 2 vs. 1	.048	.161	.043	(-.036, .132)					
CDMR x Treatment 3 vs. 1	-.030	-.094	.047	(-.123, .063)	28.722	(6, 602)	.244	.223	.004

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 57

Moderating Effects of Career Decision-Making Readiness on Relationships Between Calling Strivings and Treatment Condition

Step and Predictor Variable	B	β	SEB	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Calling Strivings	.459***	.526	.030	(.400, .519)	230.854	(1, 607)	.000	.276	.276
Step 2									
Treatment 2 vs. 1	-.024	-.014	.227	(-.470, .422)			.135	.280	.005
Treatment 3 vs. 1	.293	.157	.255	(-.208, .794)	78.545	(3, 605)			
Step 3									
Career Decision-Making Readiness	-.029	-.042	.038	(-.104, .046)		(4, 604)	.220	.282	.002
Step 4					59.335				
CDMR x Treatment 2 vs. 1	.024	.061	.055	(-.084, .133)					
CDMR x Treatment 3 vs. 1	-.036	-.082	.061	(-.156, .085)	39.641	(6, 602)	.629	.283	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 58

Moderating Effects of Career Needs on Relationships Between Career Decision-Making Self-Efficacy and Treatment Condition

Step and Predictor Variable	B	β	SEB	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Decision-Making Self-Efficacy	.742***	.746	.027	(.689, .795)	765.318	(1, 607)	.000	.558	.558
Step 2									
Treatment 2 vs. 1	.001	.000	.040	(-.077, .078)					
Treatment 3 vs. 1	.095*	.071	.044	(.008, .181)	265.338	(3, 605)	.001	.568	.010
Step 3									
Career Needs	-.117	-.081	.066	(-.246, .012)	199.021	(4, 604)	.440	.569	.000
Step 4									
Career Needs x Treatment 2 vs. 1	.061	.027	.092	(-.119, .240)					
Career Needs x Treatment 3 vs. 1	.225*	.092	.097	(.034, .417)	134.399	(6, 602)	.062	.573	.004

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 59

Moderating Effects of Career Needs on Relationships Between Career Decision-Making Difficulties and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Decision-Making Difficulties	.751***	.791	.025	(.702, .800)	988.400	(1, 607)	.000	.620	.620
Step 2									
Treatment 2 vs. 1	-.063	-.022	.087	(-.234, .108)					
Treatment 3 vs. 1	-.128	-.041	.097	(-.319, .062)	334.566	(3, 605)	.030	.624	.004
Step 3									
Career Needs	.036	.011	.146	(-.250, .323)	250.512	(4, 604)	.948	.624	.000
Step 4									
Career Needs x Treatment 2 vs. 1	.217	.041	.201	(-.177, .611)					
Career Needs x Treatment 3 vs. 1	-.379	-.066	.213	(-.798, .040)	169.980	(6, 602)	.019	.629	.005

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 60

Moderating Effects of Career Needs on Relationships Between Career Optimism and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Optimism	.749***	.820	.023	(.705, .793)	1266.792	(1, 607)	.000	.676	.676
Step 2									
Treatment 2 vs. 1	.000	.000	.039	(-.077, .078)					
Treatment 3 vs. 1	.042	.027	.044	(-.044, .128)	425.126	(3, 605)	.127	.678	.002
Step 3									
Career Needs	-.045	-.027	.066	(-.175, .085)	318.678	(4, 604)	.496	.679	.000
Step 4									
Career Needs x Treatment 2 vs. 1	-.043	-.017	.091	(-.221, .136)					
Career Needs x Treatment 3 vs. 1	.114	.040	.097	(-.076, .304)	213.174	(6, 602)	.254	.680	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 61

Moderating Effects of Career Needs on Relationships Between Career Adaptability and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Adaptability	.641***	.642	.033	(.576, .705)	377.852	(1, 607)	.000	.384	.384
Step 2									
Treatment 2 vs. 1	-.006	-.006	.038	(-.081, .069)					
Treatment 3 vs. 1	.056	.053	.043	(-.027, .140)	126.955	(3, 605)	.270	.386	.003
Step 3									
Career Needs	-.031	-.027	.063	(-.154, .092)	95.060	(4, 604)	.957	.386	.000
Step 4									
Career Needs x Treatment 2 vs. 1	.076	.042	.088	(-.097, .249)					
Career Needs x Treatment 3 vs. 1	.020	.010	.094	(-.164, .204)	63.379	(6, 602)	.673	.387	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 62

Moderating Effects of Career Needs on Relationships Between Career Locus of Control and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Career Locus of Control	.824***	.725	.032	(.762, .885)	377.852	(1, 607)	.000	.384	.384
Step 2									
Treatment 2 vs. 1	-.084	-.067	.043	(-.169, .000)					
Treatment 3 vs. 1	-.091	-.065	.048	(-.185, .003)	126.955	(3, 605)	.270	.386	.003
Step 3									
Career Needs	-.093	-.062	.071	(-.232, .045)	95.060	(4, 604)	.957	.386	.000
Step 4									
Career Needs x Treatment 2 vs. 1	.019	.008	.099	(-.176, .214)					
Career Needs x Treatment 3 vs. 1	.098	.038	.105	(-.109, .305)	63.379	(6, 602)	.673	.387	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 63

Moderating Effects of Career Needs on Relationships Between Academic Major Satisfaction and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Academic Major Satisfaction	0.520***	.713	.021	(.479, .561)	717.913	(1, 607)	.000	.542	.542
Step 2									
Treatment 2 vs. 1	.002	.002	.046	(-.087, .092)					
Treatment 3 vs. 1	-.040	-.027	.051	(-.140, .059)	238.745	(3, 605)	.854	.542	.000
Step 3									
Career Needs	-.136	-.084	.076	(-.285, .012)	182.353	(4, 604)	.011	.547	.005
Step 4									
Career Needs x Treatment 2 vs. 1	-.105	-.042	.105	(-.311, .102)					
Career Needs x Treatment 3 vs. 1	.190	.069	.112	(-.030, .409)	123.765	(6, 602)	.030	.552	.005

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 64

Moderating Effects of Career Needs on Relationships Between Self-Efficacy Strivings and Treatment Condition

SE Strivings	Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
	Step 1									
	T1 Self-Efficacy Strivings	.415***	.472	.032	(.353, .478)	169.185	(1, 607)	.000	.218	.218
	Step 2									
	Treatment 2 vs. 1	-.044	-.035	.056	(-.153, .065)					
	Treatment 3 vs. 1	.082	.059	.062	(-.039, .203)	59.178	(3, 605)	.031	.227	.009
	Step 3									
	Career Needs	-.031	-.021	.091	(-.210, .148)	44.326	(4, 604)	.825	.227	.000
	Step 4									
	Career Needs x Treatment 2 vs. 1	.030	.013	.128	(-.222, .281)					
	Career Needs x Treatment 3 vs. 1	.114	.045	.136	(-.153, .382)	29.612	(6, 602)	.691	.228	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 65

Moderating Effects of Career Needs on Relationships Between Outcome Expectation Strivings and Treatment Condition

Step and Predictor Variable	B	β	SE B	95% CI	F	ΔF	P	R ²	ΔR^2
Step 1									
T1 Outcome Expectation Strivings	.402***	.450	.032	(.338, .466)	149.576	(1, 607)	.000	.198	.198
Step 2									
Treatment 2 vs. 1	-.085	-.067	.056	(-.195, .026)					
Treatment 3 vs. 1	.133*	.096	.062	(.010, .255)	54.618	(3, 605)	.003	.213	.015
Step 3									
Career Needs	.088	.058	.093	(-.094, .270)	41.099	(4, 604)	.425	.214	.001
Step 4									
Career Needs x Treatment 2 vs. 1	-.023	-.010	.129	(-.278, .231)					
Career Needs x Treatment 3 vs. 1	-.124	-.049	.138	(-.395, .146)	27.498	(6, 602)	.639	.215	.001

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 66

Moderating Effects of Career Needs on Relationships Between Calling Strivings and Treatment Condition

Calling Strivings												
Step and Predictor Variable	<i>B</i>	β	<i>SE B</i>	95% <i>CI</i>	<i>F</i>	ΔF	<i>P</i>	<i>R</i> ²	ΔR^2			
Step 1												
T1 Calling Strivings	.461***	.527	.527	(.401, .520)	230.854	(1, 607)	.000	.276	.276			
Step 2												
Treatment 2 vs. 1	.084	.049	.049	(-.058, .226)								
Treatment 3 vs. 1	.166*	.089	.089	(.008, .323)	78.545	(3, 605)	.135	.280	.005			
Step 3												
Career Needs	.048	.024	.024	(-.185, .281)	58.826	(4, 604)	.839	.280	.000			
Step 4												
Career Needs x Treatment 2 vs. 1	-.081	-.026	-.026	(-.409, .246)								
Career Needs x Treatment 3 vs. 1	-.116	-.034	-.034	(-.464, .232)	39.196	(6, 602)	.791	.281	.001			

Note: N = 609. CI = confidence interval. DF = degrees of freedom. * $p < .05$, ** $p < .01$, *** $p < .001$.

FIGURES

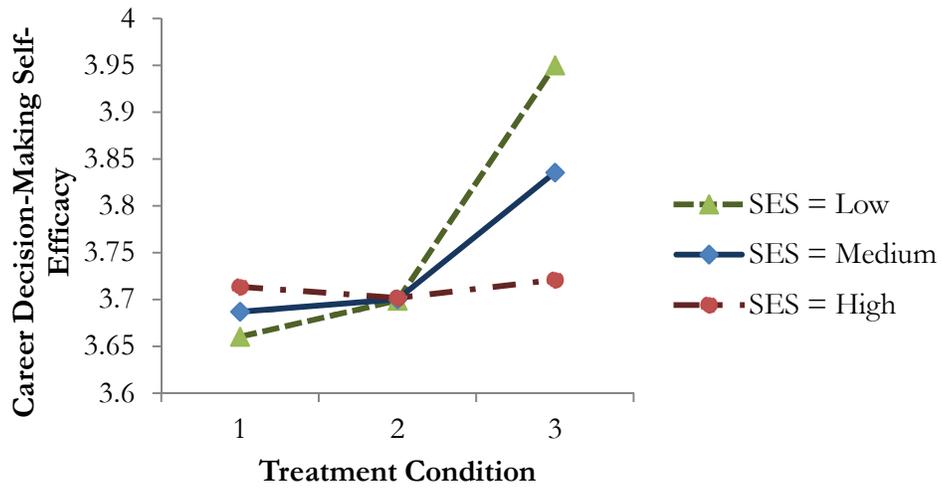


Figure 1: Graph of the moderating effect of SES on the relationship between treatment condition and career decision-making self-efficacy.

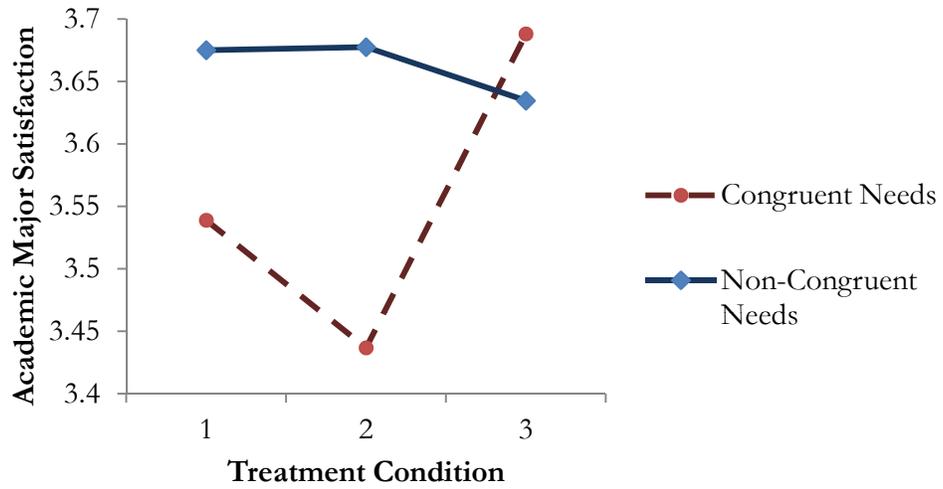


Figure 2: Graph of the moderating effect of career needs on the relationship between treatment condition and career decision-making difficulties.

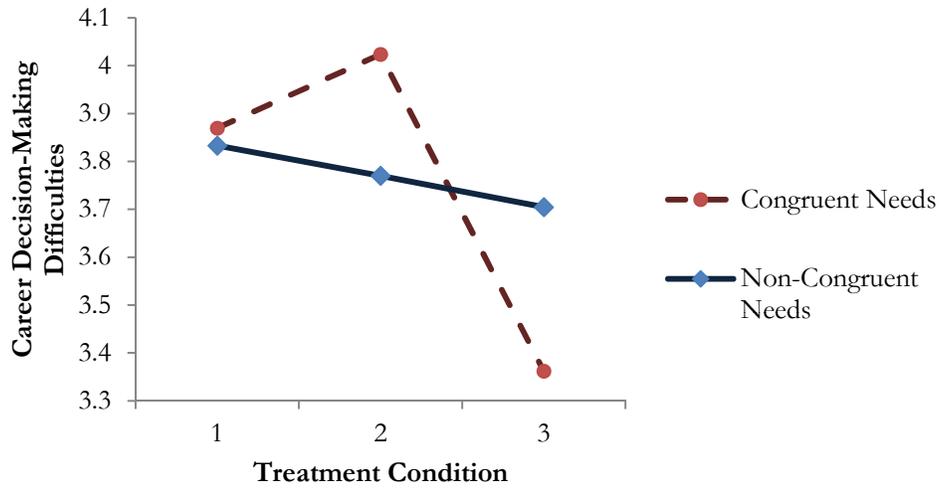


Figure 3: Graph of the moderating effect of career needs on the relationship between treatment condition and academic major satisfaction.

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APPENDIX A: DEMOGRAPHIC FORM

1. What is your age?
2. What is your gender?
 - Female
 - Male
 - Other
3. What is your ethnicity? Check all that apply:
 - African American or African
 - American Indian or Alaskan Native
 - Asian or Pacific Islander
 - Caucasian or European
 - Hispanic or Central/South American
 - Other (Please specify)
4. What is your year in school?
 - First Year
 - Second Year
 - Third Year
5. Which of the following best applies to you?
 - Full-Time Student
 - Part-Time Student
6. What is an estimate of your annual family income?
7. Have you enrolled in a particular program at your school (e.g., nursing, biology)? If so, which one(s)?
8. If applicable, what job title, occupation, and type of industry do you hope to pursue?
9. Please describe the primary activities you hope to be involved in on this job.

10. Please Check all of the following that apply to you:

Physically Disabled

Hearing Impaired

Visually Impaired

Learning Disorder (Please specify)

Developmental Disorder (Please specify)

Other Disability (Please specify)

None

11. Which of the following best applies to you?

Traditional Student

Non-Traditional Student

12. Think about your current career development needs. Which of the following statements are the most true for you right now? Check all that apply:

I need help clarifying my career-related interests, needs, values, and/or abilities

I need more information about the career or careers I am interested in

I need to figure out a strategy to select a career from those that seem to fit for me

I need help developing a specific plan for finding a job within my career field

I am interested in help for professional development and career management issues within my current career field.

Other (please specify)

13. On a scale of 1-5, with 5 being the highest level of socioeconomic status and 1 being the lowest level of socioeconomic status, where would you rate yourself?

1 = lower class

2 = lower-middle class

3 = middle class

4 = upper-middle class

5 = upper class

14. What is the highest degree you have earned?

High school diploma of equivalency (GED)

Associate degree (junior college)

Bachelor's degree

Master's degree

Doctorate

Professional (MD, JD, DDS, etc.)

Other (Please specify)

None of the above (less than high school)