AN EXAMINATION OF SOCIAL COGNITIVE PRECURSORS OF LESBIANS’ VOCATIONAL INTERESTS

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ABSTRACT

The overall purpose of this study was to extend current understanding of the precursors of lesbian women’s vocational interests. Using SCCT’s vocational interest formation model as a guiding theoretical framework, I examined the contributions of sexual orientation, gender-role conformity, learning experiences, self-efficacy, and outcome expectations to women’s vocational interests. Consistent with Morrow et al.’s (1996) theorizing, I anticipated that sexual orientation would relate significantly to learning experiences indirectly via gender-role conformity. Next, I tested the applicability of a portion of the SCCT interest model for a sample of lesbian women. The model contained learning experiences, self-efficacy, outcome expectations and interests. Finally, the direct paths for this portion of the SCCT interest model were compared for lesbian and heterosexual women to examine the extent to which the model was invariant across sexual orientation. A total of 130 self-identified lesbian and 136 heterosexual women enrolled in institutes of higher learning completed an online survey containing measures of feminine gender-role conformity, learning experiences, self-efficacy, outcome expectations, and interests. If the participant identified as lesbian, she was asked to complete a measure of sexual orientation outness. Learning experiences, self-efficacy, outcome expectations and interests were measured across Holland’s (1997) six RIASEC domains. The results indicated that sexual orientation impacts vocational learning experiences indirectly via
conformity to feminine role norms in the Artistic, Social, and Enterprising domains. Sexual orientation directly impacted interests in the Enterprising and Conventional domains. In terms of the fit of the SCCT interest model for lesbian women, the Investigative, Artistic, and Conventional models fit the data from lesbian women well, and the Realistic, Social, and Enterprising models fit adequately. Finally, the model posited by SCCT appears to be largely invariant across sexual orientation.
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CHAPTER I

STATEMENT OF THE PROBLEM

Consistent with increased sensitivity to issues of diversity in the field of Counseling Psychology over the past two decades, the career development literature has shown an increase in efforts to account for the experiences of diverse populations. Vocational researchers have examined the unique needs of various groups, including Mexican Americans (Flores, Navarro, Smith & Ploszaj, 2006; Flores & O’Brien, 2002), African Americans (Byars & Hackett, 1998; Gainor & Lent, 1998; Hackett & Byars, 1996; Waller, 2006), American Indians (Juntunen, Barraclough, Broneck, Seibel, Winlow, & Morin, 2001), Asian Americans (Tang, Fouad, & Smith, 1999), and men (Mahalik, Perry, Coonerty-Femiano, Catraio, & Land, 2006; Tokar & Jome, 1998), just to name a few. While a great deal of attention has also focused on the unique career development issues of women (e.g., Betz, 1989; 2002; Betz & Hackett, 1981, 1983, 1997; Fassinger, 1990), the experiences of lesbian women are notably absent from many of these discussions. Morgan and Brown (1991) have speculated that this absence points to an assumption by researchers that the experiences of lesbians are subsumed under the experiences of women in general. Therefore, exploration into the vocational development of lesbian women is still in its infancy.
While there has been growth in the number of articles that have examined lesbian’s vocational experiences over the past several decades (Phillips, Ingram, Smith & Mindes, 2003), much of this research has focused on issues that lesbian women face in the workplace, such as discrimination and decisions around “coming out” in the workplace (Croteau, Anderson, Distefano, & Kampa-Kokesch, 2000). In fact, discrimination and the antecedents and consequences of discrimination for lesbians and gay men is the most common area for empirical inquiry in the lesbian and gay vocational development literature (Croteau, Anderson, Distefano, & Kampa-Kokesch, 2000). A consistent finding is that lesbian women face discrimination in the job application process (i.e., Croteau & von Destinon, 1994; Embrick, Walther, & Wickens, 2007; Horvath & Ryan, 2003) and while on the job (i.e., Badgett, 1996; Croteau, 1996; Croteau & Lark, 1995; Humphrey, 1999; Levine & Leonard, 1984; May & Chochran, 2001; Ragins & Cornwell, 2001). More recent empirical inquiry has focused on more subtle forms of discrimination, such as the impact of heterosexist work environments on lesbian women (Lyons, Brenner, & Fassinger, 2005; Smith & Ingram, 2004; Waldo, 1999).

Another area that has received a great deal of attention is sexual identity management in the workplace (Croteau, Anderson, Distefano, & Kampa-Kokesch, 2000). Researchers in this area have examined factors that contribute to lesbian women’s decisions to hide or disclose their sexual orientation during the job search process or at work (i.e., Chrobot-Mason, Button, & DiClementi, 2001; Croteau & von Destinon, 1994; Griffith & Hebl, 2002; Hall, 1986; Huffman, Watrous-Rodriguez, & King, 2008; King, Reilly, & Hebl, 2008; Olson, 1987; Ragins, Singh, & Cornwell, 2007; Rostosky & Riggle, 2002; Schneider, 1986), the strategies that lesbians use to navigate this process.
(Woods & Harbeck, 1991), and the consequences of these decisions (Day & Schoernade, 1997; Driscoll, Kelley & Fassinger, 1996; Ellis & Riggle, 1995).

Despite this increased attention to issues faced by lesbian women within the vocational psychology research, there continues to be little research that examines lesbian women’s vocational experiences prior to choice implementation, especially factors that influence lesbian women’s vocational interests.

**Sexual Orientation and Gender-Role Conformity as Precursors to Lesbians’ Interests**

Within the theoretical literature examining precursors to lesbians’ vocational interests, researchers have identified gender-role conformity and sexual orientation as particularly important (Browning, Reynolds, & Dworkin, 1991; Fassinger, 1995, 1996; Garnets & Kimmel, 1991; Hetherington & Orzek, 1989; Morgan & Brown, 1991). Gender-role conformity is defined as the degree of adherence to societal rules and standards for one’s gender, which is expressed in behaviors, feelings, and thoughts (Mahalik, Morray, Coonerty-Femiano, Ludlow, Slattery, & Smiler, 2005). Examples of feminine role norms include caring for children, an emphasis on thinness and appearance, modesty, and being nice in relationships (Mahalik et al., 2005). Examples of masculine role norms include winning, emotional control, dominance, and violence (Mahalik et al., 2003).

In a review of the vocational literature examining the career development of lesbian, gay, and bisexual individuals between 1980-1996, Croteau, Anderson, Distefano, and Kampa-Kokesch (2000) concluded that a major hypothesis of this area of research was that “gender-role socialization influences the development of interests in gay and
lesbian people in a manner distinct from that of heterosexual people” (p. 393). They noted that while most authors recognize that societal messages discourage gender non-traditional behavior and interests, they also point to research arguing that lesbian women and gay men are more likely to be gender non-traditional in their vocational interests and choices than are heterosexual men and women (e.g., Browning, Reynolds, & Dworkin, 1991; Garnets & Kimmel, 1991). Overall, researchers have found that lesbian women do not rigidly adhere to traditional gender-role norms, and in fact, compared to their heterosexual counterparts, they tend to adopt nontraditional gender-role norms (e.g., Garnets & Kimmel, 1993; Hetherington & Orzek, 1989; Fassinger, 1995, 1996; Lippa, 2000; Morgan & Brown, 1991).

According to Fassinger (1995; 1996), sexual orientation is also likely to impact the vocational experiences and possibly the vocational interests of lesbians. Lesbian women and gay men represent a “nonethnic” minority (Elliot, 1993; Fassinger, 1991; Garnets & Kimmel, 1993). As with other oppressed groups, the threat of discrimination may operate to restrict the range of potential occupations that lesbian women perceive are open to them. While lesbians share many of the same career disadvantages that come with being a woman, lesbian women’s experiences are unique due to the added societal stigma from being a lesbian in a heterosexist society (Fassinger, 1996).

In considering the roles of gender-related variables and sexual orientation in the career development of lesbians, Hetherington and Orzek (1989) speculated that gender-related variables, such as gender-role conformity, may be more significant than sexual orientation in explaining lesbian’s career-related interests and choices. While research suggests that lesbian women endorse more gender-roles typical of men than do
heterosexual women, lesbian women cannot escape gender-role socialization that teaches women to be passive, dependent and other-oriented. Several authors have hypothesized that lesbian women frequently have gender non-traditional occupational interests; however, they tend to lack support for exploring and developing those interests (Chung, 1995; Morrow, Gore, and Campbell, 1996).

Conversely, Morgan and Brown (1991) and Fassinger (1995, 1996) contend that more liberal gender-roles, in combination with the reality of not depending on a male partner for financial stability, offer lesbian women greater flexibility in choosing occupations that are non-traditional for women. Indeed, studies utilizing predominately heterosexual samples or unknown samples in terms of sexual orientation, have shown that women possessing liberal/nontraditional gender-role attitudes reported greater instrumentality and self-efficacy regarding math and science careers (O’Brien & Fassinger, 1993), career decision self-efficacy (Gushue & Whitson), and higher levels of career orientation toward nontraditional (e.g., science-related) choices (Fassinger, 1990).

Morrow, Gore and Campbell (1996) have also speculated about how gender-role conformity and sexual orientation might contribute to the formation of lesbian’s vocational interests. Using the framework of Social Cognitive Career Theory (SCCT; Lent, Brown, & Hackett, 1994), they argued that self-efficacy, or individuals’ beliefs about their ability to carry out actions necessary to achieve a specific goal, generally forms prior to one’s identification of sexual orientation. Therefore, it is unlikely that sexual orientation would have a direct impact on these early self-efficacy beliefs, which predict vocational interests. Instead, they argue that gender-related variables, such as gender traditionality or non-traditionality, are more likely to be primary influences of
these beliefs. For example, they point to their unpublished research which found that
lesbian women, as a group, tended to view themselves as gender non-conformists at a
young age, however, they recalled being reprimanded for this gender incongruence
(Morrow & Campbell, 1995). This suggests that sexual orientation might have its impact
on factors that give rise to vocational interests through its impact on gender-role
conformity. They recommended that researchers conduct investigations into the relations
among gender-related variables and sexual orientation, and how these factors influence
career-related variables and outcomes (e.g. learning experiences, self-efficacy, outcome
expectations, interests, and choice), as little quantitative research in this area exists.

Dearth of Empirical Research Examining Gender-role Conformity and Sexual
Orientation as Precursors to Vocational Interests

Few quantitative studies have examined the relationship between sexual
orientation and gender-role conformity, and their contribution to vocational interests.
Lippa (2000) compared samples of lesbian and heterosexual women based on their
endorsement of gender related traits and vocational preferences. Across three studies,
Lippa found that lesbian women demonstrated occupational preferences that were more
male typical (e.g., more things- oriented) as compared to heterosexual women. In
addition, the lesbian women tended to score higher on measures of instrumentality, and
they also self-reported higher masculinity and lower femininity than their heterosexual
female counterparts. Lippa concluded that lesbian women’s vocational preferences
reflect “a compromise between their gender-atypical dispositions and the countervailing
force of gender socialization” (p. 923).
There is some limited empirical evidence that sexual orientation is related to
gender-role traditionality and vocational interests; however, this research focused on gay
men. Chung and Harmon (1994) compared the vocational interests of self-identified
heterosexual and gay men. Chung and Harmon found that sexual orientation was related
to Realistic, Investigative, Artistic, Social, but not Enterprising or Conventional interests.
Compared to heterosexual men, gay men scored higher on Artistic and Social interests,
and they tended to score lower on Realistic and Investigative interests. In addition, sex-
role orientation was found to mediate the relationship between sexual orientation and
interests for the Social domain only. Furthermore, gay men were less likely then
heterosexual men to endorse traditional masculine characteristics.

Despite findings that sex-role orientation failed to consistently mediate the
relationship between sexual orientation and vocational interests across the six RIASEC-
based interest domains, further investigation of sex-role orientation as a possible mediator
in this relationship is warranted. Chung and Harmon (1994) used the Bem Sex-Role
Inventory (BSRI; Bem, 1978) as a measure of sex-role orientation in their study, and
several researchers have criticized the BSRI for not measuring masculine and feminine
gender-role ideology as originally intended (e.g., Good, Borst & Wallace, 1994; Spence,
1991). Given that improved measures of sex-role orientation are available, referred to in
more recent literature as gender-role conformity, it seems reasonable to re-examine this
as a mediator in the relationship between sexual orientation and vocational interests.

**Social Cognitive Career Theory**

In addition to a general lack of empirical work examining the precursors of
lesbians’ vocational interests, researchers have failed to use established theories of career
development as a guiding framework for this inquiry. Several researchers have suggested that existing career theories, or adaptations of these theories, can be useful for explaining the career development of lesbian women. Several traditional career theories have been evaluated for their applicability to lesbian women, including Super’s (1953) Life Span Approach (Dunkle, 1996), Holland’s (1959; 1997) Theory (Mobley & Slaney, 1996), the Theory of Work Adjustment (Degges-White & Shoffner, 2002) and Social Cognitive Career Theory (Morrow, Gore, & Campbell, 1996).

While many of these theories offer promising frameworks for the study of the career development of lesbian women, the dynamic and comprehensive framework specified in Social Cognitive Career Theory (SCCT; Lent, Brown, & Hackett, 1994) may be particularly relevant. SCCT was developed to be inclusive of the career experiences of diverse groups, and has been very useful in examining the specific paths through which person inputs, such as race and gender, impact career development (e.g., Fouad & Smith, 1996; Gainor & Lent, 1998; Hackett & Byars, 1996; Williams & Subich, 2005). According to Lent et al. individual difference variables are relevant to career development in SCCT in two main ways: first, their presence may evoke particular reactions from the social/cultural environment, and second, individual differences are related to a structure of opportunity within which career behavior is shaped. This social constructionist perspective of individual difference variables is preferable, especially when considering sexual orientation, as it shifts the focus to the social and cultural context that shapes the learning opportunities, interpersonal reactions, and outcomes that lesbian women come to expect from various vocational paths.
In the SCCT interest formation model (see Figure 1), self-efficacy and outcome expectations are hypothesized to be core variables in the development of interests. According to Lent, Brown and Hackett (2002) interest in a career-related activity is likely to develop when an individual views him or herself as competent at the activity (self-efficacy), and when the person anticipates favorable outcomes from performing the activity (outcome expectations). Important person inputs (e.g., gender, personality) and background contextual factors (e.g., gender-role socialization, socioeconomic status) are also assumed to impact interests; however, their effect on interests is generally assumed to be indirect through their impact on learning experiences, the experiential sources of self-efficacy information that give rise to corresponding self-efficacy and outcome expectations. According to Lent (2008), sexual orientation can be conceptualized as a basic person input within SCCT (B. Lent, personal communication, January 29, 2008). Similarly, gender-role conformity can also be thought of as a person input, resulting from an interaction of more basic person inputs (e.g., gender, predispositions) and social/contextual influences, that may influence career development at various points (Gushue & Whitson, 2006).
Further Support for Applying SCCT

SCCT has been extended conceptually, and in some cases empirically, to apply to a diverse range of racial/ethnic groups and other specific populations. SCCT has promise in explaining the vocational development processes of persons with disabilities (Szymanski, Enright, Hershenson, & Ettinger, 2003), battered women (Chronster & McWhirter, 2003), adults with psychiatric disabilities (Fabian, 2000), Appalachian youth (Ali & McWhirter, 2006), and gay and lesbian workers (Morrow, Gore, & Campbell, 1996). Empirical research has been generated to support the applicability of the SCCT interest model with several different groups, including Asian Americans (Tang, Fouad, & Smith, 1999), Mexican Americans (Flores, et al. 2006; Navarro et al., 2007), African Americans (Byars-Winston, 2006; Lent et al., 2005; Waller, 2006), and Italian high school students (Lent et al., 2003).

SCCT is also a well-supported theory. Since its inception over a decade ago, SCCT, especially the model of interest formation, has sparked a great deal of empirical
Due to the complexity and comprehensiveness of the SCCT model, studies on SCCT generally examine a specific portion or set of pathways. Studies aimed at examining the fit of obtained data to corresponding sections of the SCCT model have found good overall model-data fit ratios (e.g., Gainor & Lent, 1998; Lent, Brown, Nota, & Soresi, 2003; Lent, et al., 2005; Navarro, Flores, & Worthington, 2007; Schaub & Tokar, 2005; Tokar, Thompson, Plaufcan, & Williams, 2007), with some requiring small modifications to improve or obtain good fit (i.e., Flores, Navarro, Smith & Ploszaj, 2006).

In terms of specific hypothesized pathways in SCCT, the relationship between self-efficacy and interests has been the most researched and robust finding to date (Rottinghaus, Larson, and Borgen, 2003). Research has also examined and found strong support for several other proposed relationships in the SCCT interest model, including the ability of self-efficacy and outcome expectations to jointly and significantly predict interests (Lent, Brown, Nota, & Soresi, 2003; Lent et al., 2005; Navarro, Flores, & Worthington, 2007).

More recently, research has focused more attention on learning experiences and the variables that shape an individual’s exposure to career-related learning experiences. These studies generally support the relationship between particular person inputs and learning experiences (Schaub & Tokar, 2005; Tokar et al., 2007) and they also support learning experiences as a significant predictor of self-efficacy and outcome expectations (Schaub & Tokar, 2005; Williams & Subich, 2006).
Theoretical Research Supporting the Applicability of SCCT with Lesbian Women

Morrow, Gore, & Campbell (1996) argue that SCCT might be a particularly useful framework for understanding the career development process of lesbian women and gay men. Social-cognitive variables such as learning experiences, self-efficacy, outcome expectations, and proximal and distal barriers have particular relevance in the lives of lesbians’ and gay men. For example, Morrow et al. argue that an absence of appropriate models or negative social persuasion from others may attenuate self-efficacy beliefs, thereby restricting interests for lesbian women.

Dearth of Empirical Research Supporting SCCT with Lesbian Women

In the only empirical study in which a few socio-cognitive variables were loosely applied to lesbian women, Mancuso (2004) examined the relationships among a few SCCT variables at the level of individual occupations for 4 groups: heterosexual women, heterosexual men, lesbian women and gay men. Consistent with SCCT, Mancuso found that outcome expectations strongly and consistently predicted both interests and choice intentions across the four groups, and interests consistently predicted choice intentions. Self-efficacy was found to relate to interests and choice intentions inconsistently across the four groups. Self-efficacy marginally predicted interests for three of the four groups (the exception was heterosexual women), and self-efficacy was not related to choice intentions for lesbian women or gay men.

While Mancuso’s study provides some initial support for the relevance of social-cognitive variables in predicting lesbians’ vocational interests, further research is needed. While the SCCT interest model has been found to fit adequately in several ethnic minority populations (e.g., Gainor & Lent, 1998; Waller, 2006), other studies have found
that modification to the model was needed to adequately explain the data (e.g., Flores & O’Brien, 2002; Fouad & Smith, 1996; Tang, Fouad, & Smith, 1999). An important needed step in order to support SCCT’s social-cognitive variables as predictors of lesbians’ interests is to assess the degree to which the overall representation of the interest model is consistent with data obtained from a sample of lesbian women.

**Summary**

The overall purpose of this study was to extend current understanding of the factors that give rise to lesbian women’s vocational interests. In addition to the precursors of vocational interests specified in a well-established vocational theory, SCCT, this study examined the contributions of sexual orientation, and gender-role conformity for a sample of women for each RIASEC domain. Next, I tested the applicability of the SCCT interest model for a sample of lesbian women. To accomplish this, I examined the fit of the data to SCCT’s model relating corresponding learning experiences, self-efficacy, outcome expectations, and vocational interests for each of Holland’s six RIASEC themes across sexual orientation. Finally, I compared the direct paths in the SCCT model for heterosexual and lesbian women to determine if these paths were invariant across sexual orientation.
CHAPTER II
REVIEW OF THE LITERATURE

Theoretical and Empirical Articles Examining Lesbians’ Vocational Development Prior to Choice Implementation

The following sections provide a review of the literature examining the vocational development of lesbian women. Though most research into the vocational development of lesbian women has focused on workplace issues, these studies are not reviewed here, as this study focuses on lesbian women’s vocational development prior to choice implementation.

Impact of Sexual Identity Development on Vocational Outcomes

Though much less research has focused on lesbian women’s vocational development prior to choice implementation, several empirical articles have examined the potential impact of lesbian women’s sexual identity development on career-related variables. In addition to case studies applying sexual identity development concepts (Chojnacki & Gelberg, 1994; Croteau & Thiel, 1993; Orzek, 1992), several authors have speculated about how sexual identity can impact the vocational development process for lesbians (Elliot, 1993; Fassinger, 1995; 1996; Morgan & Brown, 1991). For example, Fassinger (1996) speculated that the “coming out” process for lesbians likely interrupts their vocational development, because both of these processes are likely to occur in
adolescence and early adulthood. Further, she argued that others’ reactions to a lesbian woman during the “coming out” process likely impact her self-confidence, decision making, and her perceived occupational choices.

More recently, several authors have considered how sexual identity development fits within existing theories of vocational development (Dunkle, 1996; Mobley & Slaney, 1996). Based on Super’s (1990) Life-Span Approach, Dunkle (1996) argues that sexual identity development impacts each stage of career development, including growth, exploration, establishment, maintenance and disengagement. In the growth stage, Dunkle argues that lesbian women and gay men with gender incongruent interests may feel pressure to pursue gender congruent interests instead that will meet societal expectations. During the exploration stage, stressors related to sexual identity formation may make career related exploration less salient. Lesbian women and gay men with newly emerging sexual identities in the establishment stage may embark on career changes or a recycling back to the exploration stage based on this new identity. Throughout all of these stages, lesbian women and gay men are faced with decisions around how open to be about their sexual orientation at work.

Drawing from Holland’s (1997) person-environment fit theory of vocational development, Mobley and Slaney (1996) argue that lesbian women and gay men may consider the receptivity of persons in a work environment when making decisions around fit. In some cases, a lesbian woman might be forced to make vocational decisions that are incongruent with her personality due to constraints imposed by a homophobic society or workplace. They further speculate that workplace satisfaction for lesbian women and
gay men could be based more on the experience of acceptance and support rather than perceived fit between personality and work environment.

Despite a great deal of speculation, only three empirical studies have examined sexual identity development and vocational development. Boatwright, Gilbert, Forrest, and Ketzenberger (1996) interviewed ten lesbian women ranging in age from 30-45 about their experiences of forming a lesbian identity and how this affected their career trajectory. These researchers hypothesized that lesbian women may recall a “recycling” to earlier stages of identity development in order to integrate their newly discovered sexual identity into their overall self-concept. Further, they hypothesized that this recycling process may create a disruption in the career development process, possibly delaying career exploration, choice and commitment, or leading to a re-exploration of previous choices.

Twenty interview questions were developed based on the authors knowledge of the literature. The questions fell into five categories: coming out and personal experiences related to identifying as a lesbian, the timing of coming out compared to the traditional adolescent identity development period, the impact of their identifying as a lesbian on their career exploration and development, the impact of internal and external homophobia on their career development, and the impact of the lesbian community on their career development. Following a one-hour interview with each participant, qualitative analysis of the interview data was conducted to identify themes in the data.

In terms of the impact of coming out as a lesbian on their career trajectory, the authors identified themes related to educational delays, career derailment, and a sense of “feeling behind” their heterosexual counterparts (Boatwright et al., 1996, p. 218).
Consistent with their hypothesis, several women reported that exploration of their new sexual identity took precedence over career related exploration and choices. In addition, several women reported experiences of not being hired for jobs, or being denied promotions, as a result of being “out” as a lesbian woman. Several women also revealed that internalized homophobia served to decrease their professional self-confidence, and increase feelings of isolation in professional settings. Nine of the ten women sampled reported that being part of the lesbian community helped or benefited their career in some way, through networking, support, and opportunities to develop advocacy skills.

Overall, the experiences of the ten women interviewed by Boatwright et al. (1996) tend to support the hypothesis that lesbian women may revisit vocational exploration and choice during the integration of a lesbian identity in early or later adulthood. As a result of this process of “recycling,” many of these women reported a sense of being off-track or behind their heterosexual counterparts in reaching career milestones. This study highlights the importance of considering sexual orientation in the vocational development of lesbian women, and the danger of assuming that lesbians’ experiences can be subsumed under the experiences of women in general. Although this is important, several limitations are noteworthy. For example, this study was not guided by existing vocational theory, which has been highlighted as an important step needed in the vocational literature examining lesbian and gay vocational development (i.e., Chung, 2003). Another limitation is that this study relied on lesbians’ retrospective recall of the early stages of vocational development long after they had made career choices. This study greatly adds to the literature by examining the unique experiences of lesbians, but
More work is needed to elucidate the specific factors that impact the development of lesbian women’s vocational interests.

More recently, Adams, Cahill, and Ackerlind (2005) conducted a qualitative study to determine if some of the themes identified by Boatwright et al. (1996) would emerge for lesbian and gay Latino youth as well. They also were interested in gaining a better understanding of the intersection of multiple identities in the career development process and how variables specified in Social Cognitive Career Theory (SCCT; Lent, Brown and Hackett, 1994), such as proximal and distal contextual influences, self-efficacy, and outcome expectations, impact career development for lesbian and gay youth.

These researchers conducted individual semi-structured interviews with three female and five male Hispanic youths between the ages of 18 and 20, and also a focus group interview with five of the eight participants during which members had the opportunity to further discuss themes that had emerged from the individual interviews. The participants were recruited from a local campus LGB student organization and a community LGB youth support group. A constant-comparative method was used to analyze the data, and efforts were made to connect emergent themes with themes in the vocational literature addressing LGB issues and issues for people of color, and SCCT.

One of the emergent themes was that lesbian and gay youth reported feeling different from their peers due to being gay, and this sense of being different tended to emerge in middle school. A second theme that emerged was self-reported within-group prejudice on the basis of ethnicity but not sexual orientation. The third theme to emerge was surprising. Contrary to speculation that lesbian and gay youth might feel that some occupations are off limits due to their sexual orientation (i.e., Chung, 1996; Morrow,
Gore, and Campbell, 1996), these participants denied that they felt restricted in their career choice, and they indicated beliefs that they could succeed in the career of their choice. Adams et al. (2005) examined this finding in the context of SCCT, and pointed to the role of vicarious learning and verbal persuasion in impacting self-efficacy, as most of the participants described having partners supportive of their career-related efforts. Contrary to Boatwright et al.’s (1996) findings that vocational development was put on hold by some participants while sexual identity development took precedence, the youth in this sample indicated that these two developmental tasks were intertwined, and this emerged as a fourth theme.

Interestingly, many participants in this study talked about engaging in non-traditional gender-roles and choosing non-traditional careers for their gender, and having family support in these endeavors. This is contrary to theoretical speculation, in which researchers have hypothesized that sexual minorities will lack encouragement for gender-incongruent activities and therefore have less self-efficacy these activities (i.e., Chung, 1995; Chung & Harmon, 1994; Fassinger, 1995, 1996; Hetherington & Orzek, 1989; Morgan & Brown, 1991; Morrow, Gore, and Campbell, 1996). These youth reported that their parents were more concerned about financial ramifications of career choices than gender appropriateness.

Although this study highlights the potential applicability of some pieces of the SCCT model, and also points to a potential relationship between sexual orientation, gender-role conformity and interests, several limitations are noteworthy. First, this study combined the responses of lesbian and gay youth, which can detract from gaining a better understanding of the unique experiences of lesbian women. Second, this study failed to
systematically examine the data within the framework of SCCT, and no a prior
hypotheses about how SCCT might apply to the data were set forth. Finally, participants
were asked questions about their career choice, and less focus was placed on the
antecedents to career choice discussed in SCCT, such as vocational interests, self-
efficacy, outcome expectations and learning experiences. Future studies should examine
the applicability of SCCT to the vocational development of lesbian women using a
quantitative hypothesis testing approach.

In the only quantitative study to examine sexual identity development and
vocational development variables, Tomlinson and Fassinger (2003) examined the
relations among campus climate, lesbian identity development, and career development.
They hypothesized that both perceptions of campus climate and lesbian identity
development would account for a significant proportion of variance in vocational
development. The sample included 192 traditional-aged college women who identified
as “lesbian/gay” or as “questioning/exploring” their sexual orientation in order to recruit
more women in the early stages of lesbian identity development. In the sample, 53%
indicated “lesbian/gay,” 22% indicated “bisexual/primarily lesbian,” 13% indicated
“bisexual/primarily heterosexual,” .5% indicated “heterosexual,” .5% indicated
“transgendered,” and 11% indicated “other.”

Participants completed The Lesbian Identity Questionnaire (Fassinger, 1998),
which is a 40-item survey designed to assess the two dimensions of lesbian identity
development; Individual Sexual Identity and Group Membership Identity. Four phases of
identity development are tapped across the two dimensions: (a) Awareness, (b)
Exploration, (c) Deepening/Commitment, and (d) Internalization/Synthesis. The Iowa
Vocational Purpose Scale (Hood & Zerwas, 1997) was used to measure vocational development. This measure includes 45 items across three scales: (a) Vocational Competence, (b) Vocational Commitment, and (c) Vocational Organization. In the current study, scale scores were summed to yield one “Vocational Purpose” score. An additional 15 items (5 from each instrument) that were deemed relevant to lesbians’ vocational development were selected from the Career Decision Making Scale (Osipow, 1987), the Career Decision-Making Self-Efficacy Scale (CDMS; Taylor & Betz, 1983), and My Vocational Situation (Holland, Daiger, & Power, 1980) to measure vocational development. These items were summed to create an overall Psychological Vocational Development Scale, with higher scores reflecting less career indecision, more career decision-making self-efficacy, and a clearer vocational identity. Perceptions of campus climate were measured with the General Campus Climate Scale, selected from the Campus Climate Survey developed at the University of Illinois at Urbana-Champaign (Fitzgerald, Waldo, Cortina, Radhakrishnan, Reid, & Swan, 1996). The scale consists of 25 items across five subscales: (a) Instructor Relations, (b) Acceptance, (c) Confidence, (d) Respect, and (e) Safety. The authors also constructed four likert-type items to assess participants’ perceptions of the influence of their lesbian identity on their career development.

Tomlinson and Fassinger conducted two sets of multiple regression analyses. First, the Individual and Group phases of Lesbian Identity Development and General Campus Climate were entered simultaneously to predict Vocational Purpose. Consistent with their hypothesis, the group of predictor variables accounted for a significant portion of variance in Vocational Purpose (23%). However, only General Campus Climate, not
the lesbian identity subscales, was found to contribute uniquely to the prediction of Vocational Purpose. The second multiple regression equation included the same predictors entered simultaneously, but the criterion in this equation was Psychological Vocational Development. The results indicated that the regression equation was significant, with the predictors accounting for 28% of the variance in Psychological Vocational Development. Similar to the first multiple regression equation, only General Campus Climate contributed independent variance to the criterion variable.

The findings of this study generally support the idea that factors unique to the experience of lesbian women impact important vocational outcomes, such as career indecision, self-efficacy, and vocational identity. However, this study did not directly examine vocational interests, nor did this study use existing vocational theory as a framework, which has been a major criticism of this area of research (Croteau, Anderson, Distefano, & Kampa-Kokesch, 2000).

**The Impact of Sexual Orientation on Career Decision-Making**

Similar to other areas in the lesbian vocational development literature, much speculation exists about the impact that sexual orientation might have on vocational decision-making and choice (i.e., Canon, 1973; Chung, 1995; Fassinger, 1995, 1996; Morgan & Brown, 1991; Orzek, 1985), but few empirical studies have examined this link (Etringer, Hillerbrand, & Hetherington, 1990; Nauta, Saucier, & Woodard, 2001). Etringer, Hillerbrand, and Hetherington (1990) compared lesbian women and gay men to heterosexual women and men on several variables related to career decision making. They hypothesized that lesbians and gay men would have higher anxiety about making career decisions compared to their heterosexual counterparts due to having to consider
the potential impact of their sexual orientation and potential disclosure in chosen career fields. Further, they hypothesized that this increased level of anxiety would lead lesbians and gay men to report greater indecisiveness about career choices and a greater need for additional information on which to base their choice.

Etringer et al.’s (1990) sample consisted of 15 gay men, 18 lesbian women, 16 heterosexual men, and 21 heterosexual women who were undergraduate students attending a large Midwestern university. Some participants received the questionnaire packets as part of a random sample of 200 liberal arts students, and some were recruited to participate from gay and lesbian groups on the same campus.

The participants completed the Career Factors Inventory (CFI; Chartrand, Robbins, Morrill, & Boggs, 1990), which is a 54-item assessment with likert type items reflecting three factors found to be important in career-related decision making; Choice Anxiety, Generalized Indecisiveness, and Career Information. In addition, two single-item questions were used, one assessing the degree of uncertainty that the individual felt about his or her career choice, and the other item assessed the degree to which the individual was dissatisfied with his or her choice. The 30-item Generalized Expectancy for Success Scale (GESS; Fibel & Hale, 1978) was used to measure general expectations for success related to career decision-making.

Etringer, et al. (1990) conducted analyses of variance on all of the variables, using sex and sexual orientation as main effects. Contrary to their hypotheses, they failed to find significant main or interaction effects for career choice anxiety, indecisiveness, need for more career related information or general expectancy for success. They did find a significant interaction between sex and sexual orientation on choice uncertainty and
choice dissatisfaction. Gay men reported the highest level of career uncertainty, and lesbian women reported the lowest. Heterosexual women and gay men scored the highest on career choice dissatisfaction, and heterosexual men and lesbians reported a similarly low level of dissatisfaction.

While this study is very informative, important variables that give rise to career choice decisions were omitted, such as vocational interests, outcome expectations, and self-efficacy. Without the guidance of a sound theory of vocational development, these researchers had a difficult time offering potential explanations for the surprising outcomes. Again, this study highlights the need for more empirical research that examines important vocational variables that give rise to vocational choices.

More recently, Nauta, Saucier, and Woodard (2001) examined the impact of interpersonal influences on the career decision making of lesbian, gay, bisexual, and heterosexual college students. These researchers hypothesized that lesbian, gay and bisexual students (LGB) would report having fewer career role models and receiving less influence from role models than would their heterosexual counterparts. They also hypothesized that LGB students would find it more important to have career role models who are members of oppressed groups and who are supportive of members of oppressed groups than heterosexual students. Finally, they hypothesized that heterosexual students would report more support and encouragement in making academic and career decisions than LGB students.

The participants included 131 students enrolled at a large Midwestern university, of which 70 (53%) identified as heterosexual, 31 (24%) identified as lesbian, 14 (11%) identified as gay, and 16 (12%) identified as bisexual. The participants completed
measures to assess their number of career role models, desired characteristics of role models, and role model influence and support. The number of students’ career role models was measured with a single open-ended question that asked participants to indicate the number of career role models they identified. The authors developed a measure to assess desired characteristics of role models for this study. The instrument was made up of 10 characteristics, and participants were asked to rate the importance of each characteristic using a likert-type scale. The 15-item Influence of Others on Academic and Career Decision Making Scale (IOACDS; Nauta & Kokaly, 2001) was used to assess the amount and types of career role model influence and support that the participants experienced from others.

In order to address the first hypothesis, Nauta et al. (2001) conducted an independent samples t-test to examine the number of career role models that were reported by LGB and heterosexual students. Contrary to the first hypothesis, LGB students reported having significantly more career role models than their heterosexual counterparts. Next, a 2-group multivariate analysis of variance (MANOVA) was conducted with the 10 role model characteristics to determine if heterosexual and LGB students differed in the degree to which they rated the importance of role model characteristics. The MANOVA was significant, and a follow-up discriminant function analysis revealed that three characteristics of role models contributed the most to the significant findings; (a) having the same sexual orientation as the respondent, (b) being supportive of those whose sexual orientation is the same as the respondents, and (c) having the same gender as the respondent. These findings supported the second hypothesis. To assess the third hypothesis—that heterosexual students would report more
modeling and inspiration from role models, and more support and guidance from others
during career decision-making—these researchers conducted two independent samples t-
tests. They found only partial support for this hypothesis. The two groups did not differ
on the amount of inspiration and modeling that they perceived from role models.
However, as predicted, heterosexual students did report significantly more support and
guidance during career and academic decision making than did LGB students.

Consistent with prior speculation (e.g., Chung, 1995), this study found that LGB
students may experience less support and guidance from others than heterosexual
students during academic and career decision making. Nauta et al. (2001) speculated that
this lack of support could stem from a reduction in family support due to disclosing a
LGB orientation. Alternatively, they hypothesized that the lack of support could be a
result of the androgynous or noncomforming interests sometimes expressed by LGB
individuals. Although this study contributes to the literature that examines important
factors influencing LGB individuals’ career development, there are several limitations.
First, this study grouped together lesbian, gay and bisexual individuals, which fails to
take into account the unique vocational experiences of lesbian women. Second, these
research questions and findings were not situated in a theoretical framework, making it
difficult to identify explanatory variables that could account for important differences in
levels of support.

Gender-Role Conformity and Sexual Orientation as Precursors to Lesbians’
Vocational Interests

According to Croteau et al. (2000), the least frequently examined area in the
literature “concerns societal messages about gender and sexual orientation and the effects
of these messages on the career interests, choices, and perceptions of LGB clients” (Croteau et al., p. 398). Despite a great deal of speculation about factors that impact lesbians’ development of vocational interests, this continues to be an area in which little empirical work has been done.

Many authors in this area have hypothesized that because appropriate gender-roles are communicated to children at a young age, and lesbian women are more likely to behave in gender atypical ways, lesbian women may have gender non-traditional interests, but lack support from significant others to explore and develop these interests (i.e., Chung, 1995; Chung & Harmon, 1994; Fassinger, 1995, 1996; Hetherington & Orzek, 1989; Morgan & Brown, 1991; Morrow et al., 1996). Conversely, some authors have argued that lesbian women are more likely to reject gender traditional vocational interests and occupations (see Fassinger, 1995, 1996; Morgan & Brown, 1991).

Morrow, Gore, and Campbell (1996) explored the potential impact of sexual orientation and gender-role conformity on sexual minorities vocational interests. Applying the SCCT model, they speculated that because self-efficacy beliefs develop at early ages, often before an individual identifies as gay or lesbian, sexual orientation is unlikely to have a direct relationship with learning experiences or self-efficacy. Instead, they argued that gender identity is likely to be a primary influence on the vocational development of lesbian and gay youth. Thus, they proposed that sexual orientation likely impacts vocational development of lesbian women through its impact on gender identity, or more specifically, gender-role conformity. Further, they speculated that for lesbian women, or any oppressed group, outcome expectations may be more salient than self-efficacy in the formation of interests. They argued that because oppressed groups face
discrimination and negative attitudes, consequences of engaging in particular behaviors may be more salient for lesbians as an oppressed group. Therefore, they suspected that outcome expectations might be more strongly related to interests than self-efficacy beliefs, especially under conditions of anticipated discrimination or negative attitudes. Empirical research is needed that examines the relationships among self-efficacy beliefs, outcome expectations and interests for lesbian women.

Only one empirical article, an unpublished dissertation, has examined the impact of sexual orientation on the gender-traditionality or non-traditionality of lesbians’ vocational interests. In her unpublished dissertation, Mancuso (2004) conducted a series of studies to examine the applicability of a portion of the SCCT model with gay, lesbian, and heterosexual college students (study 1) and bisexual college students (study 2). Because study 2 focused on the career development of bisexual men and women, and the current study focuses on lesbian women, it will not be reviewed here in detail. In study 1, Mancuso proposed a model in which self-efficacy and outcome expectations directly predicted interests, and self-efficacy, outcome expectations, and interests directly predicted choice intentions across a set of seventy-five occupations. She also specified indirect relationships between self-efficacy and choice intentions and between outcome expectations and choice intentions via interests. In this study, outcome expectations were operationalized as two independent constructs. In addition to outcome expectations regarding occupational needs and values, Mancuso argued that outcome expectations regarding the sexual orientation appropriateness of various careers would be important in predicting outcomes for lesbian women and gay men.
She examined three main hypotheses: (a) all of the direct and indirect paths specified above would be significant, (b) outcome expectations regarding sexual orientation appropriateness would be a stronger predictor of interests and choice intentions for gay men and lesbian women than for heterosexual men and women, and (c) gay men and lesbian women would express greater self-efficacy, more positive outcome expectations regarding sexual orientation appropriateness, more interest, and stronger choice intentions for opposite sex-typed occupations than heterosexual men and women. She predicted the opposite pattern for same sex-typed occupations, with gay men and lesbian women expressing less self-efficacy, more negative outcome expectations, less interest and weaker choice intentions than their heterosexual counterparts.

Mancuso’s (2004) sample included 61 heterosexual women, 61 heterosexual men, 53 lesbian women, and 57 gay men recruited from two universities. She adapted four questionnaires using likert-type scales to assess self-efficacy, outcome expectations for sexual orientation appropriateness, interests, and choice intentions, across 75 occupations (Bores-Rangel, Church, Szendre & Reeves, 1990). The 75 occupations included 25 male-dominated occupations, 25-female dominated occupations, and 25- gender-neutral occupations chosen based upon census data, and coverage of all six of Holland’s (1997) RIASEC vocational themes. The measure of outcome expectations for needs and values was adapted from a similar measure developed by Church, Theresa, Rosebrook, and Szendre (1992), and it measures outcome expectations idiosyncratically. Participants were asked to circle their most important vocational value or need from a list of 19 possible choices, and then to indicate on a likert-type scale the degree to which they
believe that the occupation would meet that value. Background information, including sexual orientation, was obtained by self-report.

To test the first hypothesis, that the specified pathways of the model described above would be significant, Mancuso (2004) conducted a separate path analysis for each participant, using data at the level of occupations. Because the model was saturated, the overall model fit the data perfectly for each participant. Next, she conducted single sample t-tests to determine whether the mean path coefficients were significant for each of the four groups. The most support was found for paths from outcome expectations regarding needs and values and interests. As predicted, outcome expectations for needs and values strongly and consistently predicted both interests and choice intentions across the four groups, and interests consistently predicted choice intentions for the seventy-five occupations. Self-efficacy was found to relate to interests and choice intentions inconsistently across the four groups. Self-efficacy marginally predicted interests for three of the four groups (the exception was heterosexual women), and self-efficacy was not related to choice intentions for lesbian women or gay men. Mancuso did not report on the significance of any of the indirect effects. Finally, she computed squared multiple correlations (SMCs) for each participant and calculated means for each subgroup to determine the proportion of variability in interests and choice intentions that was accounted for by the set of socio-cognitive variables. The mean SMCs ranged from .34 to .46 for interests and from .29 to .44 for choice intentions across the four groups. Overall, the first hypothesis received mixed support.

The second hypothesis, which predicted that outcome expectations regarding sexual orientation appropriateness would be a stronger predictor of interests for lesbian
women and gay men than for heterosexual men and women, was not supported. Using MANOVA and follow-up univariate analyses, Mancuso found that the mean path coefficients for the relationship between perceptions of sexual orientation appropriateness and interests was strongest for heterosexual women, followed by lesbian women, heterosexual men and finally gay men. Therefore, she concluded that perceptions of sexual orientation appropriateness were more important for women in her sample than men.

Recall that Mancuso’s (2004) final hypothesis predicted that lesbian women, compared to heterosexual men and women, would have higher scores on the SCCT variables for opposite sex-typed occupations, and lower scores on the SCCT variables for same sex-typed occupations. To test this hypothesis, Mancuso conducted four two-way MANOVAs. Among the independent variables were gender and sexual orientation, and the dependent variables included scores for the socio-cognitive variables (i.e., self-efficacy, outcome expectations regarding sexual orientation appropriateness, interests, and choice intentions) for the female-dominated, male-dominated and gender neutral occupations. The results indicated support for this hypothesis. On all four SCCT variables, gay men scored lower on male dominated occupations and higher on female dominated occupations than heterosexual men. On all four SCCT variables lesbian women scored higher on male-dominated occupations than did heterosexual women. For female dominated occupations, lesbian women scored lower than did heterosexual women on outcome expectations and interests, but not on self-efficacy or choice intentions. Interestingly, lesbian women reported greater self-efficacy for female-dominated occupations than did heterosexual women, but had less interest in female-
dominated occupations than did heterosexual women. Mancuso concluded that, overall, gay men and lesbian women tend to exhibit patterns of scores on self-efficacy, outcome expectations, interests and choice intentions that are more similar to scores obtained from those of the opposite gender.

Mancuso’s (2004) dissertation represents an important first step in examining lesbians’ vocational interests and the applicability of existing vocational development theories with sexual minority populations. However, it is surprising that self-efficacy and interests were only marginally related for three of the four groups, and not related at all for heterosexual women. The relationship between self-efficacy and interests is one of the most robust findings in the SCCT literature (Rottinghuas, Larson & Borgen, 2003).

In addition, there are several limitations that are important to note. Mancuso examined only a very small portion of the SCCT model, and she excluded the learning experiences that give rise to self-efficacy and outcome expectations. She also did not report on indirect effects of the model, which are specified in SCCT, such as the indirect effect of self-efficacy on interests through outcome expectations. It is possible that an examination of the indirect effects among these variables could help to account for the weak relationships observed between self-efficacy and interests. Another limitation of this study is the idiosyncratic method used to measure outcome expectations for needs and values, as this excluded this variable from many of the analyses. Also problematic in this study is that Mancuso’s path analysis models were fully saturated, which did not allow for a true examination of the overall fit of the SCCT model to the data for lesbian women. Similarly, her chosen analyses did not allow for significance testing of path
coefficients across groups, in order to examine the structural invariance of the model across heterosexual and lesbian women.

**Summary**

Although several empirical articles have examined issues related to lesbians’ vocational decision making, only one unpublished empirical study has been conducted that examines the role of sexual orientation and gender-related factors on lesbian’s vocational interests. Mancuso’s (2004) study represents an important first step to better understanding the formation of lesbians’ vocational interests. More empirical studies guided by existing vocational theories are still needed.

Further, several limitations have been noted throughout this review of the literature on lesbian women’s vocational development. These limitations include: (1) the lack of empirical research examining lesbian women’s vocational development prior to choice implementation, and more specifically the lack of empirical research into lesbians’ vocational interest development; (2) lack of research and understanding of the relationship between sexual orientation and gender-related variables in the prediction of vocational outcomes, especially interests; and (3) the absence of established theories of career development as a guiding framework to explain the vocational behavior of lesbian women despite calls to do so (i.e., Lonborg & Phillips 1996).

**Social Cognitive Career Theory**

In this section, I provide an overview of Social Cognitive Career Theory, review the relevant empirical literature on the interest model, and provide an assessment of limitations in this existing body of research.
**Overview of Social Cognitive Career Theory (SCCT)**

Recognizing a need for integrated theories of vocational development, Lent et al. (1994) proposed SCCT. This theory was developed to incorporate important constructs identified in competing models of career choice and development, and to more fully explain outcomes common to these theories, such as interest formation, career choice, and performance. The resulting conceptual framework highlights the dynamic interaction of person and environmental factors that shape the formation of academic and career related interests, choices, and performance.

The foundation of the SCCT framework is Bandura’s (1986) social cognitive theory, which emphasizes the bidirectional interaction between personal attributes, external environmental factors, and overt behavior in guiding subsequent behavior. Consistent with social cognitive theory, Lent et al. (1994) identified three social cognitive mechanisms that serve as the building blocks of SCCT: (a) self-efficacy beliefs, (b) outcome expectations, and (c) goal representations. Self-efficacy refers to an individual’s beliefs about his or her ability to perform behaviors necessary to succeed in a specific domain. Outcome expectations are individuals’ beliefs about the consequences of performing particular behaviors. Finally, goal representations, referring to a determination to engage in a particular activity, are thought to be an important source of motivation and persistence. In SCCT, it is primarily through the complex interaction of these mechanisms that individuals assert agency in their career development (Lent, Brown, & Hackett, 1994).

In addition to the above core mechanisms, the SCCT framework emphasizes the importance of learning experiences, person inputs, background contextual affordances,
contextual supports and barriers, and choice goals. The impact of these variables is organized into three distinct, but interlocking models predicting career-related interest, choice, and performance. As the current study focuses on the development of vocational interests, only the interest model is elaborated further in this review.

**Model of Interest Development**

According to Lent, Brown, and Hackett (2002) vocational and academic interests represent “people’s patterns of likes, dislikes, and indifferences for various occupations and career-relevant activities” (p. 264). The interest model emphasizes experiential and social cognitive variables that influence the development of interests, which in turn, motivate choice behavior and skill acquisition efforts.

As the building blocks of SCCT, self-efficacy beliefs and outcome expectations are posited to have a strong and direct impact on vocational interests. SCCT predicts that enduring interests will develop when an individual has both perceived competence and positive expectations related to a given activity. In addition to the direct impact of self-efficacy on interests, Lent et al. (1994) hypothesized that self-efficacy beliefs impact interests indirectly through their influence on outcome expectations. According to Bandura (1986), self-efficacy is also a more potent behavioral determinant than outcome expectations. Specifically, Bandura (1986) argued that people may anticipate favorable outcomes from a given course of action; however, they are unlikely to pursue that avenue if they doubt their competence to perform necessary behaviors in that domain.

Person inputs, background contextual affordances, and learning experiences are also important components of the SCCT interest model, as these variables give rise to self-efficacy beliefs and outcome expectations. Person inputs in SCCT refer to individual
difference variables, such as gender, race/ethnicity, ability or disability status, and personality characteristics. These are viewed in SCCT from a social constructivist position, and their impact on career development is seen as due more to the reactions these predispositions evoke from the individual’s environment rather than static biological properties of the person. Background contextual affordances are considered to be the resources that an individual perceives are present (or absent) from his or her environment. Examples of background contextual affordances given by Lent, Brown and Hackett (2002) include gender-role socialization, range of available role models, and opportunities for skill development. Both person inputs and background contextual affordances provide differential exposure to learning experiences, which in turn, gives rise to self-efficacy beliefs and outcome expectations. Learning experiences refer to the experiential opportunities that the individual has to develop self-efficacy in specific areas.

Bandura (1986) described four types of learning experiences that can serve to alter an individual’s level of self-efficacy beliefs: personal performance accomplishments, vicarious learning, social persuasion, and physiological arousal states and reactions. Performance accomplishments refer to the individual’s direct experience of success or failure with a task. Vicarious learning experiences refer to the individual’s opportunities to observe others’ performance with a given task. Social persuasion is encouragement or discouragement that the individual receives from others in regard to his/her capabilities to perform specific tasks. Finally, physiological arousal refers to levels of heightened emotional and physical states during task performance, which are interpreted by the individual, and can serve to inform the individual’s level of self-efficacy. Although these four types of learning experiences are considered sources of
self-efficacy information, they serve to inform outcome expectations as well. According to Bandura, personal performance accomplishments are the most potent form of self-efficacy information.

**Empirical Research on the SCCT Interest Model**

Given the complexity of SCCT’s three interlocking models, empirical studies have generally focused on testing smaller sections of the overall model. In this section, I will review those empirical research studies that have examined vocational interest development using the SCCT interest model, and utilized either structural equation modeling or path analysis to assess the fit of the data to the proposed model.

Fouad and Smith (1996) examined several hypothesized pathways and the overall fit of the SCCT model in a sample of ethnically diverse urban middle school students. In addition to self-efficacy and outcome expectations, these researchers examined the role of gender and age, both person inputs, in the prediction of math and science related interests and choice goals. Consistent with SCCT predictions, these researchers hypothesized that self-efficacy would directly predict outcomes expectations, and self-efficacy and outcome expectations would directly predict interests and also choice goals. In addition, these researchers predicted that age and gender would have a direct impact on self-efficacy and outcome expectations. This hypothesis is inconsistent with the predictions of SCCT, as Lent et al. (1994) specified that basic person inputs (i.e., age and gender) impact self-efficacy beliefs and outcome expectations indirectly via learning experiences. However, learning experiences were not measured in this study. Finally, the authors also examined the degree of model-data fit for three of the five ethnic groups included in the total sample (Caucasian, African-American, and Hispanic).
The sample consisted of 380 middle school students representing diverse ethnic groups (i.e., 59% Hispanic American, 15% white, 11% African American, 3% Asian American, and 3% American Indian). The measures in this study were previously developed by the first author and were adapted for use with middle school students, and included measures of math and science self-efficacy, math and science outcome expectations, math and science interests, and math and science intentions. The math-science self-efficacy scale included 12 items designed to assess confidence in tasks that middle school students might encounter (e.g., “Design and describe a science experiment I want to do”). The math-science outcome expectations scale included seven likert-type items to assess students’ beliefs about the outcomes of engaging in math-science related activities (e.g., “If I do well in science, then I will be better prepared to go to college”). The math-science interest scale consisted of 20 likert-type items intended to assess students’ interests in math- and science-related activities (e.g., “working in a science lab”). Lastly, the math-science intentions scale contained six likert-type items, intended to assess students’ future intentions to engage in math- and science-related activities (e.g., “I intend to take sciences classes in high school”).

The data were analyzed using structural equation modeling, and initial results and path coefficients suggested that modification of the model would result in better model-data fit. Specifically, non-significant path coefficients suggested that deletion of the direct paths from age to outcome expectations and from gender to both self-efficacy and outcome expectations would more adequately fit the obtained data. Paths from both age and gender directly to interests were added. Interestingly, girls had higher interests in math-science activities, but boys demonstrated more positive outcome expectations for
these activities. Consistent with SCCT, self-efficacy was positively related to outcome expectations, and both self-efficacy and outcome expectations were directly related to interests. Self-efficacy, outcome expectations and interests were directly related to intentions. Also consistent with SCCT, self-efficacy was found to have an indirect effect on interests via outcome expectations. This model demonstrated a good fit to the data (i.e., AGFI = .96; RMR = .022).

Fouad and Smith (1996) also examined the extent to which the final model explained the data obtained from the three most prevalent self-identified racial/ethnic groups in their sample: white, Hispanic and African American. These researchers concluded that the model fit the data well for each group; however, it is notable that the adjusted goodness of fit index was much lower for the African-American sample (AGFI = .88) than for the white (AGFI = .97) and Hispanic sample (AGFI = .96).

Fouad and Smith’s (1996) study generally supported hypothesized paths between self-efficacy, outcome expectations, interests and intentions in the SCCT model. However, several limitations of this study must be noted. First, Fouad and Smith excluded learning experiences as a variable of interest in their study. In SCCT, person inputs are hypothesized to impact self-efficacy and outcome expectations indirectly through learning experiences (Lent et al., 1994). Person inputs are also anticipated to impact vocational interests through learning experiences, self-efficacy and outcome expectations. Contrary to these hypothesized relationships in SCCT, the person input variables, gender and age, were found to relate directly to interests. Because learning experiences were not included, this study did not provide an adequate test of whether and how person input variables impact vocational interest development in the SCCT model.
Therefore, it remains unclear if person input variables have their impact on self-efficacy, outcome expectations and interests via learning experiences as hypothesized in SCCT, or if there is in fact a direct relationship between person input variables and interests.

A second limitation is that Fouad and Smith examined interests only in math and science domains. It is important to examine the utility of the SCCT model to predict interests across a variety of domains, not just math and science. As noted above, another limitation of this study is that the model did not seem to fit as well in the African-American student sample as compared to the other two samples examined. Due to the small sample sizes, Fouad and Smith were unable to examine structural invariance of the SCCT pathways between the three groups, and this would have provided a better comparison of the equivalence of the structural paths between the three groups. Future studies could examine other person inputs, such as sexual orientation and gender-role conformity, to better understand the role of these variables in predicting interests across a variety of vocational domains. Also, comparing the fit of the SCCT model in data sets obtained from different groups could utilize tests of structural invariance to increase confidence that the models truly fit the different groups equally well.

Subsequently, Bishop and Bieschke (1998) applied SCCT’s model of interest development to explain the development of research interests among 184 doctoral students enrolled in counseling psychology programs throughout the United States. In addition to research self-efficacy, research outcome expectations, and research interests, they included three person input variables (gender, age and personality) and two contextual variables (research training environment and year in program).
Age, gender and year in program were self-reported by participants on a general demographic questionnaire. Personality was measured using the 160-item Vocational Preference Inventory- Form B (VPI-B; Gottfredon, Holland, & Holland, 1978). The VPI-B is designed to assess the six personality types specified in Holland’s theory of career development (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional). The authors only utilized participants’ scores on Artistic, Social and Investigative interests as personality variables. The research training environment was measured using the 45-item Research Training Environment Scale (RTES; Gelso, Mallinkrodt, & Royalty, 1991), which is designed to assess characteristics of effective research training environments as set forth by Gelso (1979). The 51-item Research Self-Efficacy Scale (RSES; Greeley et al., 1989) was used to assess participants’ perceptions of their ability to perform research related tasks (e.g., “interpret and understand statistical printouts”). To measure research outcome expectations, they utilized the Research Outcome Expectations Questionnaire (ROEQ; Bieschke & Bishop, 1994). The ROEQ consists of 18 statements that reflect potential positive outcomes of research involvement and two items that reflect potential negative outcomes of research involvement. Finally, the 16-item Interest in Research Questionnaire (IRQ; Bishop & Bieschke, 1994) was used to assess interests in performing various research related activities.

Bishop and Bieschke (1998) examined the proposed relationships using a recursive path analysis model with ordinary least squares for the regression equations. They tested a model in which (a) the three person input variables were directly related to research self-efficacy, research outcome expectations, and research interests, (b) the two contextual variables were directly related to research self-efficacy, research outcome
expectations, and research interests, (c) research self-efficacy directly predicted research outcome expectations, and (d) both research self-efficacy and research outcome expectations directly predicted interests in research. All of these proposed relationships were consistent with SCCT, with the exception of the direct relationships anticipated between the person input variables and interests in research, and the direct relationships anticipated between contextual variables and interests in research. Recall that SCCT predicts that person input variables and contextual background factors have their impact on self-efficacy, outcome expectations, and interests indirectly through learning experiences.

Consistent with Bishop and Bieschke’s (1998) hypothesized model, Artistic interests were negatively and directly related to interests in research, Investigative interests were positively and directly related to interests in research, and age was positively and directly related to interests in research. Only Investigative interests had direct relationships with both research self-efficacy and research outcome expectations, as these paths were not significant for either age or Artistic interests as hypothesized. Neither gender nor Social interests was found to be predictive of interests in research directly or indirectly in their study. In terms of the contextual variables, year in program was positively and directly related only to research self-efficacy, and the research training environment was directly and positively related to research self-efficacy and research outcome expectations. Contrary to expectations, year in program was not directly related to research outcome expectations or interests in research, and the research-training environment was not directly predictive of interests in research. Consistent with the SCCT model, research self-efficacy directly predicted research outcome expectations,
and both of these variables were directly related to interests in research. All together, these variables explained 62% of the variance in interests in research.

Although this study represents an interesting extension of SCCT and offers additional support for the relationships of self-efficacy, outcome expectations and interests, some findings were inconsistent with predictions set forth by SCCT. Contrary to SCCT predictions, several person input variables (i.e., Artistic and Investigative interests) were found to relate directly to interests in research. However, this is not surprising due to the item and conceptual overlap between the personality and interest measures. Several additional limitations are also noteworthy. First, this study failed to examine learning experiences. As noted by Bishop and Bieshke (1998), their set of variables accounted for only 28% of the variance in outcome expectations and only 21% of the variance in research self-efficacy. They hypothesized that other variables, such as learning experiences, might be important in the formation of self-efficacy, and should be examined in future research. Second, these researchers examined only interest in research; future studies should look at a wider domain of interest areas. Finally, this study failed to find gender, as a basic person input, predictive of vocational interests either directly or indirectly. Instead of investigating broad between-group differences, future studies could examine the impact of within-group gender-related variables, such as gender-role conformity.

Turner, Steward and Lapan (2004) examined interests in math and science careers among 318 students in the sixth grade using the SCCT framework. In addition to self-efficacy, outcome expectations and interests, they examined the role of several contextual
factors (i.e., mother’s and father’s support, and family structure [single versus two-parent homes]), and a person input variable (i.e., gender typing of math and science careers).

Math and science career interests were measured using the 15-item science scale of the Revised Unisex American College Testing Interest Inventory (UNIACT; Lamb & Prediger, 1995), which corresponds to Holland’s (1997) Investigative occupational theme. Various scales were taken from the Fennema-Sherman Mathematics Attitudes Scales (FSMA; Fennema & Sherman, 1976) to measure math self-efficacy, math outcome expectations, perceived mother and father support, and gender typing.

Turner et al. (2004) performed structural equation modeling with maximum likelihood parameter estimation to assess the hypothesized relationships among the variables. These researchers specified a model in which (a) the person input variable (gender-typing) and background contextual factors (mother support, father support, and family structure) directly predicted math self-efficacy and outcome expectations, (b) math self-efficacy directly predicted outcome expectations, and (c) math self-efficacy and outcome expectations both directly predicted math and science career interests. They concluded that this model provided a good fit to the data based on the chi-square likelihood ratio of 1.57 ($\chi^2/df=6.27/4$, $p<.181$), and a root mean square error of approximation of .04.

In terms of specific pathways, and consistent with SCCT, math self-efficacy was related positively and directly to math outcome expectations, and both math self-efficacy and math outcome expectations were related positively and directly to math and science career interests. Among the contextual factors, both father and mother support were related positively to math self-efficacy, and mother support was related positively to math
outcome expectations. Family structure was related positively to math-efficacy only, indicating that children from two-parent homes as opposed to single parent homes experienced greater math self-efficacy. The person input of gender typing was related negatively to both math self-efficacy and math outcome expectations, indicating that children viewing math-related careers as appropriate for their gender had higher math self-efficacy and were more likely to see these pursuits as valuable.

Turner et al.’s (2004) study lends support to the hypothesized relationships in SCCT among self-efficacy, outcome expectations and interests. This study also makes an important contribution to the literature by looking at the role of a variable related to gender-role socialization, and how gender-related variables such as gender typing might impact vocational interest development. Several limitations of their study also must be noted, however. First, this study did not examine the role of learning experiences. As noted, SCCT proposes that person inputs and contextual factors impact self-efficacy and outcome expectations via vocational learning experiences. There is a trend in the research to exclude learning experiences and instead hypothesize a direct relationship between person input variables and self-efficacy and outcome expectations, and between contextual background factors and self-efficacy and outcome expectations. Second, this study only examined interests in the domains of math and science. SCCT has the potential to be widely applicable across interest domains, but more research is needed that examines the SCCT model across a broader range of vocational interest areas. Future studies could examine the fit of the SCCT interest model across a variety of vocational interest areas, and examine other important person input variables, such as gender-role conformity or sexual orientation.
More recently, increased attention has examined the fit of SCCT with racial/ethnic minority populations. Lent, Brown, Sheu, Schmidt, Brenner, Gloster, Wilkins, Schmidt, Lyons and Treistman (2005) recruited students from historically black colleges and universities (HBCU’s) and a predominately white university to examine the utility of the SCCT model to predict engineering interests and major choice goals. They also sought to assess the extent to which the data fit SCCT’s interest and choice models across gender and university type (i.e., mostly white and historically black universities). Lent et al. offered several hypotheses consistent with SCCT’s models of interest formation and choice. First, they hypothesized that self-efficacy and outcome expectations would each predict unique variance in interests. Second, they expected self-efficacy, outcome expectations, and interests to each predict choice goals. Third, they posited that interests would be a partial mediator in the relationships of self-efficacy and outcome expectations to choice goals. Finally, they predicted that the data would generally fit the interest and choice models well across gender and university type. In addition, Lent et al. examined two possible pathways through which supports and barriers could relate to goals. As predicted by SCCT, they examined a direct relationship between supports and barriers to choice goals. Alternatively, they examined an indirect path posited by general social cognitive theory in which supports and barriers impact choice goals indirectly through their relationship to self-efficacy.

The participants were 487 students attending introductory engineering courses at a private HBCU, a state HBCU, and a predominately white state university. In addition to background information, the students completed measures of self-efficacy, outcome expectations, interests, major choice goals, and supports and barriers. Self-efficacy was
measured with 11 items, four of which were taken from Lent, Brown, and Larkin’s 
(1986) self-efficacy for academic milestones measure, and seven items adapted from a 
barrier-coping efficacy measure (Lent et al., 2001). Outcome expectations were 
measured with a list of 10 positive outcomes that could result from obtaining a degree in 
engineering, and participants rated the degree to which they agreed that an engineering 
degree would result in each outcome. Interests were measured by having participants 
indicate their degree of interest in performing each of seven engineering-related 
activities. Supports and barriers related to pursuing an engineering degree were assessed 
with scales adapted from Lent et al. (2001). Participants rated the likelihood of facing 
nine supports and five barriers in the pursuit of an engineering degree. Major choice 
goals were measured by asking students to indicate their level of agreement with four 
statements related to their academic intentions.

The analyses included structural equation modeling to test the fit of the data to the 
model for the full sample, separately for men and women, and separately for students at 
the HBCUs and predominately white universities. The results for the full sample 
indicated a good fit of the structural model to the data; however, the theoretical model did 
not fully explain the relations among the factors as indicated by poorer fit as compared to 
the measurement model. In terms of pathways, the hypothesis that self-efficacy and 
outcome expectations each would contribute to the prediction of interests was supported. 
Only partially supporting the second hypothesis, self-efficacy and interests, but not 
outcome expectations, predicted goals. Finally, supports and barriers were found to 
impact goals indirectly through self-efficacy, with barriers also having a small direct 
relation to goals, which supports relations posited by general social cognitive theory.
A multiple-groups analysis was conducted to examine the invariance of the structural paths in the theoretical model across gender. This involved testing two models. In the first model, the values of the structural paths were allowed to vary for men and women. In the second model, these values were constrained to be equal for men and women. These two models were then compared to determine if constraining the paths resulted in significantly poorer fit. The results indicated that the structural coefficients did not differ significantly between women and men. A second multiple groups analysis was conducted to examine possible differences in structural paths for the two university types. The procedure was the same as described above, and the results indicated that the structural paths did differ as a function of university type. Further examination of the constrained model revealed that only the covariance path between supports and barriers differed for the two samples. The path between supports and barriers was larger in magnitude in the HBCU sample than in the predominately white university sample.

Overall, the work of Lent et al. (2005) suggests that social cognitive variables are useful in understanding the interests and choice goals of engineering students across gender and university types. These findings contribute greatly to the growing research that supports SCCT’s utility with women and racial-ethnic minorities. Although this is useful, it must be noted that there still exists a need to extend the research on SCCT beyond gender and race-ethnicity to examine other aspects of diversity, such as sexual orientation. Another important limitation of this study is the narrow academic domain examined, engineering, and the research on SCCT needs to be extended into a broader range of academic pursuits.
Waller (2006) examined the ability of SCCT to explain the math interest and choice intentions of non-traditionally aged African-American college students. Waller hypothesized that (1) math self-efficacy and outcome expectations would predict math interest, (2) math self-efficacy would predict choice intentions both directly and indirectly via interests, (3) outcome expectations would predict choice intentions both directly and indirectly via interests, and (4) interests would be positively related to choice intentions. All of the above hypotheses were consistent with predictions outlined in SCCT.

The participants included 156 African-American college students enrolled at a predominately African-American university. Over 77% of the sample were above traditional college age (i.e., 18-22), with half being above the age of 30 years old. In addition to a range of demographic information, the participants completed measures of math self-efficacy, math outcome expectations, and math/science interests. Math self-efficacy was measured with the 16-item Mathematics Course Self-Efficacy Scale developed by Betz and Hackett (1983) that asks participants to rate their confidence in their ability to complete a range of math-related college courses with a grade of “B” or better. Outcome expectations were measured using the Mathematics Outcome Expectations Scale (MOES; Fennema & Sherman, 1976), which is a 10-item scale that asks participants to rate their agreement with statements pertaining to the significance of math in their future life and career plans. Math/science interests were measured with the 15-item Mathematics/Science Interest Scale (MSIS; Lent, Brown, & Hackett, 2000), which asks participants to rate their degree of interest in studying eight topics and seven activities that are related to math and science.
Consistent with the first hypothesis, correlations revealed that both self-efficacy and outcome expectations for math were strongly and positively related to interests in math. Also consistent with SCCT, regression analyses revealed that self-efficacy and outcome expectations were related to interests directly, and self-efficacy also related indirectly to interests via outcome expectations. Lending support to the second hypothesis, a regression analysis revealed that math self-efficacy was related to math choice intentions both directly and indirectly via math interests. Waller (2006) found that the effect of self-efficacy on choice intentions indirectly through outcome expectations was not significant. In terms of the third hypothesis, Waller found mixed support. Contrary to predictions based on SCCT, outcome expectations did not yield a significant direct effect on choice intentions. Instead, the effect of math outcome expectations on choice intentions was completely mediated by interests in math. Consistent with the fourth hypothesis, interests in math had a direct positive effect on choice intentions.

Overall, Waller (2006) found support for the applicability of SCCT with a sample of non-traditional African-American students. Similar to prior research with mostly white samples, Waller found that for non-traditional African-American college students, math interests are likely to develop when they believe that they can both perform math tasks successfully and they expect a successful outcome. Contrary to the predictions of SCCT, outcome expectations did not relate directly to choice intentions. Waller hypothesized that other factors, such as limited role models, might mediate the translation of outcome expectations to choice intentions for non-traditional African-American college students. This study lends to the growing body of literature that supports SCCT with diverse populations, but several limitations must be noted. First, Waller examined a
very limited portion of the SCCT model, and did not examine any precursors, such as person inputs or learning experiences, that give rise to self-efficacy beliefs and outcome expectations. Another limitation is that Waller did not examine the overall model-data fit, which would have provided a more stringent test of the applicability of the SCCT model to this population.

Navarro, Flores, and Worthington (2007) examined the ability of SCCT to predict the development of math and science interests and goals for Mexican American middle school students. Navarro et al. explored the role of several other variables deemed to be culturally and socially relevant to Mexican Americans, including gender, generation status, social class, acculturation, and perceptions of social support. Consistent with SCCT, Navarro et al. hypothesized that generation status (i.e., a person input variable), along with social class, Mexican orientation and Anglo orientation (i.e., background contextual influences), would impact math/science self-efficacy and math/science outcome expectations indirectly via their impact on learning experiences. Perceived social support (i.e., a contextual influence proximal to career behavior) would directly impact choice goals for math/science. The remaining hypotheses in regard to the relations between self-efficacy, outcome expectations, interests, and goals were consistent with those propositions in SCCT. Specifically, they hypothesized that self-efficacy would predict outcome expectations, and both self-efficacy and outcome expectations would predict interests. Self-efficacy, outcome expectations and interests were hypothesized to directly predict choice intentions. Finally, they predicted that gender would moderate the relationships in the hypothesized model.
The participants included 409 Mexican American eighth grade students attending one of two public middle schools in a community near the U.S.-Mexico border. Participants completed measures of generation status, Anglo and Mexican orientation, social class, perceived social support, past math/science performance accomplishments, math/science self-efficacy, math/science outcome expectations, math/science interests, and math/science intentions and goals. Gender and generation status were each obtained by participant self-report. Anglo and Mexican orientation were measured using the Acculturation Rating Scale for Mexican Americans-II (ARMSA-II; Cuéllar, Arnold, & Maldanado, 1995), which is a 30-item assessment of an individual’s association with Mexican and Anglo cultures independently across three domains: language, ethnic identity, and ethnic interaction. In addition to asking participants to self-identify social class standing, social class was measured using several indictors, including education attainment of the male and female head of household, access to resources at home (i.e., computer, atlas, dictionary and encyclopedia), and the number of people living at home. Perceived social support from parents, teachers, classmates, and a close friend was assessed using the Child and Adolescent Social Support Scale (CASS; Malecki, Demaray, & Elliot, 2000). The CASS contains 12 items to assess each source of support (i.e., parent, teacher, classmates, and a close friend) for a total of 48 items. Past math/science performance accomplishments were assessed by averaging participants’ responses to two questions that asked them to indicate their seventh-grade math and science grades. Math/science self-efficacy was assessed using the 12-item Math/Science Self-Efficacy Scale (MSSES; Fouad, Smith & Enochs, 1997), and outcome expectations were assessed using the 6-item Math/Science Outcome Expectations Scale (MSOES;
Fouad et al., 1997). Math/Science interests were measured using the 20-item Math/Science Interest Scale (MSIS; Fouad & Smith, 1996).

This study utilized structural equation modeling procedures to examine math/science goal intentions when controlling for gender due to gender differences on several variables (e.g., parent education level, teacher support, classmate support, close friend support, and math/science self-efficacy). These researchers assessed model fit using Hu And Bentler’s (1999) joint criteria, in addition to several other recommended fit indices. Although the comparative fit index (CFI), goodness of fit index (GFI), standardized root-mean-square residual (SRMR), root-mean-square error of approximation (RMSEA), and a modified bootstrap approach all indicated excellent fit of the data, the chi-square statistic was significant. If the specified model is an adequate fit to the data, a small, non-significant chi-square value is expected. Because the chi-square statistic is sensitive to sample size, these researchers nevertheless retained their original model. The combination of predictor variables was able to account for 40% of the variance in Mexican American middle school students’ math/science goal intentions.

Next, these researchers utilized the Sobel test to examine indirect effects. First, they examined SCCT’s proposition that background contextual affordances and person inputs relate to self-efficacy and outcome expectations indirectly via their relationships with learning experiences. Social class was related positively to math/science self-efficacy (but not outcome expectations) indirectly via performance accomplishments. Also contrary to this proposition, generation status, Mexican orientation, and Anglo orientation did not relate indirectly to self-efficacy or outcome expectations. Second, they examined the proposition that self-efficacy and outcome expectations both have
direct and indirect relations with goals. This proposition was supported, as both outcome expectations and self-efficacy related to goals both directly and indirectly via interests. In addition, self-efficacy related to goals indirectly via outcome expectations, as SCCT would predict.

Finally, these researchers conducted a multiple groups analysis to determine if the hypothesized model was consistent for Mexican American boys and girls. These researchers followed the recommendations of Byrne (2001), which involve examining the relative change in fit between a model that allows the paths to vary between the two groups and a second model in which all of the paths are constrained to be equal across the groups. The results indicated that constraining the paths to be equivalent did not result in significantly worse fit. Therefore, the SCCT model tested was a good fit for boys and girls.

This study adds to the accumulating literature that supports the applicability of SCCT with diverse populations, in this case, Mexican American middle school students. Although a great deal of research has been conducted on self-efficacy and outcome expectations, fewer studies have examined the precursors of these, such as background contextual affordances and learning experiences. This study is important given that it examined a myriad of variables that give rise to learning experiences and later self-efficacy beliefs and outcome expectations for Mexican American youth.

A few limitations of this study also must be noted. As has been pointed out with several other studies that have examined SCCT, this study examined a very limited domain of interests (i.e., math and science). Second, this study examined only one dimension of learning experiences (i.e., past performance accomplishments) and did not
examine the role of social persuasion, physiological arousal, or vicarious learning. Also, the measurement of past performance accomplishments was inadequate, as only two questions were utilized which asked participants to indicate their grade in math and science classes. Given these limitations, it is not surprising that these researchers failed to find a direct relationship between performance accomplishments and outcome expectations. Future research is needed that examines the relative contribution of each of the four types of learning experiences to self-efficacy and outcome expectations across a range of occupations.

Tang, Fouad, and Smith (1999) examined the applicability of the SCCT model to explain the factors influencing vocational interests and choices among Asian American students. Family socio-economic status (SES), acculturation, and family involvement were included in the model as background contextual affordances, as these variables were identified in the literature as relevant to Asian Americans’ vocational development. The authors hypothesized that (1) acculturation would impact self-efficacy, and both of these variables would jointly impact interests and choices, (2) family SES would directly impact self-efficacy and interests, (3) family involvement would directly impact both self-efficacy and occupational choice, and (4) consistent with SCCT, self-efficacy would impact interests and choice. Contrary to the SCCT model, these researchers predicted that interests would have a weak relationship with career choice due to cultural expectations to place family expectations and goals before one’s own.

Participants included 187 Asian American college students attending one of eight major universities in the eastern and Midwestern areas of the United States. Acculturation was measured with the Suinn-Lew Asian self-identity acculturation scale.
(SL-Asia, Suinn & Lew, 1987), which includes 26 items aimed at assessing Asian-Americans’ level of comfort with the American language, parents’ racial identity, one’s own racial identity, friendship patterns, behaviors, generational/geographic background, and attitudes. Lower scores indicate lower acculturation (high Asian Identity), and higher scores reflect higher acculturation (high Western Identity). Vocational interests were measured via the Strong Interest Inventory (SII, Harmon, Hansen, Borgen, & Hammer, 1994), and only the 6 General Occupational Themes (GOTs) were used in this study to indicate standing on each RIASEC domain. Self-efficacy was measured using the Confidence Inventory (Betz, 1994), which contains 60-items that correspond to the six General Occupational Themes of the Strong Interest Inventory. Family involvement was measured with eight questions on a likert-type scale related to family involvement in career decision making and choice. Career choice was assessed by a self-report item that asked participants to indicate specific occupations that they have decided to pursue. Because these researchers were also interested in understanding Asian-Americans’ tendency to pursue a restricted range of occupations (i.e., science and technology careers), they calculated a Representation Index (RI; Hsia, 1988) that provided an index of whether the participants’ chosen career was more or less typical for an Asian-American. Participants’ self-efficacy and interest scores were similarly transformed to represent Asian Americans’ typicality in self-efficacy and interest in conforming to the career choice.

A path analysis was conducted to examine if the fit of the hypothesized relations was adequate to explain Asian American vocational interests and choice. The model fit statistics used by these researchers provided mixed evidence in regard to model data fit.
While the Bentler-Bonnet Normed Fit Index (BBNFI) was .96, and the Comparative Fit Index was .97, the chi-square/degrees of freedom ratio of 3.65 indicated poor fit to the data (i.e., less than 3 indicates adequate fit).

In terms of specific paths, the first hypothesis was supported, and acculturation was related negatively and directly to self-efficacy, interests and career choice. This indicated that more highly acculturated Asian-Americans reported less self-efficacy, interests and choices in occupations that are considered traditional for Asian-Americans. Contrary to the second hypothesis, family SES did not relate directly to self-efficacy or interests. Family involvement was related directly to career choice but not self-efficacy, lending partial support to the third hypothesis. Consistent with the fourth hypothesis and SCCT predictions, self-efficacy predicted both interests and career choice. Finally, as these researchers predicted, interests did not relate significantly to career choice, which is contrary to SCCT’s predictions.

Overall, these researchers concluded that modification to the proposed model based on the tenets of SCCT was required to adequately account for the vocational interests and choices of Asian American college students. Notably, vocational interests did not relate to career choice in this sample, and these researchers pointed to cultural expectations that place fulfilling family expectations for career choice over following one’s own interests. This finding highlights the need to examine the fit of the SCCT model in data obtained from diverse groups.

Several important limitations to these findings should be noted. First, Tang et al. (1999) failed to include outcome expectations and learning experiences, which are central variables in the SCCT model. Background contextual variables and person inputs in
SCCT are hypothesized to impact self-efficacy and outcome expectations indirectly via learning experiences. Therefore, future research should examine the relationship between background variables and self-efficacy via learning experiences in order to be a true test of SCCT.

Testing a large portion of SCCT’s interest and choice models, Lent, Brown, Nota, and Soresi (2003) examined hypothesized paths across RIASEC domains using a sample of 796 Italian high school students. Consistent with relationships posited in SCCT, these researchers hypothesized that (a) self-efficacy would relate to outcome expectations, (b) interests would be predicted by self-efficacy, outcome expectations, and a combination of these two variables, (c) choice considerations would be predicted by self-efficacy, outcome expectations and interests, and (d) interests would partially mediate the relationship of self-efficacy and outcome expectations to choice considerations. These researchers also examined whether two contextual variables, social supports and barriers, relate directly to choice behavior, as posited in SCCT, or if these variables also impact choice indirectly through self-efficacy, as hypothesized by Bandura (1999, 2000).

The self-efficacy, outcome expectations, interest, and occupational consideration measures were adapted from previous studies (Gore, 1996; Gore & Leuwerke, 2000). Each measure contained the same set of 42 occupational titles, which includes seven items for each RIASEC domain, that participants rated on likert-type scales. Measures of social supports and barriers were created for this study based upon the work of Lent et al. (2001). For these measures, participants read a description of each RIASEC domain and responded to eight items on a likert type scale, indicating their perception of barriers or supports for pursuing occupations in that domain.
Employing a “2-step modeling” strategy (see Kline, 1998), Lent et al. (2003) first conducted several confirmatory factor analyses (CFA) to test the fit of the measurement model. As compared to both 2- and 3- factor models, each 6-factor model (self-efficacy, outcome expectations, interests, occupational choice consideration, social supports, and social barriers represented as six correlated latent constructs for each of the six Holland types), in which the error covariances for the socio-cognitive variables were allowed to covary, provided a good model-data fit (e.g., CFI ranged from .92 to .97). In terms of the structural model, Lent et al. examined the fit of a direct effects model, in which supports and barriers related directly to choice considerations as predicted by SCCT, and a partially mediated model, which added paths from social supports and barriers to self-efficacy as suggested by Bandura (1999, 2000). The results indicated that across the six RIASEC theme models, Bandura’s partially mediated model provided a better fit to the data than did the direct effects model.

In regard to predictions involving specific paths in the model, the results indicated that self-efficacy predicted outcome expectations and both outcome expectations and self-efficacy predicted interests across the six RIASEC models. Consistent with predictions, the combination of self-efficacy and outcome expectations explained substantial amounts of variance in interests across the domains (e.g., $R^2$ ranging from .73 to .84). Although interests predicted choice consideration across Holland themes, the direct relationship between outcome expectations and choice considerations was found in four models (all but Realistic and Investigative), and a direct relationship between self-efficacy and choice considerations was only found in two models (Investigative and Artistic). Contrary to predictions, interests fully mediated the relationships between both...
self-efficacy and outcome expectations and choice consideration in the Realistic model; in the other five models, partial mediation was observed. A direct relationship was observed between support and choice considerations only in the Realistic model, and the relationships between both supports and barriers to choice considerations were fully mediated by self-efficacy in the remaining models. Overall, the set of sociocognitive variables (including supports and barriers) explained substantial variance in choice consideration across Holland themes ($R^2$ ranging from .58 for Artistic to .76 for Conventional).

This study supports many of the hypothesized paths in SCCT’s interest and choice models across RIASEC domains, thus supporting SCCT’s applicability to occupational domains beyond math and science. However, several limitations must be noted. These researchers did not include learning experiences, which has been pointed out as a general trend in the research. Any individual study cannot be expected to include all SCCT variables, but it would be interesting to examine the relative salience of the different types of learning experiences in diverse groups. Although this study extends the literature by utilizing an international sample, future studies should continue to examine the applicability of the SCCT model to other diverse groups, such as lesbian women.

The importance of learning experiences in the development of interests has only been recently examined. Schaub and Tokar (2005) expanded the literature on SCCT by examining the linkages proposed by SCCT between personality (a person input), learning experiences, self-efficacy, outcome expectations, and interests. They hypothesized that the four sources of learning experiences (i.e., positive performance accomplishments, vicarious learning, social persuasion, and less negative physiological/emotional arousal)
would be related positively to self-efficacy and outcome expectations for each of Holland’s (1997) RIASEC types. In addition to a direct relationship between personality and interests, they also hypothesized that personality would have an indirect relationship to interests via relevant learning experiences, self-efficacy beliefs, and outcome expectations.

Schaub and Tokar (2005) measured learning experiences with the Learning Experiences Questionnaire (LEQ; Schaub, 2004), which is a rationally derived 120-item self-report measure of an individual’s recall of exposure to Bandura’s (1986) four sources of self-efficacy information. Self-efficacy was measured with the 60-item Skills Confidence Inventory (SCI; Betz, Borgen, & Harmon, 1996), in which participants rate their perceived level of confidence in their ability to perform tasks related to Holland’s six RIASEC domains. Outcome expectations were measured within each RIASEC domain using the Occupational Outcome Expectations (OOE; Gore & Leuwerke, 2000), in which participants self-report the degree to which they expect desired outcomes from a series of 84 occupational titles. Vocational interests were measured using the General Occupational Themes (GOT’s) of the Strong Interest Inventory (SII; Harmon, Hansen, Borgen, & Hammer, 1994), which measure broad occupational interests corresponding to each Holland theme. Finally, the NEO Five-Factor Inventory (NEO-FFI-S; Costa & McCrae, 1992) was used to measure personality. The NEO-FFI-S is a 60-item self-report measure of an individual’s standing on the five domains of normal personality (i.e., neuroticism, extraversion, openness, agreeableness, and conscientiousness).

To test their hypotheses, Schaub and Tokar (2005) conducted a series of path analyses, one for each RIASEC domain. As these researchers had hypothesized, learning
experiences were a positive and significant predictor of self-efficacy and outcome expectations in all six models. More specifically, the influence of learning experiences on outcome expectations was fully mediated by self-efficacy for the models predicting Investigative, Artistic, Enterprising, and Conventional interests, and partial mediation via self-efficacy occurred for the model predicting Social interests. Consistent with the predictions of SCCT, the combination of learning experiences and self-efficacy explained a substantial amount of variance in outcome expectations across Holland themes.

In regard to personality-interest relationships, the results of this study indicated that personality had a significant and positive direct effect on interests, with openness predicting Artistic interests, agreeableness predicting Social interests, and extraversion predicting Enterprising interests. As predicted, the relationship of personality to interests was partially mediated through learning experiences and the resulting self-efficacy and outcomes expectations that derive from learning experiences in five of the six personality-interest relationships tested.

Though not directly related to the hypotheses of their study, Schaub and Tokar (2005) also examined additional relationships among the sociocognitive variables as predicted by SCCT. Consistent with SCCT, results supported Lent et al.’s. (1994) contention that self-efficacy is positively related to outcome expectations, and that self-efficacy and outcome expectations are positively related to interests. Consistent with previous research, the impact of self-efficacy on interests was partially mediated by outcome expectations for the Investigative, Artistic, Social, and Conventional models, and fully mediated via outcome expectations in the Enterprising model. Finally, personality
was a significant positive predictor of learning experiences for the Artistic, Social, Enterprising, and Conventional models.

Taken together, Schaub and Tokar (2005) supported many of the hypothesized paths in the SCCT interest model. These findings also indicated that basic person inputs, or characteristics of the individual (i.e., personality), can have an important impact on interest development through learning experiences. It is possible that individuals may seek learning experiences, or may be encouraged by others to seek learning experiences, consistent with their self-concept.

This study was one of the first to examine precursors to learning experiences, but it was limited to examining the role of one specific variable, personality. The importance of other person variables, such as gender-role conformity, remains unclear. An additional limitation of this study is that Schaub and Tokar (2005) measured learning experiences globally, and, therefore, the relative salience of each of the four types of learning experiences is unclear. Also, sexual orientation of the sample was not reported nor included in the analyses. Therefore, it is unclear to what extent sexual orientation impacts interest development, and whether the social cognitive variables included in this study are relevant in explaining the interest development of sexual minorities.

In an attempt to further explore the contribution of person inputs to the formation of learning experiences in SCCT, Tokar, Thompson, Plaufcan, and Williams (2007) explored three person inputs, including personality, gender, and gender-role conformity across Holland’s six RIASEC themes. These researchers’ conceptualization of and findings regarding the role of gender-role conformity is of most relevance to the current study. These researchers argued that conformity to gender-role norms would be
considered a person variable, resulting from an interaction of more basic person inputs (e.g., gender, predispositions) and social/contextual influences (e.g., gender-role socialization) that may influence career development at various points (see also Gushue & Whitson, 2006).

Given that conformity to gender-role norms was viewed as resulting from the interaction of more basic person inputs and environmental influences, these researchers hypothesized that personality and gender would contribute to learning experiences both directly and also indirectly via gender-role conformity. In addition, they hypothesized that for both women and men, greater conformity to feminine role norms would be associated with more reported learning experiences in the Artistic, Social and Conventional domains, and fewer reported learning experiences in the Realistic, Investigative, and Enterprising domains. The opposite pattern was hypothesized to occur with greater conformity to masculine role norms, such that both women and men who reported greater conformity to masculine role norms would also report more learning experiences in the Realistic, Investigative and Enterprising domains, and fewer learning experiences in the Artistic, Social and Conventional domains.

The participants, 257 undergraduate students (144 women and 113 men) completed the LEQ to measure learning experiences, and the NEO-Five Factor Inventory (NEO-FFI-S; Costa & McCrae, 1992) to measure personality. The Conformity to Feminine Norms Inventory (CFNI; Mahalik et al., 2005) and the Conformity to Masculine Norms Inventory (CMNI; Mahalik et al., 2003) were used to measure adherence to feminine and masculine role norms, respectively. The CFNI is an 84-item self-report measure of adherence to feminine norms in the dominant United State culture.
across 8 domains: (a) Nice in Relationships, (b) Thinness, (c) Modesty, (d) Domestic, (e) Care for Children, (f) Romantic Relationship, (g) Sexual Fidelity, and (h) Invest in Appearance. Respondents rate each statement on a four point likert-type scale. Scale scores can be computed for each of eight factors, but total scores were used in this study. The CMNI is a 94-item self-report measure of conformity to masculine norms dominant in the U.S. Response format is the same as for the CFNI, and it is composed of 11 factors: (a) Winning, (b) Emotional Control, (c) Risk-Taking, (d) Violence, (e) Power over Women, (f) Dominance, (g) Playboy, (h) Self-Reliance, (i) Primacy of Work, (j) Disdain for Homosexuals, and (k) Pursuit of Status.

Tokar et al. (2007) performed a series of path analyses to test the fit of the data to the hypothesized mediator model across each of the RIASEC themes. Then, path coefficients were examined to assess hypothesized direct and indirect effects. Overall, the fit of each model to the data was supported. The combination of person inputs accounted for a significant and substantial proportion of the variance in learning experiences for each Holland theme, with total $R^2$ values ranging from .17 (Conventional) to .33 (Social). Similar to the results found by Schaub and Tokar (2005), hypothesized direct relations between personality and learning experiences were largely supported, and more importantly, personality was also found to impact learning experiences indirectly via conformity to gender-role norms in five of eight hypothesized relationships.

As hypothesized, gender was also found to impact learning experiences directly and also indirectly via gender-role conformity. More specifically, adherence to feminine role norms partially mediated gender’s contribution to the Realistic and Social models and fully mediated the effect in the Artistic model. Adherence to masculine role norms
partially mediated gender’s effect in the Realistic and Social models and fully mediated the effect in the Enterprising model.

Overall, gender-role conformity was supported as a mediator of the effect of more basic person inputs, and also was found to make a unique contribution to learning experiences in six of 12 hypothesized relations. More specifically, consistent with hypotheses, those reporting greater conformity to masculine role norms also reported more Realistic and Enterprising, and fewer Social, learning experiences. Individuals reporting more conformity to feminine role norms expressed having more Social and Artistic learning experiences, but contrary to hypotheses, also reported more Realistic learning experiences as well.

This study is notable for supporting the importance of person inputs, especially gender-role conformity, in shaping an individual’s learning history. It made significant contributions to understanding how person and environmental factors contribute to differential learning histories, but several limitations must be noted. First, Tokar et al. (2007) examined learning experiences globally, and did not examine how the person inputs may impact the four sources of self-efficacy information differently. Finally, as this study examined only a portion of the SCCT model, it is unclear if the basic person inputs explored in the models may contribute to other socio-cognitive variables directly, in addition to indirectly through learning experiences as hypothesized in SCCT. For example, Fouad and Smith (1996) found that the person inputs of gender and age contributed directly to interests, and Bishop and Bieschke (1994) found that Investigative interests, Artistic interests, and age all contributed directly to interests in research as well as indirectly through research self-efficacy and research outcome expectations.
Therefore, there is mixed evidence as to how person inputs impact vocational interests. Future research could examine direct as well as indirect relationships (via learning experiences) between person inputs and interests, and also examine the impact of other input variables, such as sexual orientation.

**Summary of the Empirical Research on SCCT’s Interest Model**

Empirical research generally has supported the hypothesized relationships between self-efficacy, outcome expectations and interests. Much less empirical work, however, has addressed the factors hypothesized in SCCT to impact self-efficacy and outcome expectations, namely learning experiences. Although several studies have examined the impact of person inputs and contextual background factors on interests, these studies have not included learning experiences. Instead, these studies generally have hypothesized direct relationships between person input variables and self-efficacy, outcome expectations and interests (e.g., Bishop & Bieschke, 1998; Fouad & Smith, 1996; Tang, Fouad & Smith, 1999; Turner, Steward & Lapan, 2004), whereas SCCT proposes that person inputs and background contextual variables have their impact on these variables through their impact on vocational learning experiences. Possibly as a result of omitting vocational learning experiences, some studies have found direct associations of both person inputs and contextual background factors with vocational interests (e.g., Bishop & Bieschke, 1998; Fouad & Smith, 1996; Navarro, Flores, & Worthington, 2007).

Of the three studies that utilized structural equation modeling and have examined the impact of vocational learning experiences on vocational interests, one study examined only one dimension of vocational learning experiences (Navarro, Flores, & Worthington,
2007), and the other two studies examined learning experiences globally (Schaub & Tokar, 2005; Tokar et al., 2007). Future research is needed to examine the relative contribution of each of the four types of learning experiences, rather than examining them globally.

This review of the literature also highlights the work that has been done empirically to extend the applicability of the SCCT model to diverse populations, such as African-Americans (Fouad & Smith, 1996; Lent et al., 2005; Waller, 2006), Asian-Americans (Tang, Fouad, & Smith, 1999), and Mexican-Americans (Navarre, Flores & Worthington, 2007). Recall that Mancuso’s (2004) unpublished dissertation represents the only attempt in the SCCT literature to examine the fit of this model to the vocational development of lesbian women and gay men. As noted previously, limitations of her study include: (a) learning experiences were not measured, (b) no test of the fit of the data to her proposed model for lesbian women was performed, and (c) no test of structural invariance across sexual orientation was performed. Therefore, future research could provide a more systematic investigation of the applicability of the SCCT model for lesbian women.

Indeed, as noted throughout the review of empirical articles examining the SCCT interest model, there are several limitations in the extant literature. These include the following: (1) a focus on predicting a limited set of vocational interests (i.e., math and science), (2) the majority of studies have not included learning experiences or, if learning experiences were included, they were measured globally, and (3) no published study has examined the applicability of SCCT with sexual minorities.
According to Smith and Fouad (1999), “it is particularly critical to examine domain areas other than math and science if the social-cognitive career model is to be applied generally across occupational areas” (p. 462). Studies that have examined domains other than math and science have utilized Holland’s (1997) RIASEC typology (i.e., Schaub & Tokar, 2005; Tokar, Thompson, Plaufcan, & Williams, 2007). Holland’s typology has been supported as a valid method of assessing interests across multiple domains (see Schaub & Tokar, 2005; Tokar et al., 2007), and is seen as an important addition to the measurement of interests in the SCCT model. To expand the literature on the SCCT model and the literature on the career development of lesbians, the current study utilizes Holland’s typology to examine interests across a broad range of interest domains.

As noted, many studies have failed to examine the role of learning experiences when testing the SCCT model. Recall that in the SCCT model, individuals are expected to have differing access to experiential sources of self-efficacy information and outcome expectations, referred to as learning experiences, based on person inputs (i.e., race, gender, sexual orientation etc.) and background contextual affordances (i.e., gender-role socialization, availability of role models). Therefore, learning experiences are considered to be an important mediator between person inputs, such as sexual orientation, and the sociocognitive mechanisms described in SCCT.

### Research on Gender-Role Conformity

Morrow, Gore and Campbell (1996) highlighted the potentially important role of gender-role conformity or non-conformity in the development of lesbian women’s vocational interests. According to Mahalik (2000), gender-role norms are guides or
standards that are understood by members of a group and operate to constrain masculine and feminine behavior. These standards that constitute femininity for girls and masculinity for boys are communicated and reinforced by social agents, such as parents, peers, teachers and the media (Bem, 1981). For women, conformity to feminine role norms is defined as “adhering to societal rules and standards about how to be feminine and is demonstrated in the individual woman’s behaviors, feelings and thoughts” (Mahalik, Morray, Coonerty-Femiano, Ludlow, Slattery, & Smiler, 2005).

**Empirical Research on Gender-Role Conformity and Vocational Interests**

Mahalik, Perry, Coonerty-Femiano, Catraio, and Land (2006) examined the relationship between conformity to masculine gender-roles and vocational interests using Holland’s RIASEC domains. These researchers hypothesized that men would report different levels of adherence to 11 masculinity norms as a function of their RIASEC vocational interests. Their sample included 310 men, of which 300 reported a heterosexual orientation, nine reported a homosexual orientation, and one reported a bisexual orientation. The CMNI was used to measure adherence to masculinity norms across 11 categories. Vocational interests were measured by asking respondents to indicate their ideal job or career following college. These responses were then classified into one of Holland’s RIASEC codes using the Dictionary of Holland Occupational Titles (Gottfredson & Holland, 1996).

The data were analyzed by conducting a multivariate analysis of variance with participants’ interests (based on RIASEC high-point codes) as the grouping variable. The overall model was significant, and follow-up analyses were conducted to determine which group differences were significant. Makalik et al. (2006) found that Enterprising
men showed the greatest difference on adherence to masculinity norms from other men grouped by interest types, especially Social men. For example, Enterprising men reported more conformity to norms around Winning, Risk Taking, Primacy of Work, Power Over Women, Dominance, Playboy, and Pursuit of Status than Social men. In addition, men with Realistic interests reported more adherence to masculine norms of Risk Taking than Social men, more conformity to Violence than Investigative men, and more Disdain for Homosexuals than Artistic men.

This study demonstrates that an individual’s conformity to his gendered context is related to his vocational interests. These authors suggested that it can be useful for counselors to talk to vocational clients about how conformity or non-conformity to an array of gender norms may relate to interests or lack of interest in certain career domains. Although this study is valuable for taking attention away from broad group differences based on gender and focusing more on within gender variability (i.e., among men), several limitations are also noteworthy. First, Mahalik et al. (2006) obtained data about sexual orientation; however, they did not recruit a large enough sample size of gay men (n=9) to conduct analyses separately for this group. Second, these researchers only examined men, so the gendered context of women’s vocational interests is still unclear. Future research could examine the role of gender-role conformity in lesbians’ and heterosexual women’s vocational development.

Only one study has examined the relationship between conformity to gender-role norms and sexual orientation in the prediction of vocational interests. Chung and Harmon (1994) examined the relationship between sexual orientation, sex-role orientation, and vocational interests and aspirations in a sample of gay and heterosexual
men. These researchers hypothesized that gay men would be more likely than heterosexual men to report gender non-traditional career interests and aspirations. They also suspected that because female-dominated work (i.e., gender non-traditional work for men) typically is related to lower socioeconomic status, gay men’s career aspirations would be lower in socioeconomic status than those for heterosexual men. As a possible explanation for these differences in vocational outcomes, Chung and Harmon examined sex-role orientation, which they defined as “an individual’s endorsement of psychologically feminine characteristics and psychologically masculine characteristics” (p. 225). They hypothesized that gay men would not only endorse less masculine characteristics and more traditionally feminine characteristics compared to heterosexual men, but that sex-role orientation would mediate the relationship between sexual orientation and vocational interests and aspirations.

Chung and Harmon’s (1994) sample consisted of a group of 60 heterosexual men and a group of 63 gay men matched on age, socioeconomic background, race, student status, and education level. Career interests were measured with the Self-Directed Search (SDS; Holland, 1985). The SDS is composed of six subscales corresponding to each of Holland’s vocational types (Realistic, Investigative, Artistic, Social Enterprising, and Conventional). Participants were classified into one of six Holland types, based on their highest SDS scale score. Career aspirations were measured with one item asking participants to list their ideal career. The self-reported career aspiration was then scored on the Socioeconomic Index (SEI; Stevens & Cho, 1985) to represent the socioeconomic status of the participant’s career aspiration, and it was also scored on the Male Dominance Index (MDI; Yanico, 1988) to determine the gender traditionality of the
given occupation. Self-reported sexual orientation in addition to basic demographic information was collected via the Lifestyle Questionnaire (LQ; Chung & Harmon, 1994). Finally, the 60-item Bem Sex-Role Inventory (BSRI; Bem, 1978) was used to measure participants’ sex-role orientation. The BSRI was designed to measure gender-role identity with two independent scales, a 20-item Masculinity scale and a 20-item Femininity scale, in addition to 20 filler items. Based on these scores, participants were placed into one of four sex-role types using a median split procedure. The four sex-role types identified by Bem (1981) include androgynous (high feminine-high masculine), feminine (high feminine-low masculine), masculine (low feminine-high masculine), and undifferentiated (low feminine-low masculine).

In terms of the relationship between sexual orientation and interests, intercorrelations revealed that sexual orientation was related to Realistic ($r = -.37$), Investigative ($r = -.18$), Artistic ($r = .26$) Social ($r = .24$), but not Enterprising ($r = .09$) nor Conventional ($r = .14$) interests. To further examine differences in interests between gay men and heterosexual men, Chung and Harmon (1994) performed a multivariate analysis of variance (MANOVA) with sexual orientation as an independent variable and the six SDS-subscale scores as dependent variables. The results of the MANOVA revealed that gay men and heterosexual men differed significantly on Realistic, Investigative, Artistic and Social interests. More specifically, gay men reported higher Artistic and Social interests, but lower Realistic and Investigative interests than heterosexual men. Consistent with this finding, a chi-square test using participants’ highest Holland type rather than SDS subtest score, revealed that gay men were more likely to fall into the
Artistic, Social or Investigative type, while heterosexual men were more likely to be distributed in the Investigative followed by the Realistic type.

Subsequent MANOVAs were performed to test Chung and Harmon’s (1994) second and third hypotheses. Consistent with Chung and Harmon’s second hypothesis, gay men tended to have career aspirations that were less traditional for men based on MDI ratings. However, gay men’s career aspirations were not lower in socioeconomic level. Their third hypothesis also received mixed support, as gay men did endorse less traditionally masculine characteristics than heterosexual men, but the two groups did not differ in reported levels of femininity.

Finally, Chung and Harmon (1994) performed a multivariate analysis of covariance (MANCOVA) to determine if sex-role orientation mediated the relationship between sexual orientation and vocational interests and aspirations. Sexual orientation was entered as the independent variable and the SDS subscale scores on the Realistic, Investigative, Artistic, and Social scales, and the MDI scores of career aspirations were entered as dependent variables. The BSRI Masculinity and Femininity scores were entered as covariates. Contrary to expectations, the sex-role orientation scores were significant covariates only for the Social scale.

Chung and Harmon’s (1994) study demonstrates the importance of both gender and sexual orientation in understanding the vocational interests of gay men. Although they did not find that sex-role orientation (a gender-related variable) was as powerful a mediator as expected, they speculated that gay men’s gender non-traditional interests may be related to being gay, but their similarity to heterosexual men in socioeconomic level of career aspirations may be more related to being a male. Chung and Harmon
recommended further research on the impact of sexual orientation and sex-role orientation on vocational interests, especially studies investigating the career development of lesbian women.

A major limitation of Chung and Harmon’s (1994) study is that they did not include lesbian women in their sample. It is unclear to what extent sexual orientation and sex-role orientation may be important in explaining the vocational interests of lesbian women, and to what extent their interests differ from heterosexual women. Another limitation of the current study is the use of the BSRI to measure sex-role orientation. Several researchers have criticized the BSRI for not measuring masculine and feminine gender-role ideology as originally intended (e.g., Good, Borst & Wallace, 1994; Spence, 1991). These researchers argue that the BSRI is better seen as assessing whether or not individuals self-report possessing global personality traits, namely expressiveness and instrumentality, that are socially desirable for women and men (respectively) in this culture. Given these criticisms, the null findings involving sex-role orientation as a mediator of the relationship between sexual orientation and vocational outcomes may be more attributable to the BSRI’s questionable construct validity. Future research could revisit the potential role of gender-role conformity as a mediator in the relationship between sexual orientation and vocational interests using instruments designed specifically to assess gender-role conformity, such as the Conformity to Feminine Norms Inventory (CFNI; Mahalik, Morray, Coonerty-Femiano, Ludlow, Slattery, & Smiler, 2005).

Only two empirical articles have examined the link between gender-role conformity and vocational interests; however, both of these studies utilized samples of
men. In addition to the two studies reviewed above, Tokar et al. (2007) more recently examined the role of gender-role conformity in the prediction of interests via learning experiences. These researchers argued that conformity to gender-role norms would be considered a person variable in SCCT, resulting from an interaction of more basic person inputs (e.g., gender, predispositions) and social/contextual influences (e.g., gender-role socialization) that may influence career development at various points (see also Gushue & Whitson, 2006).

Further, Tokar et al. (2007) found that gender-role conformity was both a mediator of the effect of more basic person inputs (i.e., gender and personality) on learning experiences, and was also found to make a unique contribution to learning experiences in six of 12 hypothesized relations. More specifically, consistent with hypotheses, those reporting greater conformity to masculine role norms also reported more Realistic and Enterprising and fewer Social learning experiences. Individuals reporting more conformity to feminine role norms expressed having more Social and Artistic learning experiences but, contrary to hypotheses, also reported more Realistic learning experiences as well.

A major limitation of this area of research is that no empirical study has examined the relationship between sexual orientation, gender-role conformity and the development of vocational interests for lesbian women. Chung and Harmon (1994) failed to find that sex-role orientation mediated the relationship between sexual orientation and vocational interests across the six Holland vocational types, this null finding may be more a result of the assessment used for sex-role orientation than a lack of a mediating relationship. Newer assessments of gender-role conformity are available, such as the Conformity to
Feminine Norms Inventory (CFNI; Mahalik et al., 2005) and the Conformity to Masculine Norms Inventory (CMNI; Mahalik et al., 2005), and these should be used in future research.

**Summary and Purpose of the Current Study**

The overall purpose of this study was to extend current understanding of the precursors of lesbians’ vocational interests. As noted, there is a shortage of empirical research that examines lesbians’ vocational development prior to choice implementation, and much of this research fails to use existing theories of vocational development to guide inquiry. Given these limitations, the current study utilized an established theory of vocational development, SCCT, as a guiding framework into precursors of lesbians’ vocational interests. At the same time, this study filled important gaps within the SCCT literature, by examining the relative contributions of the four types of learning experiences to corresponding self-efficacy and outcome expectations, and by examining interests across Holland’s (1996) RIASEC themes.

Recall Morrow et al.’s (1996) assertion that sexual orientation impacts important vocational variables, such as learning experiences, indirectly through gender-role traditionality early in life. Within the SCCT model, sexual orientation can be conceptualized as a basic person input. (B. Lent, personal communication, January 29, 2008). Given Morrow et al.’s speculation about the relationship between sexual orientation and gender-role conformity, it was hypothesized that sexual orientation (a basic person input) impacts vocational learning experiences indirectly via gender-role conformity. Given some research findings that basic person inputs may also impact vocational interests directly (e.g., Bishop & Bieschke, 1998; Fouad & Smith, 1996), it is
plausible that sexual orientation might impact interests directly as well as indirectly via gender-role conformity and learning experiences.

Morrow, Gore and Campbell (1996) suggested that future research should examine the relative salience of the various sources of self-efficacy information for lesbians. They argued that although many lesbians report engaging in more male typical behavior and activities in childhood (e.g., Fassinger, 1996), social persuasion from others generally operates to encourage achievement in gender congruent activities, thus decreasing self-efficacy for gender non-traditional occupations. Morrow, Gore and Campbell (1996) further speculated that physiological arousal can be a powerful influence on the development of self-efficacy beliefs and interests. They hypothesized that lesbians might experience negative arousal states, such as anxiety, when engaging in gender-congruent activities. Alternatively, positive arousal states might occur from performing behaviors that are more compatible with their gender identity. As noted above, no empirical study has examined the relative salience of the four sources of self-efficacy information for lesbian women, so it is unknown how these sources of information interact to influence lesbians’ self-efficacy and outcome expectations.

First, this study examined the precursors of lesbian women’s vocational interests across each of Holland’s (1996) RIASEC themes (see Figure 2). The precursors in the present study included sexual orientation, gender-role conformity, learning experiences, self-efficacy, and outcome expectations. Consistent with Morrow et al.’s (1996) theorizing, I anticipated that sexual orientation relates significantly to interests and learning experiences; however, those relations are at least somewhat indirect (i.e., partially mediated through gender-role conformity).
Next, my study tested the applicability of the SCCT interest model for a sample of lesbian women. Specifically, using a sample of lesbian women, I examined the fit of the data to SCCT’s model relating corresponding learning experiences, self-efficacy, outcome expectations, and vocational interests for each of Holland’s six RIASEC themes (see Figure 3). This study also explored the relative contributions of each of Bandura’s (1986) four types of learning experiences to corresponding self-efficacy and outcome expectations, with a particular focus on the relative salience of physiological arousal for lesbian women. Next, I examined if the proposed SCCT interest model is invariant across sexual orientation, by testing the structural invariance of the specified pathways for each RIASEC domain using a sample of lesbian women and a sample of heterosexual women. (see Figure 3).
Figure 3. SCCT interest model being used to test the overall model data fit for lesbian women, and to compare the structural invariance of the pathways for lesbian and heterosexual women.

**Hypotheses**

The main research questions in this study involve: (1) the role of sexual orientation, gender-role conformity, learning experiences, self-efficacy, and outcome expectations in the prediction of vocational interests, (2) the mediating role of gender-role conformity in the relation between sexual orientation and learning experiences (3) the applicability of the SCCT model to explain vocational interest development for lesbians across RIASEC domains, and (4) the invariance of the SCCT structural model across sexual orientation.

Hypotheses 1-11 address the first set of path analytic models, which examined the contributions of sexual orientation, gender-role conformity, learning experiences, self-efficacy and outcome expectations to vocational interests across each of Holland’s six RIASEC types with a combined sample of lesbian and heterosexual women. While hypotheses 1 through 8 correspond to direct relationship in this model, hypotheses 9
through 11 address hypothesized indirect relationships among variables in the model. Consistent with predictions made by Morrow et al. (1996), it is hypothesized that sexual orientation will have its impact on learning experiences indirectly via gender-role conformity. In addition, based on the previous literature that has found direct relationships between basic person inputs and interests (e.g., Bishop & Bieschke, 1998; Fouad & Smith, 1996), I hypothesized an additional direct relationship between sexual orientation and vocational interests. This is the only hypothesis that is not consistent with SCCT theory, as Lent, Brown and Hackett (1994) did not posit a direct relationship between basic person inputs and vocational interests.

A subset of this larger model was used to test Hypotheses 12 and 13 (see Figure 3). These hypotheses examined the fit of a basic SCCT interest model for lesbian women, and the extent to which the relationships among the social-cognitive variables are consistent in samples of lesbian and heterosexual women.

*Hypothesis 1: Hypothesized relationship of sexual orientation and gender-role conformity.*

Sexual orientation demonstrates a direct relationship with conformity to feminine role norms. This hypothesis is based on the theoretical and empirical literature that has found lesbian women are, as a group, less conforming than heterosexual women to feminine role norms (e.g., Garnets & Kimmel, 1993; Hetherington & Orzek, 1989; Fassinger, 1995, 1996; Lippa, 2000; Morgan & Brown, 1991). Therefore, sexual orientation will demonstrate a direct positive relationship with conformity to feminine role norms, indicating that a lesbian sexual orientation is related to lower conformity to feminine role norms.
Hypothesis 2: Hypothesized relationship between gender-role conformity and learning experiences.

Conformity to feminine role norms will be negatively related to Realistic, Investigative and Enterprising learning experiences, and positively related to Social, Artistic and Conventional learning experiences. This hypothesis is based in the conceptual and empirical literature. Recall that Morrow et al. (1996) suggested that many lesbian women recall being gender non-traditional in childhood, and this likely shapes their vocational learning experiences. In the empirical literature, Realistic, Investigative and Enterprising domains tend to be seen as more traditional for males, and Social, Artistic, and Conventional domains tend to be considered more traditional for females (Aros, Henly, & Curtis, 1998; Lapan, Adams, Turner, & Hinkleman, 2000; Lippa, 2000). Given these consistent differences in vocational interests based on gender, we might expect that gender-related variables and differential exposure to learning experiences might account for some of these differences.

Hypothesis 2A: Conformity to feminine role norms directly and negatively relates to Realistic personal performance accomplishments, vicarious learning, verbal persuasion and lower physiological arousal.

Hypothesis 2B: Conformity to feminine role norms directly and negatively relates to Investigative personal performance accomplishments, vicarious learning, verbal persuasion and lower physiological arousal.
Hypothesis 2C: Conformity to feminine role norms directly and positively relates to Artistic personal performance accomplishments, vicarious learning, verbal persuasion and lower physiological arousal.

Hypothesis 2D: Conformity to feminine role norms directly and positively relates to Social personal performance accomplishments, vicarious learning, verbal persuasion and lower physiological arousal.

Hypothesis 2E: Conformity to feminine role norms directly and negatively relates to Enterprising personal performance accomplishments, vicarious learning, verbal persuasion and lower physiological arousal.

Hypothesis 2F: Conformity to feminine role norms directly and positively relates to Conventional personal performance accomplishments, vicarious learning, verbal persuasion and lower physiological arousal.

Hypothesis 3: Hypothesized relations between learning experiences and self-efficacy

For each RIASEC domain, the four types of learning experiences each relate positively to corresponding self-efficacy beliefs.

Hypothesis 3A-3F: In the Realistic, Investigative, Artistic, Social, Enterprising, and Conventional domains, respectively, personal performance accomplishments, vicarious learning, verbal persuasion and lower physiological arousal each relate positively to self-efficacy beliefs.

Hypothesis 4: Hypothesized relations between learning experiences and outcome expectations.
For each RIASEC domain, the four types of learning experiences each relate positively to corresponding outcome expectations.

_Hypothesis 4A-4F:_ In the Realistic, Investigative, Artistic, Social, Enterprising, and Conventional domains, respectively, personal performance accomplishments, vicarious learning, verbal persuasion and lower physiological arousal each relate positively to outcome expectations.

_Hypothesis 5 Hypothesized relations between self-efficacy and outcome expectations._

For all of the RIASEC domains, self-efficacy demonstrates a positive relationship with outcome expectations.

_Hypothesis 5A-5F:_ In the Realistic, Investigative, Artistic, Social, Enterprising, and Conventional models, respectively, self-efficacy is positively related to outcome expectations.

_Hypothesis 6: Hypothesized relations between self-efficacy and interests._

For each RIASEC domain, self-efficacy demonstrates a positive relationship with vocational interests.

_Hypothesis 6A-6F:_ In the Realistic, Investigative, Artistic, Social, Enterprising, and Conventional models, respectively, self-efficacy demonstrates a positive relationship with interests.

_Hypothesis 7: Hypothesized relationship between outcome expectations and interests._
For each RIASEC domain, outcome expectations demonstrate a positive relationship with vocational interests.

*Hypothesis 7A-7F*: In the Realistic, Investigative, Artistic, Social, Enterprising, and Conventional models, respectively, outcome expectations demonstrate a positive relationship with interests.

*Hypothesis 8*: Hypothesized relationship between sexual orientation and interests.

For each RIASEC domain, sexual orientation demonstrates a direct relationship with vocational interests. This hypothesis is based on Chung and Harmon’s (1994) findings in which sexual orientation was directly related to vocational interests for gay men, and also the SCCT literature in which basic person inputs have been found to impact interests both directly and indirectly (e.g., Bishop & Bieschke, 1998; Fouad & Smith, 1996). Mancuso (2004) found that lesbian women tended to express more interest in typically male-dominated occupations than heterosexual women, and less interest in female-dominated occupations than heterosexual women. In terms of Holland’s (1997) RIASEC themes, research consistently finds that men’s interests tend to be represented by Realistic, Investigative and Enterprising themes, while women’s interests are most represented by Artistic, Social and Conventional themes (Aros, Henly, & Curtis, 1998; Lapan, Adams, Turner, & Hinkleman, 2000; Lippa, 2000). Therefore, I hypothesize that a heterosexual orientation directly and positively relates to interests in Artistic, Social and Conventional themes, and a heterosexual orientation directly and negatively relates to interests in Realistic, Investigative and Conventional themes.
**Hypothesis 8A:** A heterosexual orientation directly and negatively relates to interests in Realistic occupations.

**Hypothesis 8B:** A heterosexual orientation directly and negatively relates to interests in Investigative occupations.

**Hypothesis 8C:** A heterosexual orientation directly and positively relates to interests in Artistic occupations.

**Hypothesis 8D:** A heterosexual orientation directly and positively relates to interests in Social occupations.

**Hypothesis 8E:** A heterosexual orientation directly and negatively relates to interests in Enterprising occupations.

**Hypothesis 8F:** A heterosexual orientation directly and positively relates to interests in Conventional occupations.

**Hypothesis 9:** Hypothesized indirect relationships between learning experiences and outcome expectations via self-efficacy beliefs

For each RIASEC domain, part of the total relationship between each of the four types of learning experiences and outcome expectations is indirect via self-efficacy beliefs.

**Hypothesis 9A-9F:** In the Realistic, Investigative, Artistic, Social, Enterprising, and Conventional models, respectively, personal performance accomplishments, vicarious learning, verbal persuasion, and physiological arousal each demonstrates an indirect relationship to outcome expectations via self-efficacy.
Hypothesis 10: Hypothesized indirect relationships between self-efficacy and vocational interests via outcome expectations.

Hypothesis 10A-10F: In the Realistic, Investigative, Artistic, Social, Enterprising, and Conventional models, respectively, self-efficacy demonstrates an indirect relationship with interests via outcome expectations.

Hypothesis 11: Hypothesized indirect relationship between sexual orientation and learning experiences via conformity to feminine gender-role norms.

For each RIASEC domain, the relationship between sexual orientation and learning experiences will be completely indirect via conformity to gender-role norms. This hypothesis is based on the theoretical literature. According to Morrow, Gore, and Campbell (1996), self-efficacy beliefs form early in life, most likely prior to an individual’s identification as gay or lesbian. Therefore, sexual orientation is unlikely to have a direct influence on the development of early vocational self-identity. Instead, they argue that sexual orientation likely impacts the career development process indirectly, through variables related to sexual orientation, such as gender-identity and gender-role traditionality or non-traditionality. Therefore, it is likely that gender-role conformity has a more direct role in shaping an individual’s history of vocational learning experiences, with sexual orientation having its impact indirectly via conformity to feminine role norms.

Hypothesis 11A-11F: In the models predicting Realistic, Investigative, Artistic, Social, Enterprising, and Conventional interests, respectively, the relationship between
sexual orientation and learning experiences is completely indirect via conformity to gender-role norms.

*Hypothesis 12: Overall model data fit*

The data obtained from a sample of lesbian women demonstrates at least an adequate fit to SCCT’s interest model for each RIASEC domain (see Figure 3). This model includes the four types of learning experiences (i.e., social persuasion, vicarious learning, personal performance accomplishments and physiological arousal), self-efficacy, outcome expectations, and interests.

*Hypothesis 12A-12F: SCCT’s model of interest development for the Realistic, Investigative, Artistic, Social, Enterprising, and Conventional domains, respectively, demonstrates at least adequate fit to the data obtained from lesbian women.*

*Hypothesis 13: Hypothesized invariance of the relationships between variables when models are compared for lesbian and heterosexual women.*

For each RIASEC domain, the relationships in the theoretical model will not differ for lesbian and heterosexual women.

*Hypothesis 13A-13F: In the models predicting Realistic, Investigative, Artistic, Social, Enterprising, and Conventional interests, respectively, the overall model-data fit will not differ by sexual orientation.*
CHAPTER III

METHODOLOGY

Participants and Procedure

The data for the current study were collected in the form of an online survey using the Survey Monkey website. The participants were recruited from on-campus organizations that serve predominately women and LGBT students. An email was sent to the directors of Women’s Centers at U.S. colleges requesting that the study link and information for a study of women’s vocational interests be posted to a listserv or email list for the organization. Similarly, in order to recruit lesbian college students, an email was sent to the directors of LGBT centers and presidents of LGBT student organizations on college campuses in the U.S. As an additional incentive for participation, participants were given the option of entering an email address to be included in a drawing to win one of two $50 amazon.com gift certificates.

In terms of sample size, Kline (2005) has recommended a cases-to-parameter ratio of at least 5:1 when using maximum likelihood estimation procedures. In the largest path-analytic model included in this study, there were 26 free parameters; therefore, a minimum sample size of 130 lesbian and 130 heterosexual women was needed.

Consistent with findings that exclusive same-sex attractions are rare among lesbian women and that women may label themselves lesbian but experience sexual fluidity, sexual orientation was measured on a continuum (Diamond & Savin-Williams,
Sexual orientation was measured using a 5-point scale: (1) attracted exclusively to the same sex/lesbian, (2) attracted mostly to the same sex, (3) equally attracted to the same and opposite sex/bisexual, (4) attracted mostly to the opposite sex, and (5) attracted exclusively to the opposite sex/heterosexual. Respondents identifying themselves as exclusively or mostly attracted to the same sex (1 or 2) were grouped together to create the lesbian sample, and those indicating that they were attracted exclusively or mostly to the opposite sex (4 or 5) were grouped together to form the heterosexual sample. This is consistent with methods in prior research to compare lesbian and heterosexual women (Peters & Cantrell, 1993).

The data from 266 women (130 lesbian and 136 heterosexual women) were used in the final sample. The participants ranged in age from 17 to 52, with a mean reported age of 24.52 (SD = 7.23). The majority of participants self-identified their racial/ethnic membership as European-American/White (70.3%). The remaining women identified as Latina-American (7.9%), Bi/Multi-racial American (7.5%), African-American/Black (6%), and Asian-American (5.3%). “Other” was chosen by 2.6% of the participants, the majority of whom indicated that they were international students of Asian or Central American origin. One participant did not indicate her racial/ethnic group.

The sample represented approximately 69 academic institutions across the United States and approximately 80 academic majors. The academic majors reported varied widely (e.g., sustainable agriculture, pre-med, education, engineering, physics, linguistics, gender studies, commercial photography, law, social work). The largest concentrations included psychology (22.6%), engineering (5.3%), biology (3%),
interdisciplinary studies (3%), and sociology (3%). Only 3 students (1.1%) indicated that they were undecided.

**Instruments**

*Learning Experience Questionnaire (LEQ).* The LEQ (Schaub, 2004) was used to assess learning experiences. It is a 120-item self-report assessment of individuals’ prior career-related learning experiences. The LEQ was developed rationally to tap each of Bandura’s (1986) four sources of self-efficacy information (i.e., personal performance accomplishments, vicarious learning, social persuasion, and physiological arousal) for each of Holland’s (1997) six RIASEC themes, thus yielding 24 subscales (e.g., Realistic personal performance accomplishments, Realistic vicarious learning, Realistic social persuasion, and Realistic physiological arousal). Participants are asked to rate the extent to which they recall each type of learning experience using a 6-point Likert-type scale ranging from *Strongly Disagree* (1) to *Strongly Agree* (6). For example, an item from the Realistic performance accomplishments scale is “I have been successful when I used tools to work on things.” The physiological arousal scale is reversed scored, with higher scores reflecting lower physiological arousal.

Schaub (2004) supported the content validity of this measure by having three counseling psychologists who are experts in vocational research evaluate the extent to which the items reflected what they were intended to measure, whether the Holland domains were adequately represented, and the clarity of wording. Schaub also reported adequate internal consistency estimates for the LEQ subscales and total scales for samples of female and male college students. With five items designed to tap each of the four types of learning experiences, RIASEC summary scale scores can be obtained by
summing the 20 items that make up each domain. Using these 20-item RIASEC summary scales, Schaub (2004) reported alpha reliability estimates ranging from .72 (Conventional) to .89 (Realistic) (Mdn = .82) in a sample of 222 college students. Construct validity evidence was demonstrated by Schaub and Tokar (2005), who found that LEQ summary scores were related positively to scores for corresponding self-efficacy and outcome expectations.

The current study used the 24 LEQ subscales to obtain scores on each of the four types of learning experiences for each RIASEC theme. For the 24 LEQ subscales, Schaub (2004) initially reported alpha coefficients ranging from .51 (Enterprising vicarious learning) to .84 (Realistic performance accomplishments) (Mdn = .69). However, given that each subscale was comprised only of 5 items, the Spearman-Brown prophecy formula was employed to calculate reliability estimates for 10 items per subscale. This formula calculation resulted in alpha coefficients for LEQ subscales ranging from .68 (Enterprising vicarious learning) to .91 (Realistic performance accomplishments) (Mdn = .82).

Occupational Outcome Expectations (OOE). The OOE (Gore & Leuwerke, 2000) contains 84 occupational titles (e.g., musician, speech therapist), with fourteen occupational titles designed to tap each Holland theme (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional), yielding six 14-item subscales. Participants are asked to indicate the degree to which they believe they would get what they wanted in each occupation using a 9-point scale ranging from 1 (Not very much) to 9 (Very much). A score for each Holland type can be obtained by summing the responses on the fourteen items within the subscale, yielding a subscale total score ranging from 0 to 126.
Across the six Holland themes, the OOE has demonstrated excellent internal consistency estimates (.91, .94, .94, .95, .92, and .96 for R, I, A, S, E, and C, respectively) in a sample of 93 college students (Gore & Leuwerke, 2000). Gore (1996) found that the OOE scores correlated with corresponding vocational interests for each of Holland’s six themes (rs = .36, .60, .56, .70, .57, and .47 for R, I, A, S, E, and C, respectively).

Lent, Brown, Nota, and Soresi (2003) created a 42-item version of the OOE by selecting the seven highest-loading items from each RIASEC based domain in the Gore (1996) study. The 42-item version was be used in the current study as a measure of outcome expectations, self-efficacy and interests. Unpublished data indicate that the internal reliability estimates for the six outcome expectations scales containing seven items each ranged from .87 (Realistic) to .90 (Conventional), and the self-efficacy scales ranged from .87 (Artistic) to .94 (Enterprising) (Gore, 2002).

Lent et al. (2003) used this 42-item scale to measure outcome expectations, self-efficacy and interests by adapting the instructions for each. The self-efficacy measure asked participants to “indicate how much confidence you have in your ability to become a successful worker in each of these occupations” using a 10-point scale (0= No Confidence; 9= Complete Confidence). The instructions for the outcome expectations measure listed a variety of positive outcomes (e.g., independence, creativity, and prestige) that people may consider when thinking about possible occupational choices. Participants were instructed to rate each occupation in terms of the degree to which “you would get what you wanted from that occupation” on a 10-point scale (0= Not Very Much; 9= Very Much). The interests measure asked participants to indicate how much “you think you would like or dislike the work activities that people in each of these
occupations perform” on a 10-point scale (0= Strongly Dislike; 9= Strongly Like). Higher scores on each measure reflect greater self-efficacy, outcome expectations, and interests, respectively.

Lent et al. (2003) found adequate internal reliability estimates in a sample of 796 Italian high school students for the self-efficacy (.86, .92, .82, .87, .89, .94 for RIASEC, respectively), outcome expectations (.84, .91, .85, .86, .90, .94 for RIASEC, respectively), and interest scales (.80, .90, .83, .86, .89, .94 for RIASEC, respectively). Consistent with SCCT, Lent et al.’s interest measure demonstrated positive associations with corresponding measures of self-efficacy, outcome expectations, and occupational considerations across the six RIASEC domains.

Lent et al. (2003) recognized the possibility that including the same 42 occupational titles across the self-efficacy, outcome expectations and interest instruments could inflate the correlations among these constructs, thus overriding any theoretical differences between them. To test this possibility, Lent et al. (2003) performed a series of confirmatory factory analyses (CFAs) to examine the latent structure underlying these measures (also included in the model were measures of occupational considerations, social supports, and social barriers). This analysis involved the comparison of three different structural representations of the data. The first representation of the data was a correlated 2-factor model in which self-efficacy, outcome expectations, interests, and choice considerations composed a single latent dimension, and social supports and social barriers composed a second latent dimension. The second model contained three correlated latent dimensions: (1) self-efficacy and outcome expectations, (2) interest and choice consideration, and (3) social supports and barriers. Overall, these first two models
examined the possibility that the six sets of measures actually represent fewer than six latent dimensions. In the third model, self-efficacy, outcome expectations, interests, choice consideration, social supports, and social barriers were represented as six distinct but correlated latent dimensions.

Lent et al. (2003) tested each of these three basic measurement models six times (i.e., for each of Holland’s [1996] six RIASEC themes). These researchers created item parcels, which are needed for use with CFA, using exploratory factor analysis and fitting single-factor solutions to each measure. The item-factor loadings were then used to form two or three composite indicators for each construct. The results of the CFAs revealed that the fit indices (CFI, NNFI, and RMSEA) generally improved across the RIASEC domains as they moved from the more parsimonious 2- and 3- factor models to the 6-factor measurement model. While the 6-factor model was a relatively better fit, the fit indices were still not considered optimal (e.g., most CFI values were <.90). In order to improve this model-data fit, Lent et al. decided to allow the six sets of measurement errors to covary in the tests for each Holland type. They argued that because the same occupational titles were used across measures, conceptually and empirically, it made sense for the errors to covary. The revised 6-factor models produced adequate-to-good model-data fit statistics (e.g., CFI ranged from .92 to .97; NNFI from .89 to .95). Overall, Lent et al. concluded that their results supported the representation of self-efficacy, outcome expectations, interests, choice consideration, social supports, and social barriers as six distinct but correlated latent dimensions. These results lend support for the use of the same 42 occupations titles across measures of self-efficacy, outcome expectations and interests, which were used in the current study.
Conformity to Feminine Norms Inventory (CFNI). The CFNI (Mahalik et al., 2005) was used to measure gender-role conformity. It is an 84-item self-report measure of conformity to feminine norms in the dominant United States culture. Based on factor analyses of the CFNI items, Mahalik et al. identified eight factors: (a) Nice in Relationships, (b) Thinness, (c) Modesty, (d) Domestic, (e) Care for Children, (f) Romantic Relationship, (g) Sexual Fidelity, and (h) Invest in Appearance. A sample item from the Thinness scale is “I would be happier if I was thinner.” Respondents rate their degree of agreement for each item on a 4-point Likert-type scale ranging from Strongly Disagree (0) to Strongly Agree (3).

The CFNI total score and its subscales have been found to relate in predicted ways to measures of femininity, masculinity, eating disorder symptomology and feminist identity development, thus supporting the validity of this measure (see Mahalik et al., 2005). In a sample of 733 college students, Mahalik et al. reported an alpha reliability estimate of .88 and a 2-3-week stability estimate of .94 for CFNI total scores. In a sample of 257 college students, Tokar et. al. (2007) reported an alpha reliability estimate of the CFNI total scale of .91.

Outness Inventory (OI). The OI (Mohr & Fassinger, 2000) was utilized to measure degree of sexual orientation outness. The OI is composed of 11 items that assess the extent to which a variety of individuals in the respondent’s life know about and openly discuss the respondent’s lesbian, gay or bisexual identity. Each item inquires about a different individual or group of people in the respondent’s life, including mother, father, siblings, extended family and relatives, old and new heterosexual friends, strangers, work peers and supervisors, and members and leaders of one’s religious
community. Respondents are asked to rate each person or group on a 7-point rating scale, with the extremes being: 1 (person definitely does not know about your sexual orientation status), and 7 (person definitely knows about your sexual orientation status, and it is openly talked about).

Based on the results of exploratory and conformity factor analyses with the OI items in samples of 590 lesbians and 414 gay men, Mohr and Fassinger (2000) identified a three-factor structure of the OI: (1) Out to World, (2) Out to Family, and (3) Out to Religion. The alpha reliabilities for these scales were .79, .74 and .94, respectively. In addition to obtaining subscale scores for the OI by summing the items for each of these scales, an overall outness score can be obtained by averaging the total scores for each scale, with higher scores reflecting greater outness.

While level of outness was not directly related to any of the primary hypotheses in this study, this measure was included to examine sexual orientation outness as a potential covariate to social-cognitive variables involved in interest formation. This is important because researchers have examined sexual orientation outness in the workplace (e.g., Croteau & von Destinon, 1994; Griffith & Hebl, 2002; Levine & Leonard, 1984), but no published empirical research has examined the impact of sexual orientation outness on vocational interest formation.

There is some speculation about how sexual orientation outness might relate to vocational interest formation. For example, Morrow, Gore and Campbell (1996) have speculated that some lesbian women might decide to seek employment in environments which would allow them to be out, either because they are politically active or already open about their sexual orientation. Morrow et al. go on to argue that in addition to
impacting the translation of interests into career choices, decisions related to sexual orientation and outness may impact vocational variables through altering outcome expectations. Despite this minimal speculation, it is unclear what role sexual orientation outness might play in the formation of vocational interests for lesbian women.

**Analyses**

The data were analyzed by conducting a series of path models with M-Plus (Muthén & Muthén, 2005), which utilizes maximum likelihood estimation procedures. An initial set of six path analytic models (one for each RIASEC domain) was conducted to examine the contribution of sexual orientation, gender-role conformity, learning experiences, outcome expectations and self-efficacy to corresponding vocational interests using a sample of lesbian and heterosexual women (see Figure 2). The direct and indirect paths in this model were examined to determine the contributions of sexual orientation and gender-role conformity to learning experiences, self-efficacy, outcome expectations, and vocational interests.

Next, a second set of six path models was run to determine if the fit of the SCCT interest model is adequate for lesbian women, and if the direct paths in the model vary based on sexual orientation. This model included the four types of learning experiences, outcome expectations, self-efficacy and interests (see Figure 3). Consistent with the recommendations of Kline (2005), fit was evaluated using four fit indices: (1) the model chi square, (2) the Steiger-Lind root mean square error of approximation (RMSEA; Steiger, 1990), the Bentler comparative fit index (CFI; Bentler, 1990), and the standardized root mean square residual (SRMR). To determine if the proposed model differs by sexual orientation, a multiple group analysis was conducted for each RIASEC
domain. This involves two steps. In the first set of models, the values of the hypothesized structural paths were allowed to vary between lesbian and heterosexual women. In the next step, the values of the structural paths were constrained to be equal in the lesbian and heterosexual samples. The chi-square difference statistic was used to determine if constraining the structural paths to be equal in the two groups resulted in a significantly worse fit, which would indicate that the model varies by sexual orientation.
CHAPTER IV

RESULTS

Data Screening

Prior to proceeding with data analyses, SPSS 12.0 was utilized to screen the data and conduct a missing values analysis (MVA). A total of 425 participants agreed to the informed consent and entered the online survey. Of these, 129 participants quit the survey prior to reaching the demographic information page. These cases were dropped from the analyses, as information about sexual orientation was not available for them. Three additional participants who completed the survey were excluded from analyses because they did not answer the question related to sexual orientation. Twenty-four participants selected “bisexual” to describe her sexual orientation, and they were excluded from further analyses.

The data from the remaining 269 participants were subjected to MVA to identify the percentage of missing data for each participant, and to determine patterns of missing data. Overall, the amount of missing data was small, with 98.5% of the sample having less than 3.5% missing data. There were three cases with greater than 10% missing data. Closer examination of these cases revealed that two of these participants had not completed an entire measure (OE), and one had not completed most of the LEQ. These cases included two heterosexual participants and one lesbian participant. Because the
proportion of missing data was great for these participants, and the MVA did not reveal any connection between the missing data and hypotheses, these cases were deleted from the analyses.

Next, Expectation Maximization (EM) procedures were used to substitute missing values for the remaining 266 cases (i.e., cases with less than 10% missing data). This estimation procedure was chosen for several reasons. First, it is preferred to other methods such as mean substitution, because it adds a degree of random error to the estimates to avoid bias (Howell, 2007). Second, Schlomer, Bauman, and Card (2010) found that maximum likelihood procedures, of which EM is a type, can provide acceptable estimates of regression coefficients and standard errors across samples with 10% and 20% missing data.

Finally, univariate normality was assessed by examining skew and kurtosis values for each scale included in the analyses. Kline (2005) cautions that an absolute skew value index greater than 3.0, and an absolute kurtosis value greater than 10 is indicative of extreme skew and kurtosis, respectively. None of the variables in the current study violated this guideline, and therefore all variables satisfied the assumption of univariate normality. The final sample included 266 women, 130 identifying as lesbian and 136 identifying as heterosexual.

**Descriptive Statistics**

Means, standard deviations, and alpha reliabilities were computed for all variables included in the analyses for the full sample, and separately for lesbian and heterosexual women (See Table 1).
For the full sample, coefficient alphas for the outcome expectations, self-efficacy and interests measures were good and consistent with previous research (Lent et al., 2003). The coefficient alphas for the outcome expectations measure were .86, .90, .91, .91, .95, and .95 for R, I, A, S, E, and C, respectively. For the measure of self-efficacy, coefficient alphas were .90, .91, .87, .89, .94, and .95 for R, I, A, S, E, and C, respectively. Coefficient alphas for the interest scale were .86, .90, .91, .91, .93, and .95 for R, I, A, S, E, and C, respectively. These values were consistent for lesbian and heterosexual women. Alpha coefficients for the LEQ in the full sample ranged from .46 (Social performance accomplishments) to .84 (Realistic performance accomplishments) (Mdn= .70). These are similar to the reliability estimates reported by Schaub (2003). Consistent with recommendations by Schaub (2003) the Spearman-Brown Prophecy Formula was calculated to determine the reliability of 10-item LEQ subscales. This resulted in all subscales obtaining reliability greater than .64, with the exception of Social performance accomplishments, which was .51 after the correction. Finally, the CFNI total scale coefficient alpha was .90, and was consistent for lesbian and heterosexual women.

A series of independent samples t-tests were run to determine if lesbian and heterosexual women differed on any of the 43 variables of interest. The two groups differed on six of the 24 LEQ domains: Realistic performance accomplishments (t[264] = 2.80, p<.05), Realistic verbal persuasion (t[264] = 2.17, p<.05), Realistic physiological arousal (t[264] = 3.79, p<.001), Investigative performance accomplishments(t[264] = 2.28, p<.05), Investigative Physiological Arousal (t[264] = 3.19, p<.05), and Enterprising Performance Accomplishments (t[264] = 2.14, p<.05). Lesbian women reported more
experiences in each of these domains than heterosexual women. Recall that physiological arousal is reverse scored, so higher scores for lesbian women reflect less negative physiological arousal when performing Realistic and Investigative related tasks.

Lesbian women and heterosexual women differed on four of the six RIASEC domains on the outcome expectations measure: Realistic outcome expectations ($t[264] = 2.24, p < .05$), Social outcome expectations ($t[264] = -2.22, p < .05$), Enterprising outcome expectations ($t[257.34] = -3.21, p < .01$), and Conventional outcome expectations ($t[250.58] = -3.26, p < .01$). Heterosexual women reported higher outcome expectations than lesbian women for Social, Enterprising and Conventional careers, while lesbian women had higher outcome expectations for Realistic careers.

Lesbian and heterosexual women differed on two of six self-efficacy domains: Realistic self-efficacy ($t[264] = 4.05, p < .001$), and Social self-efficacy ($t[264] = -2.34, p < .05$). Lesbian women expressed greater self-efficacy for occupations in the Realistic domain, while heterosexual women expressed greater self-efficacy for occupations in the Social domain. The two groups differed on four of six interest domains: Realistic interests ($t[256.54] = 3.46, p < .01$), Social interests ($t[264] = -2.65, p < .01$), Enterprising interests ($t[260] = -3.41, p < .01$), and Conventional interests ($t[241.67] = -3.83, p < .001$). Heterosexual women expressed greater interests in occupations in the Social, Enterprising, and Conventional domains, while lesbian women reported greater interests in Realistic occupations. Finally, the two groups differed on CFNI scores ($t[264] = -4.06, p < .001$), with heterosexual women reporting greater conformity to feminine role norms than lesbian women.
Table 1

Means, Standard Deviations, and Alpha Coefficients for Measures of Learning Experiences, Outcome Expectations, Self-Efficacy, Interests and Conformity to Feminine Role Norms for Lesbian Women, Heterosexual Women, and the Full Sample

<table>
<thead>
<tr>
<th>Scale</th>
<th>Lesbian (n=130)</th>
<th></th>
<th>Heterosexual (n=136)</th>
<th></th>
<th>Full Sample (N= 266)</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>Alpha</td>
<td>M</td>
<td>SD</td>
<td>Alpha</td>
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<td>LEQ</td>
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<td>Accomplishments</td>
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<td>5.84</td>
<td>.86</td>
<td>18.66</td>
<td>5.45</td>
<td>.81</td>
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<td>16.54</td>
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<td>.73</td>
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Correlations Among the Variables

Correlations were computed separately for lesbian and heterosexual women, and are presented in Tables 2-7. Given the increase in family-wise error when computing multiple correlations, the more stringent alpha level of .01 was used to determine significance. Across both groups and RIASEC domains, self-efficacy, outcome expectations and interests were strongly correlated in the positive direction. Of 42 possible relationships, the Outness Inventory total score was correlated only marginally with four social-cognitive variables. This included Social self-efficacy ($r[128] = .21, p < .05$), Social performance accomplishments ($r[128] = .26, p < .01$), Enterprising performance accomplishments ($r[128] = .24, p < .01$), and Conventional performance accomplishments ($r[128] = .31, p < .01$). Outness Inventory total scores were unrelated to CFNI scores. Therefore, the Outness Inventory was excluded from further analysis.

In the Realistic domain, a lesbian sexual orientation was related to higher reported performance accomplishments, verbal persuasion, outcome expectations, self-efficacy, interests, and physiological arousal than heterosexual women. In the Investigative domain, a lesbian orientation was indicative of greater reported performance accomplishments and physiological arousal. In the Social domain, a lesbian orientation was related to lower reported self-efficacy, outcome expectations, and interests as compared to heterosexual women. In the Enterprising domain, a lesbian sexual orientation was related to more reported performance accomplishments, lower outcome expectations, and lower interests than heterosexual women. In the Conventional domain, a lesbian orientation was related to lower outcome expectations, and lower interests than...
heterosexual women. Sexual orientation was not significantly related to any of the socio-cognitive variables or Interests in the Artistic domain.

Sexual orientation was positively correlated with CFNI scores, indicating that a heterosexual orientation was related to higher conformity to feminine norms. CFNI scores were unrelated to learning experiences, self-efficacy, outcome expectations, and interests for Realistic, Investigative, and Conventional domains for heterosexual women. CFNI scores were most related to socio-cognitive variables in the Social domain for heterosexual women, with significant positive relationships between CFNI scores and three of the four types of learning experiences (physiological arousal is the exception), self-efficacy, outcome expectations, and interests.

For lesbian women, CFNI scores were significantly related negatively to Realistic outcome expectations and Realistic interests, positively related to Artistic performance accomplishments, Artistic vicarious learning, and Artistic physiological arousal, positively related to Social performance accomplishments, Social verbal persuasion, and Social outcome expectations, positively related to Enterprising verbal persuasion, and positively related to Conventional verbal persuasion and Conventional interests.
Table 2

Correlations Among Realistic Learning Experiences, Realistic Outcome Expectations, Realistic Self-Efficacy, Realistic Interests, Conformity to Feminine Norms and Sexual Orientation

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Note. The data for women identifying as lesbian are above the diagonal (n = 130), and data for women identifying as heterosexual are below the diagonal (n = 136). Correlations involving sexual orientation are for the entire sample (N=266). Sexual orientation is coded 0=lesbian and 1=heterosexual. * denotes significance at .01.
Table 3

Correlations Among Investigative Learning Experiences, Investigative Outcome Expectations, Investigative Self-Efficacy, Investigative Interests, Conformity to Feminine Norms and Sexual Orientation

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Note. The data for women identifying as lesbian are above the diagonal (n = 130), and data for women identifying as heterosexual are below the diagonal (n = 136). Correlations involving sexual orientation are for the entire sample (N=266). Sexual orientation is coded 0= lesbian and 1=heterosexual. * denotes significance at .01.
Table 4

*Correlations Among Artistic Learning Experiences, Artistic Outcome Expectations, Artistic Self-Efficacy, Artistic Interests, Conformity to Feminine Norms and Sexual Orientation*

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</table>

Note. The data for women identifying as lesbian are above the diagonal (n = 130), and data for women identifying as heterosexual are below the diagonal (n = 136). Correlations involving sexual orientation are for the entire sample (N=266). Sexual orientation is coded 0=lesbian and 1=heterosexual. * denotes significance at .01.
Table 5

*Correlations Among Social Learning Experiences, Social Outcome Expectations, Social Self-Efficacy, Social Interests, Conformity to Feminine Norms and Sexual Orientation.*

<table>
<thead>
<tr>
<th>Variable</th>
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</table>

Note. The data for women identifying as lesbian are above the diagonal (n = 130), and data for women identifying as heterosexual are below the diagonal (n = 136). Correlations involving sexual orientation are for the entire sample (N=266). Sexual orientation is coded 0=lesbian and 1=heterosexual. * denotes significance at .01.
Table 6

Correlations Among Enterprising Learning Experiences, Enterprising Outcome Expectations, Enterprising Self-Efficacy, Enterprising Interests, Conformity to Feminine Norms and Sexual Orientation

<table>
<thead>
<tr>
<th>Variable</th>
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</table>

Note. The data for women identifying as lesbian are above the diagonal (n = 130), and data for women identifying as heterosexual are below the diagonal (n = 136). Correlations involving sexual orientation are for the entire sample (N=266). Sexual orientation is coded 0= lesbian and 1= heterosexual. * denotes significance at .01.
Table 7

*Correlations Among Conventional Learning Experiences, Conventional Outcome Expectations, Conventional Self-Efficacy, Conventional Interests, Conformity to Feminine Norms and Sexual Orientation*

<table>
<thead>
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<td>.24*</td>
<td>x</td>
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</tbody>
</table>

Note. The data for women identifying as lesbian are above the diagonal (n = 130), and data for women identifying as heterosexual are below the diagonal (n = 136). Correlations involving sexual orientation are for the entire sample (N=266). Sexual orientation is coded 0= lesbian and 1=heterosexual. * denotes significance at .01.

Path Model Results

The first set of path analyses addressed the relationship between sexual orientation, conformity to feminine role norms, and socio-cognitive variables in the prediction of interests for a sample of lesbian and heterosexual women. Consistent with recommendations by Kline (2005), reasonably good model-data fit was concluded if the following criteria were met: (1) a non-significant model chi square value, (2) a CFI value greater than .90, (3) a RMSEA value less than .08, and a SRMR value less than .10. The fit statistics for the six RIASEC models are summarized in Table 8.

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The initial set of path models indicated very poor fit to the data across RIASEC domains. Model modification indices across RIASEC domains indicated that allowing the disturbances (unexplained variance) for the four learning experience variables within each model to correlate would improve fit. Given that the learning experience variables were part of the same inventory, it is reasonable that they share at least one common cause that is not included in the model. Therefore, a second set of six RIASEC models was tested that allowed the disturbances of the four learning experiences to correlate, and the fit statistics are included in Table 8 under “Modified.”

The modified Investigative, Artistic, and Enterprising models fit the data well according to all four indices of fit. The results for the modified Realistic, Social and Conventional Models were somewhat more mixed. The Realistic model fit well according to two of the four fit indices. The Social model fit well according to two of four indices of fit. The Conventional model fit well according to three of the four indices of fit, with the chi-square just reaching significance. In all three of these models, the model chi-square was significant. According to Kline (2005) the model chi-square is sensitive to sample size, and as sample size increases the chance of rejecting the null increases even though differences between observed and predicted covariances is small (Kline, 2005). Also, in the Social and Realistic models, the RMSEA values approached but did not meet values indicative of good fit. Therefore, the Realistic, Social and Conventional models demonstrated adequate model data fit. Overall, the set of social-cognitive variables, sexual orientation, and conformity to feminine role norms jointly accounted for 61%, 72%, 73%, 81%, 79%, and 77% of the variance in interests respectively for R, I, A, S, E, and C.
Table 8

Fit Statistics for the Six Initial and Modified RIASEC Models

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<th>Path Model</th>
<th>Model $\chi^2$ (df)</th>
<th>CFI</th>
<th>RMSEA</th>
<th>SRMR</th>
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</table>

Note. Criteria for interpreting good model-data fit included: a non-significant model chi square value, a CFI value greater than .90, a RMSEA value less than .08, and a SRMR value less than .10.

*p<.05, **p<.01

Figure 4. Standardized path coefficients for the Realistic Model. *p<.05. **p<.01.
Figure 5. Standardized path coefficients for the Investigative Model. *$p<.05$. **$p<.01$. 

Figure 6. Standardized path coefficients for the Artistic Model. *$p<.05$. **$p<.001$. 

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Figure 7. Standardized path coefficients for the Social Model. *$p<.05$. **$p<.001$. 

Figure 8. Standardized path coefficients for the Enterprising Model. *$p<.05$. **$p<.001$. 

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Hypothesis 1. Consistent with my first hypothesis, the results indicated that sexual orientation had a significant positive relationship with conformity to feminine role norms. This indicates that lesbian women, as a group, reported lower conformity to traditional feminine gender-roles than heterosexual women in the sample.

Hypotheses 2A-2F. My second hypothesis concerned the relationship between conformity to feminine role norms and learning experiences. I hypothesized that conformity to feminine norms would be negatively related to learning experiences in the Realistic, Investigative, and Enterprising domains, and positively related to learning experiences in the Social, Artistic and Conventional domains. This hypothesis received mix support. In all but one domain (Realistic), CFNI scores were significantly related to at least one type of vocational learning experience. These relationships were in the predicted direction, with the exception of Enterprising Learning Experiences and CFNI scores.
2A. Contrary to this hypothesis, conformity to feminine norms was not significantly related to any of the four types of learning experiences in the Realistic domain.

2B. Conformity to feminine role norms was significantly and negatively related to two of the four types of Investigative learning experiences (Investigative performance accomplishments [β=-.12], and Investigative physiological arousal [β=-.13]), which partially supports this hypothesis.

2C. In partial support of this hypothesis, conformity to feminine role norms was significantly and positively related to Artistic vicarious learning experiences (β=.12).

2D. Consistent with this hypothesis, conformity to feminine role norms was significantly and positively related to three of the four Social learning experiences domains (Social performance accomplishments [β=.34], Social verbal persuasion [β=.26], and Social vicarious learning [β=.25]).

2E. Contrary to my hypothesis, conformity to feminine role norms was positively and significantly related to two Enterprising learning experience domains (Enterprising verbal persuasion [β=.15], and Enterprising vicarious learning [β=.15]).

2F. Providing partial support for my hypothesis, conformity to feminine role norms was significantly and positively related to one of four types of Conventional learning experiences (Conventional verbal persuasion [β=.15]).

Hypotheses 3A-3F. I hypothesized that the four types of learning experiences each would relate positively to self-efficacy beliefs across RIASEC models. The most consistent and robust finding was observed between performance accomplishments and self-efficacy, with these variables being significantly and positively related in all six
RIASEC models. Also consistent was the relationship between physiological arousal and self-efficacy, with this relationship significant and positive in five of six RIASEC domains (the exception being Social). By contrast, vicarious learning failed to significantly predict self-efficacy in any of the RIASEC models. These null findings could be due to the relatively low alpha reliability values associated with some of the learning experience domains, as low reliability can attenuate relationships among variables (Kline, 2005).

3A. In the Realistic model, two of the four types of Realistic learning experiences related positively to Realistic self-efficacy (Realistic performance accomplishments [β=.31] and Realistic physiological arousal [β=.23]).

3B. In the Investigative model, two of the four types of Investigative learning experiences related positively to Investigative self-efficacy (Investigative performance accomplishments [β=.34] and Investigative physiological arousal [β=.22]).

3C. In the Artistic model, three of the four types of Artistic learning experiences were significantly and positively related to Artistic self-efficacy (Artistic performance accomplishments [β=.22], Artistic verbal persuasion [β=.32], and Artistic physiological arousal [β=.29]).

3D. In the Social model, only Social performance accomplishments (β=.40) was significantly and positively related to Social self-efficacy.

3E. In the Enterprising model, three of the four types of Enterprising learning experiences were related positively and significantly to Enterprising self-efficacy (Enterprising performance accomplishments [β=.29], Enterprising verbal persuasion [β=.24], and Enterprising physiological arousal [β=.15]).
In the Conventional model, two of the four Conventional learning experiences domains were related significantly and positively to Conventional self-efficacy (performance accomplishments \( \beta = .26 \) and physiological arousal \( \beta = .15 \)).

**Hypotheses 4A-4F.** I hypothesized that the four types of learning experiences each relate positively to outcome expectations across RIASEC domains. Performance Accomplishments seemed to be the most consistent predictor of outcome expectations, with significant relationships between these variables in four of the six domains (the exceptions were Artistic and Conventional). Interestingly, three of these four relationships were in the negative direction (Investigative, Social, and Enterprising). Verbal persuasion only significantly predicted Enterprising and Conventional outcome expectations. Physiological arousal significantly predicted only Artistic and Conventional outcome expectations, and these were both in the negative direction. Vicarious leaning was not significantly related to outcome expectations in any model.

4A. Only Realistic performance accomplishments related significantly and positively to outcome expectations \( (\beta = .19) \).

4B. Investigative performance accomplishments was significantly related to outcome expectations \( (\beta = .13) \); however, contrary to expectations this relationship was negative.

4C. Artistic physiological arousal was significantly related to outcome expectations \( (\beta = -.19) \); however, contrary to expectations, this relationship was negative.

4D. Social performance accomplishments was significantly related to outcome expectations \( (\beta = -.11) \); however, contrary to expectations, this relationship was negative.
4E. Enterprising performance accomplishments ($\beta = -0.23$) and Enterprising verbal persuasion ($\beta = 0.19$) were significantly related to outcome expectations. While verbal persuasion was positively related to outcome expectations as hypothesized, performance accomplishments were negatively related to outcome expectations, which was contrary to my hypothesis.

4F. Conventional verbal persuasion ($\beta = 0.12$) and Conventional physiological arousal ($\beta = -0.15$) were both significantly related to outcome expectations. As hypothesized, verbal persuasion was positively related to outcome expectations. Contrary to my hypothesis, physiological arousal was related negatively to outcome expectations.

Hypotheses 5A-5F. I hypothesized that self-efficacy demonstrates a positive relationship with outcome expectations across RIASEC domains. This hypothesis was strongly supported. In all six RIASEC models, self-efficacy was strongly and positively related to outcome expectations ($\beta$’s ranging from 0.45 to 0.77).

Hypotheses 6A-6F. I hypothesized that self-efficacy demonstrates a positive relationship with vocational interests across RIASEC domains. This hypothesis was strongly supported. In all six RIASEC models, self-efficacy was strongly and positively related to interests. Specifically, direct effects ranged from 0.12 to 0.37. Furthermore, total effects (direct plus indirect effects, via outcome expectations) ranged from 0.60 to 0.81.

Hypotheses 7A-7F. I hypothesized that outcome expectations demonstrate a positive relationship with vocational interests across RIASEC models. This hypothesis
was strongly supported. In all six RIASEC models, outcome expectations were strongly and positively related to interests, with direct effects ranging from .50 to .80.

**Hypotheses 8A-8F.** I hypothesized that sexual orientation demonstrates a direct relationship with vocational interests across RIASEC domains. Specifically, I hypothesized that a heterosexual orientation directly and positively relates to interests in Artistic, Social and Conventional themes, and directly and negatively relates to interests in Realistic, Investigative and Conventional themes. Sexual orientation was significantly related to vocational interests in the Enterprising ($\beta = .06$) and Conventional models ($\beta = .08$), and these relationships were both positive. This indicates that a heterosexual orientation was related to greater interests in the Enterprising (contrary to my hypothesis) and Conventional domains (consistent with my hypothesis). Contrary to my hypothesis, sexual orientation was not significantly directly related to interests in Realistic, Investigative, Artistic, or Social occupations.

**Hypotheses 9A-F.** In each of the RIASEC models, I hypothesized that personal performance accomplishments, vicarious learning, verbal persuasion, and physiological arousal demonstrate an indirect relationship to outcome expectations via self-efficacy. This hypothesis received mixed support (see Table 9 for a summary of indirect effects). This hypothesis held most strongly for personal performance accomplishments. In all six models, personal performance accomplishments were significantly and indirectly related to outcome expectations via self-efficacy. In contrast, vicarious learning did not relate significantly to outcome expectations indirectly via self-efficacy in any of the six models.
In the Social model, only one type of learning experience related to corresponding outcome expectations indirectly via self-efficacy (Social performance accomplishments).

In three models (Realistic, Investigative, and Conventional), only two types of learning experiences related to corresponding outcome expectations indirectly via self-efficacy, and in all three cases the significant relationship involved performance accomplishments and physiological arousal. Finally in two models (Artistic and Enterprising), three of the four types of learning experiences were related to corresponding outcome expectations significantly and indirectly via self-efficacy (performance accomplishments, verbal persuasion, and physiological arousal).

9A. In the Realistic model, only Realistic performance accomplishments ($\beta = .14$) and physiological arousal ($\beta = .10$) demonstrated an indirect relationship with outcome expectations via self-efficacy.

9B. In the Investigative model, only Investigative performance accomplishments ($\beta = .22$) and physiological arousal ($\beta = .15$) demonstrated an indirect relationship with outcome expectations via self-efficacy.

9C. In the Artistic model, Artistic performance accomplishments ($\beta = .16$), verbal persuasion ($\beta = .23$), and physiological arousal ($\beta = .21$) demonstrated an indirect relationship with outcome expectations via self-efficacy.

9D. In the Social model, only Social performance accomplishments ($\beta = .31$) demonstrated an indirect relationship with outcome expectations via self-efficacy.

9E. In the Enterprising model, Enterprising performance accomplishments ($\beta = .20$), verbal persuasion ($\beta = .17$), and physiological arousal ($\beta = .10$) demonstrated an indirect relationship with outcome expectations via self-efficacy.
In the Conventional model, only Conventional performance accomplishments ($\beta = .16$) and physiological arousal ($\beta = .09$) demonstrated an indirect relationship with outcome expectations via self-efficacy.

**Hypotheses 10A-10F.** I hypothesized that self-efficacy would significantly relate to corresponding vocational interests indirectly via outcome expectations in each of the six RIASEC models. This hypothesis was strongly supported. In each of the six RIASEC models, self-efficacy related significantly to corresponding vocational interests indirectly via outcome expectations, with indirect effects ranging from .22 (Realistic) to .52 (Enterprising) (see Table 9).

**Hypotheses 11A-11F.** I hypothesized that the relationship between sexual orientation and the four types of learning experiences in each RIASEC model is indirect via conformity to gender-role norms. This hypothesis received mixed support. In the Realistic and Investigative models, none of the indirect relationships between sexual orientation and the corresponding learning experiences were significant. This hypothesis received the greatest support in the Social model. The relationship between sexual orientation and Social vicarious learning, Social verbal persuasion, and Social performance accomplishments was indirect via gender-role conformity.

11A. In the Realistic model, sexual orientation did not relate to any of the four types of learning experiences indirectly via gender-role conformity.
11B. In the Investigative model, sexual orientation did not relate to any of the four types of learning experiences indirectly via gender-role conformity.

11C. In the Artistic model, sexual orientation related significantly to Artistic vicarious learning indirectly via gender-role conformity ($\beta = .04$).

11D. In the Social model, sexual orientation related significantly to Social vicarious learning ($\beta = .06$), Social verbal persuasion ($\beta = .06$), and Social performance accomplishments ($\beta = .08$) indirectly via gender-role conformity.

11E. In the Enterprising model, sexual orientation related significantly to Enterprising verbal persuasion ($\beta = .04$) and Enterprising vicarious learning ($\beta = .04$) indirectly via gender-role conformity.

11F. In the Conventional model, sexual orientation related significantly to Conventional verbal persuasion indirectly via gender-role conformity ($\beta = .04$).

Table 9.

**Summary of Standardized Coefficients for Direct, Indirect, and Total Effects**

<table>
<thead>
<tr>
<th>Indirect Path</th>
<th>R</th>
<th>I</th>
<th>A</th>
<th>S</th>
<th>E</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO → PA via CFNI</td>
<td>.01</td>
<td>-.02</td>
<td>.02</td>
<td>.08**</td>
<td>.02</td>
<td>.02</td>
</tr>
<tr>
<td>SO → VP via CFNI</td>
<td>-.01</td>
<td>.00</td>
<td>-.01</td>
<td>.06**</td>
<td>.04*</td>
<td>.04*</td>
</tr>
<tr>
<td>SO → VL via CFNI</td>
<td>.02</td>
<td>.01</td>
<td>.04*</td>
<td>.06**</td>
<td>.04*</td>
<td>.01</td>
</tr>
<tr>
<td>SO → PhA via CFNI</td>
<td>.00</td>
<td>-.02</td>
<td>.01</td>
<td>.02</td>
<td>.02</td>
<td>-.01</td>
</tr>
<tr>
<td>SE → Interests via OE</td>
<td>.37**</td>
<td>.31**</td>
<td>.32**</td>
<td>.30**</td>
<td>.20**</td>
<td>.12**</td>
</tr>
<tr>
<td>Direct Effect</td>
<td>.22**</td>
<td>.40**</td>
<td>.44**</td>
<td>.50**</td>
<td>.52**</td>
<td>.50**</td>
</tr>
<tr>
<td>Indirect Effect</td>
<td>.60**</td>
<td>.70**</td>
<td>.76**</td>
<td>.81**</td>
<td>.71**</td>
<td>.62**</td>
</tr>
<tr>
<td>Total Effect</td>
<td>.37**</td>
<td>.31**</td>
<td>.32**</td>
<td>.30**</td>
<td>.20**</td>
<td>.12**</td>
</tr>
</tbody>
</table>
Hypothesis 12A-F. I hypothesized that the data obtained from a sample of lesbian women would demonstrate at least an adequate fit to SCCT’s interest model for each RIASEC domain. The model being tested included the four types of learning experiences (i.e., social persuasion, vicarious learning, personal performance accomplishments and physiological arousal), self-efficacy, outcome expectations, and interests (see Figure 3).

The chi-square value, CFI, RMSEA, and SRMR for each RIASEC model is presented in Table 10. The results for Investigative, Artistic, and Conventional models indicated good model-data fit across all four indices. The results for the Realistic,
Social, and Enterprising models were more mixed. While three indices indicate good fit of the data to the Realistic model, the RMSEA value was just above the .08 cutoff. The Social and Enterprising models demonstrated good fit according to two of the four indices of fit. While both models had CFI and SRMR values that indicated good fit, the chi-square values reached significance, and the RMSEA values were just above the cutoff. No modification indices were suggested for any of these three models. Therefore, the Realistic, Social, and Enterprising models seem to demonstrate adequate fit to the data. The RIASEC models with the standardized path coefficients for lesbian women are presented in Figures 10-15. The corresponding standardized path coefficients for heterosexual women are presented in parentheses. For lesbian women, the variance accounted for in interests by the set of socio-cognitive variables was 62%, 75%, 70%, 82%, 76%, and 73% for R, I, A, S, E, and C, respectively. The corresponding values for heterosexual women were 60%, 71%, 76%, 81%, 80%, and 79% for R, I, A, S, E and C, respectively.
### Table 10

**Fit Statistics for the Six RIASEC Models for Lesbian Women (n=130)**

<table>
<thead>
<tr>
<th>Path Model</th>
<th>Model $\chi^2$ (df)</th>
<th>CFI</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realistic</td>
<td>9.36 (4)</td>
<td>.98</td>
<td>.10</td>
<td>.03</td>
</tr>
<tr>
<td>Investigative</td>
<td>2.10 (4)</td>
<td>1.0</td>
<td>.00</td>
<td>.01</td>
</tr>
<tr>
<td>Artistic</td>
<td>5.98 (4)</td>
<td>.99</td>
<td>.06</td>
<td>.02</td>
</tr>
<tr>
<td>Social</td>
<td>9.87 (4)*</td>
<td>.98</td>
<td>.11</td>
<td>.02</td>
</tr>
<tr>
<td>Enterprising</td>
<td>12.49 (4)*</td>
<td>.97</td>
<td>.13</td>
<td>.02</td>
</tr>
<tr>
<td>Conventional</td>
<td>7.23 (4)</td>
<td>.99</td>
<td>.06</td>
<td>.02</td>
</tr>
</tbody>
</table>

Note. Criteria for interpreting good model-data fit included: a non-significant model chi square value, a CFI value greater than .90, a RMSEA value less than .08, and a SRMR value less than .10.

*p < .05, **p < .01

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**Figure 10.** Standardized path coefficients for lesbian and heterosexual women for the Realistic Model. *p < .05. **p < .001. Values for heterosexual women are in parentheses.
Figure 11. Standardized path coefficients for lesbian and heterosexual women for the Investigative Model. *$p<.05$. **$p<.001$. Values for heterosexual women are in parentheses.

Figure 12. Standardized path coefficients for lesbian and heterosexual women for the Artistic Model. *$p<.05$. **$p<.001$. Values for heterosexual women are in parentheses.
Figure 13. Standardized path coefficients for lesbian and heterosexual women for the Social Model. *$p<.05$. **$p<.001$. Values for heterosexual women are in parentheses.

Figure 14. Standardized path coefficients for lesbian and heterosexual women for the Enterprising Model. *$p<.05$. **$p<.001$. Values for heterosexual women are in parentheses.
Figure 15. Standardized path coefficients for lesbian and heterosexual women for the Conventional Model. *$p<.05$. **$p<.001$. Values for heterosexual women are in parentheses.

Hypothesis 13A-13F. I hypothesized that each of the six RIASEC models would demonstrate structural invariance across sexual orientation. In order to test this hypothesis, a series of multiple groups path analyses were conducted to compare the estimates of the unstandardized direct effects across lesbian and heterosexual women. First, I obtained chi-square values for each RIASEC model allowing all direct paths to be estimated freely in the two groups. Then, I imposed cross-group equality constraints to obtain a second set of chi-square values. By examining the change in the chi-square values when applying these equality constraints, I determined if the unconstrained model fit significantly better than the constrained model. If the difference in fit is associated with a significant $p$-value, it indicates that constraining the model resulted in a worse fit,
and therefore, the structural paths are not invariant across the two groups (lesbian and heterosexual women). The results of this analysis are presented in Table 11. The standardized path coefficients for the two groups are presented in Figures 10-15.

As indicated in Table 11, the difference in chi-square values for the constrained and unconstrained models was not significant for the Realistic, Artistic, Social, and Enterprising models. This demonstrated invariance across sexual orientation for the Realistic, Artistic, Social and Enterprising models. The chi-square values for the constrained and unconstrained models were significantly different for the Investigative and Conventional models, indicating that at least some of the relationships in these models differed for lesbian and heterosexual women.

In order to identify the specific paths that differed for lesbian and heterosexual women, I compared the Investigative model in which all of the direct path coefficients were constrained to be equal across groups to a series of models in which one set of path coefficients at a time were allowed to vary between the two groups. This same procedure was repeated with the Conventional model.

For the Investigative model, allowing the path from self-efficacy to interests to vary between groups improved the fit relative to the fully constrained model ($\Delta \chi^2[10] = 13.90, p= .18$). An examination of the unstandardized path coefficients revealed that the path from self-efficacy to interests was .464 for lesbian women, and .108 in heterosexual women. While there is a strong positive correlation between Investigative self-efficacy and interests for lesbian women, this relationship was not significant in the heterosexual sample. With this path freed, the p-value was no longer significant, indicating that the remaining paths were consistent across sexual orientation.
In the Conventional model, releasing the constraint on the path from Conventional vicarious learning to Conventional outcome expectations improved the fit of the model relative to the unconstrained model ($\Delta \chi^2[10] = 17.45, p = .07$). Examining the unstandardized path coefficients revealed that this path was -.46 for lesbian women and .45 for heterosexual women. While Conventional Vicarious learning experiences had a significant negative relationship with outcome expectations for lesbian women, this path was not significant in the heterosexual sample.

Table 11.

*Tests of Structural Invariance Across Sexual Orientation for the six RIASEC models.*

<table>
<thead>
<tr>
<th>Path Model</th>
<th>Constrained $\chi^2$</th>
<th>Unconstrained $\chi^2$</th>
<th>$\chi^2$ Difference</th>
<th>df</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realistic</td>
<td>31.42</td>
<td>17.88</td>
<td>13.54</td>
<td>11</td>
<td>.26</td>
</tr>
<tr>
<td>Investigative</td>
<td>32.40</td>
<td>11.02</td>
<td>21.38</td>
<td>11</td>
<td>.03*</td>
</tr>
<tr>
<td>Artistic</td>
<td>28.64</td>
<td>14.48</td>
<td>14.16</td>
<td>11</td>
<td>.22</td>
</tr>
<tr>
<td>Social</td>
<td>28.87</td>
<td>12.84</td>
<td>16.02</td>
<td>11</td>
<td>.14</td>
</tr>
<tr>
<td>Enterprising</td>
<td>29.00</td>
<td>15.09</td>
<td>13.91</td>
<td>11</td>
<td>.24</td>
</tr>
<tr>
<td>Conventional</td>
<td>39.36</td>
<td>12.50</td>
<td>26.86</td>
<td>11</td>
<td>&lt;.01**</td>
</tr>
</tbody>
</table>

Note. Significant p-values indicate that the corresponding model varies by sexual orientation.

*p<.05, **p<.01.
CHAPTER V
DISCUSSION

The purpose of the present study was to extend current understanding of lesbians’ experiences prior to vocational choice implementation by examining the factors that give rise to lesbians’ vocational interests. First, the contributions of sexual orientation, gender-role conformity, and social cognitive variables to vocational interests were examined by using a sample of women that identify as predominately heterosexual or predominately lesbian. Because much of the literature examining the career development of lesbian women has failed to use established theories of vocational development, Social Cognitive Career Theory (SCCT) was chosen as a guiding framework. SCCT has been extended conceptually, and in some cases empirically, to diverse racial, ethnic, and minority groups. Within this framework, sexual orientation can be understood as a basic person input. Consistent with theorizing by Morrow, Gore and Campbell (1995), sexual orientation was hypothesized to impact vocational learning experiences and interests indirectly via gender-role conformity. This hypothesis received mixed support.

Consistent with theoretical speculation, lesbian women, as a group, reported lower conformity to traditional feminine gender-role norms than heterosexual women (e.g., Browning, Reynolds, & Dworkin, 1991; Garnets & Kimmel, 1991; Morgan & Brown, 1991). Overall, sexual orientation was found to impact vocational learning experiences indirectly via gender-role conformity in the Artistic, Social, and Enterprising
domains. Sexual orientation directly impacted interests in the Enterprising and Conventional domains.

Next, I examined the extent to which a model consistent with SCCT, containing vocational learning experiences, self-efficacy, outcome expectations, and interests explains the data obtained from a sample of lesbian women only. This analysis was conducted to determine the applicability of the SCCT model to explain variance in lesbians’ vocational interests. Based on several indices of fit, the Investigative, Artistic, and Conventional models fit the data from lesbian women well, and the Realistic, Social, and Enterprising models fit adequately.

Finally, a test of structural invariance was conducted to compare the fit of the SCCT model relating corresponding learning experiences, self-efficacy, and outcome expectations to interests in a sample of women who identify as lesbian and a sample of women identifying as heterosexual. Four of the six interest models were found not to vary by sexual orientation. However, the Investigative and Conventional models were found to vary between lesbian and heterosexual women. In both cases, freeing one of the 11 constrained paths improved fit relative to the unconstrained model to a significant degree.

In the sections that follow, I will further elaborate on the results of my study by organizing the findings by RIASEC model. Within each domain, I will consider the results of the primary research questions involving the contributions of sexual orientation and gender-role conformity to vocational interests, adequacy of model fit for lesbian women, and the structural invariance of path coefficients across lesbian and heterosexual women.
Mean Differences

In terms of mean differences, lesbian women reported more learning experiences (performance accomplishments, verbal persuasion, and physiological arousal), higher outcome expectations, self-efficacy, and interests in Realistic occupations than heterosexual women. Recall that Realistic occupations tend to be viewed as more traditional for men (Aros, Henly, & Curtis, 1998; Lapan, Adams, Turner, & Hinkleman, 2000; Lippa, 2000). This pattern of findings seems to be consistent with theoretical literature which asserts that lesbian women are more likely to be gender non-traditional in their vocational interests and choices than are heterosexual women (e.g., Browning, Reynolds, & Dworkin, 1991; Garnets & Kimmel, 1991).

This finding seems contrary to speculation that lesbians’ tend to lack support and opportunity for exploring and developing gender non-traditional interests (Chung, 1995; Morrow, Gore, & Campbell, 1996). While lesbian women may express greater outcome expectations, self-efficacy, and interests in Realistic occupations than heterosexual women, it is unclear if this translates into greater intentions or goals to pursue a Realistic occupation. Further research is needed to examine this relationship, and the supports and barriers that lesbian women experience in pursuing these types of male-dominated fields.

Impact of Social Cognitive Variables, Sexual Orientation, and Gender-Role Conformity on Realistic Interests

Among my central hypotheses was that gender-role conformity would mediate the relationship between sexual orientation and the four types of Realistic learning experiences. This was based on theorizing by Morrow, Gore and Campbell (1996), in
which they predicted that gender-related variables would be more likely than sexual orientation to have a direct impact on vocational variables, given that vocational learning experiences often precede identification of sexual orientation for most youth.

This hypothesis was largely unsupported in the Realistic domain. In terms of overall model-data fit, only two of the four indices reached the criteria set to indicate good fit. In addition, sexual orientation did not relate significantly to any of the four- types of vocational learning experiences indirectly via gender-role conformity. In examining this model, it appears that feminine gender-role conformity was unrelated to any of the four- types of vocational learning experiences. This finding is surprising, given that previous research has found significant relationships between both feminine gender-role conformity and masculine gender-role conformity and overall Realistic learning experiences (Tokar, Thompson, Plaufcan, & Williams, 2007).

Masculine-gender-role conformity was not examined in the current study; however, there is some indication that this could be an important variable to explore in future research. Indeed, Tokar et al. (2007) found that greater endorsement of masculine gender-role norms was related to greater reported Realistic learning experiences. There is some evidence that lesbian women, as a group, score higher on masculinity than heterosexual women on bipolar scales of masculinity-femininity (Pillard, 1991). It is possible that masculine-gender-role conformity could mediate the relationship between sexual orientation and Realistic learning experiences for women. Given that Realistic occupations are considered male-typical, adhering or not adhering to these norms might be more important than the degree of adherence to feminine gender-role norms. Future
research could examine if conformity to masculine gender-roles mediates the relationship between sexual orientation and learning experiences in the Realistic domain.

In terms of the social-cognitive variables, strong support was found for the relationships posited in SCCT between self-efficacy, outcome expectations, and interests. As predicted by SCCT, these three variables demonstrated significant positive relationships in this sample of lesbian and heterosexual women. Contrary to expectations based on SCCT, only some of the learning experience variables were significantly related to self-efficacy and outcome expectations. For example, only Realistic performance accomplishments and Realistic physiological arousal were significantly related to Realistic self-efficacy. Only Realistic performance accomplishments were significantly related to outcome expectations. However, Realistic performance accomplishments and Realistic physiological arousal were found to impact Realistic outcome expectations indirectly via Realistic self-efficacy, which is consistent with SCCT predictions. Similar to the current findings, Williams and Subich (2006) reported that only Realistic performance accomplishments and Realistic Physiological Arousal were related to Realistic self-efficacy for their sample of women.

**Model Fit for Lesbian Women and Structural Invariance**

In order to examine the applicability of the SCCT model for lesbian women, a subset of the larger model was used to examine model-data fit for lesbian women and to compare the direct paths obtained to those obtained from women identifying as primarily heterosexual. This subset of the Realistic model fit the data well according to three of four indices of fit (the exception being RMSEA). In examining this model for lesbian women, it appears that the misfit is due to only some of the Realistic learning experiences.
being related to Realistic self-efficacy and Realistic outcome expectations. While only Realistic verbal persuasion and Realistic physiological arousal were related significantly to Realistic self-efficacy, none of the Realistic learning experience types were significantly related to Realistic outcome expectations for lesbian women. This is surprising, given that past research has found direct relationships between Realistic learning experiences and Realistic outcome expectations (Schaub & Tokar, 2005; Williams & Subich, 2006). Instead, for lesbian women, a significant indirect relationship occurred between three of the four types of Realistic learning experiences (the exception being vicarious learning) and Realistic outcome expectations. Thus, lesbians’ Realistic learning experiences had their effect on corresponding outcome expectations through lesbians’ self-efficacy beliefs.

The test of structural invariance indicated that the direct paths in the Realistic model did not differ significantly between women identifying as predominately heterosexual and predominately lesbian. Indeed, for both samples self-efficacy, outcome expectations, and interests were strongly and positively related. In addition, for both samples, none of the Realistic learning experiences was significantly related to Realistic outcome expectations. This could indicate that an important variable not included in the current model helps to explain women’s Realistic outcome expectations. However, this finding appears to be unique to this sample, and could be due to sample size or the modest reliability of the learning experiences subscales. Therefore, further research is needed.

While the test of structural invariance indicated that constraining the direct paths to be equivalent for lesbian and heterosexual women did not result in significantly worse
model data fit, some notable differences emerged. While Realistic physiological arousal was significantly related to self-efficacy in both groups, Realistic performance accomplishments was significantly related to self-efficacy for heterosexual but not for lesbian women. Conversely, Realistic verbal persuasion was significantly related to self-efficacy for lesbian but not for heterosexual women. This difference appears to be obscured in the larger model that combined these two groups.

As efforts at interventions have been made over the past several years to increase women’s self-efficacy in Realistic occupations (e.g., Betz & Schifano, 2000), the current research suggests that a different approach is perhaps needed to raise the self-efficacy of lesbian and heterosexual women. While decreasing negative arousal for Realistic activities would be important for both lesbian and heterosexual women, the opportunity to perform Realistic-typed activities appears to be the most powerful for heterosexual women, and having encouragement from others appears to be a powerful determinant of Realistic self-efficacy for lesbian women.

**Summary**

The hypothesis that sexual orientation impacts Realistic learning experiences indirectly via feminine gender-role conformity was not supported. The current study did not examine the role of masculine gender-role conformity, and this may be an area of inquiry in future research. While the proposed Realistic model demonstrated adequate but not good fit for the sample of lesbian women, most of the misfit appears to be due to the relationships of Realistic learning experiences to Realistic self-efficacy and Realistic outcome expectations. Although the test of structural invariance indicated that the set of direct paths in the model did not vary by sexual orientation, some important differences
in specific paths emerged that could impact interventions aimed at increasing women’s Realistic self-efficacy.

**Investigative**

**Mean Differences**

In the Investigative domain, lesbian and heterosexual women differed on only two learning experience variables. Lesbian women reported more Investigative performance accomplishments, and more Investigative Physiological Arousal than heterosexual women. Though lesbian women reported more of these learning experiences, they did not differ from heterosexual women on Investigative self-efficacy, outcome expectations or interests.

**Impact of Social Cognitive Variables, Sexual Orientation, and Gender-Role Conformity on Investigative Interests**

The hypothesis that sexual orientation impacts Investigative learning experiences indirectly via gender-role conformity was largely unsupported in this sample. While the specified model, which included sexual orientation and feminine gender-role conformity, fit the data well according to all four indices of fit, sexual orientation failed to relate significantly to any of the Investigative learning experiences indirectly via gender-role conformity. Examining this model, it appears that a portion of the model fit very well, while the remainder of the model did not, which may account for the favorable fit index values.

More specifically, Investigative self-efficacy, outcome expectations and interests were strongly and significantly positively related. On the other hand, feminine gender-role conformity was related to only two of the four types of learning experiences
Investigative performance accomplishments and Investigative physiological arousal were significantly related to Investigative self-efficacy. Only one type of learning experience, Investigative performance accomplishments, was significantly related to Investigative outcome expectations. However, both Investigative performance accomplishments and Investigative physiological arousal significantly and positively impacted outcome expectations indirectly via Investigative self-efficacy. This pattern of findings between learning experiences and self-efficacy and between learning experiences and outcome expectations is similar to those reported by Williams & Subich (2006) in a sample of women.

It is interesting to note that while this study found that feminine gender-role conformity related significantly to two Investigative learning experiences, Tokar, Thompson, Plaufcan, and Williams (2007) failed to find a relationship between feminine gender-role conformity and learning experiences when using LEQ summary scores in a sample of men and women. It is possible this observed difference stems from the use of the 24 LEQ subscales in the current study, as opposed to the summary scale scores, which allowed a more detailed analysis of the four Investigative learning experience types.

Model Fit for Lesbian Women and Structural Invariance

Consistent with the findings for the full sample, all four indices of fit indicated that the data fit the proposed Investigative model well for the sample of lesbian women. Also consistent with the findings from the full sample, self-efficacy, outcome
expectations, and interests were strongly and positively related. Some misfit between the proposed model and the data obtained from lesbian women was apparent in the relationship between Investigative learning experiences and both Investigative self-efficacy and Investigative outcome expectations. Investigative performance accomplishments and Investigative physiological arousal were significantly and positively related to Investigative self-efficacy, whereas none of the Investigative learning experiences was directly and significantly related to outcome expectations.

In terms of structural invariance across sexual orientation, the findings indicated that the direct paths were not equivalent for lesbian and heterosexual women. Further exploration revealed that the path between self-efficacy and interests was significantly different for lesbian and heterosexual women. Stated another way, sexual orientation acted as a moderator in the relationship between Investigative self-efficacy and Investigative Interests. This relationship was positive and significant for lesbian women, and positive but not significant for heterosexual women.

It is surprising that Investigative self-efficacy did not directly relate to Investigative interests for the heterosexual sample, given that the relationship between self-efficacy and interests is one of the most robust findings in the SCCT literature (Rottinghaus, Larson, & Borgen, 2003). Examining this relationship further revealed that the relationship between Investigative self-efficacy and Investigative interests was completely indirect via Investigative outcome expectations for the heterosexual sample. For the heterosexual women in the sample, it appears that perceived consequences become more important than self-efficacy beliefs when considering these more male-
typical Investigative occupations. This finding needs additional research, to ensure that it is not specific to this sample.

Given the numerous calls during the past several decades for greater efforts to increase the number of women in science, technology, engineering and math-related (STEM) occupations (e.g., Betz & Hackett, 1983; Betz & Schifano, 2000), the current study highlights some important areas for intervention. For both the lesbian and heterosexual women in this sample, Investigative performance accomplishments and Investigative physiological arousal were significantly and positively related to Investigative self-efficacy. Therefore, intervention efforts for women could particularly focus on providing women with opportunities to engage in Investigative activities, while focusing on reducing negative arousal states that can occur while engaging in these activities. Because self-efficacy was not significantly directly related to Investigative interests for heterosexual women, particular attention needs to be placed on raising these women’s outcome expectations for Investigative activities and occupations. In addition, more research is needed to determine what barriers might be getting in the way of the translation of self-efficacy into interests for heterosexual women.

**Summary**

The hypothesis that sexual orientation impacts Investigative learning experiences indirectly via feminine gender-role conformity was not supported. For both the full sample and the sample of lesbian women, the proposed Investigative models fit the data well according to all four indices of fit; however, caution is warranted. The last half of the model fit very well, while some misfit of the specified model was noted in the beginning portions of the models. The test of structural invariance revealed that the set of
direct paths in the Investigative model was not equivalent across sexual orientation. The path from Investigative self-efficacy to Investigative interests was significant and positive for lesbian women, but not significant for heterosexual women. Further research is needed in regard to this finding, but it does appear to have implications for interventions aimed at increasing heterosexual women’s participation in STEM occupations.

Artistic

Mean Differences

Results of t-tests and correlations revealed that lesbian and heterosexual women did not significantly differ on any of the social-cognitive variables in the Artistic domain. Recall that Artistic occupations tend to be viewed as more traditional for women (Aros, Henly, & Curtis, 1998; Lapan, Adams, Turner, & Hinkleman, 2000; Lippa, 2000). Given the theoretical literature, which asserts that lesbian women are more likely to be gender non-traditional in their vocational interests and choices than are heterosexual women (e.g., Browning, Reynolds, & Dworkin, 1991; Garnets & Kimmel, 1991), this finding of no significant differences was surprising.

Impact of Social Cognitive Variables, Sexual Orientation, and Gender-Role Conformity on Artistic Interests

The hypothesis that sexual orientation impacts learning experiences indirectly via gender-role conformity received some minimal support in the Artistic domain. The hypothesized Artistic model fit the data well according to all four indices of fit. An examination of the indirect effects revealed that sexual orientation did impact Artistic vicarious learning indirectly via feminine gender-role conformity, though the effect was small. Specifically, heterosexual women reported more Artistic vicarious learning
experiences, and this difference in learning experiences was accounted for by their higher conformity to feminine gender-role norms. Stated another way, this greater access to Artistic vicarious learning experiences for heterosexual women can be attributed more to their higher gender-role conformity than to their sexual orientation. Previous research has also found that feminine gender-role conformity is related to greater reported Artistic learning experiences (Tokar, Thompson, Plaufcan, & Williams, 2007).

In this Artistic model for the full sample, the relationships between self-efficacy, outcome expectation and interests were strong and positive. Regarding the hypothesized relationship between gender-role conformity and Artistic learning experiences, feminine gender-role conformity was related only to Artistic vicarious learning. Artistic performance accomplishments, verbal persuasion and physiological arousal significantly and positively related to Artistic self-efficacy. Artistic physiological arousal was the only learning experience significantly and directly related to Artistic outcome expectations; however, contrary to my hypothesis, it is in the negative direction. This finding represents a departure from those reported by Williams and Subich (2006), as they found a positive but non-significant relationship between Artistic physiological arousal and Artistic outcome expectations in their sample of women. Further research is needed to ensure that this finding is not unique to this sample. Consistent with predictions based upon SCCT, three of the four types of learning experiences (the exception being Artistic vicarious learning) were significantly related to Artistic outcome expectations indirectly via Artistic self-efficacy.
Model Fit for Lesbian Women and Structural Invariance

In examining the subset of the larger Artistic model in the sample of lesbian women, the data fit the specified model well according to all four indices of fit. The test of structural invariance revealed that the direct paths in the model were equivalent across sexual orientation. For both lesbian and heterosexual women, Artistic self-efficacy, outcome expectations and interests were strongly and positively related. While the test of structural invariance indicated that constraining the direct paths to be equivalent for lesbian and heterosexual women did not result in a significantly worse model-data fit, some interesting differences emerged in the relationship between Artistic learning experiences and Artistic self-efficacy. While Artistic performance accomplishments were a positive and significant precursor of Artistic self-efficacy for lesbian women, this relationship did not reach significance for heterosexual women. Conversely, for heterosexual but not lesbian women, Artistic vicarious learning and Artistic physiological arousal were positive and significant precursors of Artistic self-efficacy. Artistic verbal persuasion was strongly and positively related to Artistic self-efficacy for both lesbian and heterosexual women. Therefore, any interventions aimed at raising lesbian and heterosexual women’s self-efficacy could incorporate verbal encouragement around artistic abilities; however, these results indicate that opportunities to successfully engage in artistic activities are a more powerful determinant of Artistic self-efficacy for lesbian women, and seeing others engage in Artistic activities and interventions aimed at lowering negative arousal for Artistic activities may be more powerful for heterosexual women.
Summary

The Artistic domain provided some minimal support to the hypothesis that sexual orientation impacts Artistic learning experiences indirectly via feminine gender-role conformity. While the specified model fit the data well, sexual orientation was significantly related to only one type of learning experience indirectly via gender-role conformity. While the subset of the Artistic model fit the data well for lesbian women and the direct paths did not differ significantly between lesbian and heterosexual women, some important differences were noted which have implications for interventions aimed at increasing lesbian and heterosexual women’s Artistic self-efficacy beliefs.

Social

Mean Differences

A number of mean differences between lesbian and heterosexual women were observed in the Social domain. While lesbian and heterosexual women did not differ on the degree of reported Social learning experiences, heterosexual women reported greater Social outcome expectations, Social self-efficacy and Social interests than lesbian women. This finding seems to be consistent with the theoretical literature, which asserts that lesbian women are more likely to be gender non-traditional in their vocational interests and choices than are heterosexual women (e.g., Browning, Reynolds, & Dworkin, 1991; Garnets & Kimmel, 1991); however, it is interesting to note that these differences arose even though lesbian and heterosexual women did not report any differences in their Social learning histories.

This finding, that lesbian and heterosexual women did not differ in their reported Social learning experiences, is consistent with the theoretical literature. According to
Morrow, Gore and Campbell (1996), the majority of media images that youth are exposed to are gender-stereotypic, and social persuasion tends to operate in the direction of encouraging those activities that are consistent with one’s gender.

However, lesbians’ self-efficacy and outcome expectations could be lower due to devaluing of “pink-collar” or traditionally female-dominated occupations that sometimes happens in lesbian communities (Morgan & Brown, 1991). Therefore, it is possible that given similar learning histories, lesbian women may hold lower outcome expectations for these traditionally female-typed jobs, given the potential social consequences of their choice in the lesbian community. In addition, Morgan and Brown also speculate that lesbians may gravitate away from occupations that are traditionally held by women for economic reasons. Female-dominated occupations tend to pay less than those held by men, and lesbian women, who cannot rely on a male partner’s higher wages, may expect that a Social occupation will not fulfill their need to make a higher wage. Further research is needed into this finding.

**Impact of Social Cognitive Variables, Sexual Orientation, and Gender-Role Conformity on Social Interests**

The hypothesis that sexual orientation impacts vocational learning experiences indirectly via feminine gender-role conformity appears to have received the most support from the Social model. The specified Social model fit the data well according to two of the four indices of fit. In examining this model, it appears that the misfit occurred in the relationships between Social learning experiences and both Social self-efficacy and Social outcome expectations. Only Social performance accomplishments were
significantly related to Social self-efficacy and Social outcome expectations in the full sample of women.

An examination of the indirect effects revealed that sexual orientation impacted three of the four types of Social learning experiences (the exception was Social physiological arousal) indirectly via feminine gender-role conformity. This indicates that the women in the sample were not differentially exposed to Social learning experiences based only on sexual orientation. Instead, differences in feminine gender-role conformity accounted for at least some of the difference between lesbian and heterosexual women on Social learning experiences. Specifically, heterosexual women reported greater Social performance accomplishments, Social vicarious learning and Social verbal persuasion than lesbian women, and this difference was at least partially accounted for by heterosexual women’s greater adherence to feminine gender-role norms. However, it is important to note that the effect sizes for the indirect effects were generally small.

Recall that Chung and Harmon (1994) found that sex-role orientation mediated the relationship between sexual orientation and interests in the Social domain only. Similarly in this study, the strongest support for the mediating role of feminine gender-role conformity occurred in the Social domain. These findings support the important role that gender-role conformity plays in developing an interest or lack of interest in Social occupations for men and women.

**Model Fit for Lesbian Women and Structural Invariance**

When the subset of the Social model was examined in the sample of women only, the fit of the model to the data was again mixed. The Social model fit the data well for lesbian women according to two of four indices of fit. Similar to the findings for the full
sample, only Social performance accomplishments were significantly and directly related to Social self-efficacy and Social outcome expectations.

The test of structural invariance indicated that constraining the direct paths to be equivalent for lesbian and heterosexual women did not result in significantly worse model data fit. However, some important differences were noted. While Social performance accomplishments were a strong predictor of Social self-efficacy for both lesbian and heterosexual women, Social verbal persuasion was significantly and positively related to Social self-efficacy for lesbian women only. Conversely, Social physiological arousal was positively and significantly related to Social self-efficacy for heterosexual but not lesbian women.

Further, while the experience of more Social performance accomplishments was related to lesbians’ lower Social outcome expectations, this relationship was non-significant for heterosexual women. While SCCT posits that learning experiences are positively related to outcome expectations, a similar departure from theory was reported by Williams and Subich (2006). It is possible that having learning experiences in particular domains (in this case, prior Social performance accomplishments) helps women, especially lesbian women who might experience discrimination, to realize that important values will not be fulfilled in that occupation. Further research is needed to examine this relationship, given SCCT’s hypothesis that more learning experiences will bolster outcome expectations.

**Summary**

Despite mixed support for the fit of the specified Social model to the data from the full sample, the Social model appears to provide the most support for the hypothesis
that sexual orientation impacts learning experiences indirectly via feminine gender-role conformity. The fit of the Social model for lesbian women was adequate, but misfit was noted in the relationships between Social learning experiences and both Social self-efficacy and Social outcome expectations. While the test of structural invariance revealed that constraining the direct paths in the model for lesbian and heterosexual women did not result in significantly worse fit, some important differences were noted between lesbian and heterosexual women in the relationships of Social learning experiences to Social self-efficacy and Social outcome expectations.

**Enterprising**

**Mean Differences**

While lesbian women reported more Enterprising performance accomplishments, heterosexual women reported greater Enterprising outcome expectations and interests. This pattern of findings was surprising, given that lesbian women are hypothesized in the literature to have more gender non-traditional interests (Browning, Reynolds, & Dworkin, 1991; Garnets & Kimmel, 1991), and Enterprising occupations are seen as more traditional for males (Aros, Henly, & Curtis, 1998; Lapan, Adams, Turner, & Hinkleman, 2000; Lippa, 2000).

**Impact of Social Cognitive Variables, Sexual Orientation, and Gender-Role Conformity on Enterprising Interests**

The hypothesis that sexual orientation impacts learning experiences indirectly via gender-role conformity only received minimal support in the Enterprising domain. The Enterprising model did demonstrate good fit to the data across all four indices of fit. However, in examining this model, it appears that some parts of the model fit better than
others. While the relationships among Enterprising self-efficacy, outcome expectations, and interests were strong and positive, only some of the Enterprising learning experiences were related directly to Enterprising self-efficacy and outcome expectations. For example, Enterprising performance accomplishments, verbal persuasion and physiological arousal, but not vicarious learning, were directly and significantly related to Enterprising self-efficacy. Only Enterprising performance accomplishments and verbal persuasion were significantly and directly related to Enterprising outcome expectations.

In examining the indirect effects, sexual orientation was significantly related to Enterprising verbal persuasion and vicarious learning indirectly via feminine gender-role conformity. This indicated that heterosexual women reported more Enterprising verbal persuasion and vicarious learning experiences, which was accounted for at least in part by heterosexual women’s greater endorsement of feminine gender-role conformity. Therefore, it was not sexual orientation, but rather greater endorsement of feminine gender-role norms, that accounted for these different Enterprising learning histories between lesbian and heterosexual women. As noted above, these findings were surprising given the expectation that lesbian women would report more Enterprising learning experiences, given that Enterprising occupations are more traditional for males (Aros, Henly, & Curtis, 1998; Lapan, Adams, Turner, & Hinkleman, 2000; Lippa, 2000).

In the Enterprising model, sexual orientation was directly and positively related to interests in the Enterprising domain. This indicated that heterosexual women reported more interest in Enterprising occupations than lesbian women. The finding that sexual orientation, a person input variable, was directly related to interests in the Enterprising domain is not consistent with SCCT, but is consistent with previous empirical research.
that has found direct relationships between person inputs and interests in the SCCT model (Bishop & Bieschke, 1998; Fouad & Smith, 1996; Schaub & Tokar, 2005).

Based on the mean differences noted above and the direct relationship between sexual orientation and Enterprising interests, a pattern emerged from the data in which heterosexual women expressed greater outcome expectations and interests in Enterprising occupations than lesbian women. Though inconsistent with my hypotheses, these findings are not unexplainable. Specifically, they may have had something to do with the data collection for the heterosexual sample of women. Recall that the heterosexual women in the sample were drawn predominantly from Women’s Development Centers. Women’s Development Centers often encourage their members to engage in advocacy work and leadership opportunities that advance issues important to women. This overlaps greatly with occupations in the Enterprising domain, which involve leadership activities and persuading people. Future research should examine this relationship in other samples of women, but this could certainly be a strength of Women’s Development Centers.

**Model Fit for Lesbian Women and Structural Invariance**

When a subset of the Enterprising model was examined in the sample of lesbian women, the results indicated that the specified model fit the data well according to two of the four indices of fit. In examining the Enterprising model in the sample of lesbian women, it again appears that the misfit was due to the lack of relationships between Enterprising learning experiences and both Enterprising self-efficacy and Enterprising outcome expectations. For lesbian women, only Enterprising performance accomplishments and verbal persuasion were related significantly to Enterprising self-
efficacy and Enterprising outcome expectations. The relationships between Enterprising self-efficacy, outcome expectations and interests were significant and positive.

The test of structural invariance revealed that constraining the paths in the Enterprising model to be equal for lesbian and heterosexual women did not result in significantly worse fit. However, some important differences between Enterprising learning experiences and Enterprising self-efficacy and outcome expectations emerged. While performance accomplishments and verbal persuasion were strong and positively related to Enterprising self-efficacy for lesbian and heterosexual women, Enterprising physiological arousal was significantly related to Enterprising self-efficacy for heterosexual women only. In addition to opportunities for engaging in Enterprising activities and verbal encouragement, any interventions aimed at increasing Enterprising self-efficacy for heterosexual women could benefit from specifically focusing on reducing negative arousal states associated with Enterprising activities.

While Enterprising performance accomplishments were unrelated to Enterprising outcome expectations for heterosexual women, there was a strong negative relationship between Enterprising performance accomplishments and Enterprising outcome expectations for lesbian women. While this finding has been observed in other samples of women (Williams & Subich, 2006) in the Enterprising domain, it is inconsistent with SCCT propositions.

A significant negative relationship between performance accomplishments and outcome expectations was observed in the current study for lesbian women in the Social and Enterprising domains. It is possible that having learning experiences in a particular domain helps women to realize that important values will not be fulfilled in that
occupation. Further research is needed to examine this relationship, given SCCT’s hypothesis that more learning experiences will bolster outcome expectations.

**Summary**

The Enterprising domain provided some minimal support for the hypothesis that sexual orientation impacts learning experiences indirectly via gender-role conformity. While overall model fit index values indicated good fit of the data to the full sample, the subset of the Enterprising model only provided an adequate fit to the data for lesbian women. The test of structural invariance revealed that constraining the direct paths for lesbian and heterosexual women did not result in significantly worse fit. Nevertheless, some differences were noted between lesbian and heterosexual women in the relationship between Enterprising learning experiences and both Enterprising self-efficacy and outcome expectations. Similar to the Social model, performance accomplishments demonstrated an unanticipated negative relationship with outcome expectations for lesbian women in the Enterprising model.

**Conventional**

**Mean Differences**

While lesbian and heterosexual women did not differ on reported Conventional learning experiences or Conventional self-efficacy, lesbian women reported lower Conventional outcome expectations and interests than heterosexual women. Given that Conventional occupations are seen as more traditional for women (Aros, Henly, & Curtis, 1998; Lapan, Adams, Turner, & Hinkleman, 2000; Lippa, 2000), these differences are consistent with speculation in the literature that lesbian women will have vocational
interests that are less gender-traditional than heterosexual women (Browning, Reynolds, & Dworkin, 1991; Garnets & Kimmel, 1991).

**Impact of Social Cognitive Variables, Sexual Orientation, and Gender-Role Conformity on Conventional Interests**

The Conventional model provided minimal support to the hypothesis that sexual orientation impacts vocational learning experiences indirectly via feminine gender-role conformity. The specified Conventional model fit the data well according to three of four fit indices (the exception was the model chi-square). In examining this model, it appears that feminine gender-role conformity was significantly related only to Conventional verbal persuasion. In addition, only Conventional performance accomplishments and physiological arousal were significantly related to Conventional self-efficacy. Only Conventional verbal persuasion and physiological arousal were significantly and directly related to Conventional outcome expectations. This portion of the model seems to account for the misfit, as Conventional self-efficacy, outcome expectations and interests were positively and significantly related.

In examining the indirect effects, feminine gender-role conformity mediated the relation of sexual orientation to only one of the four Conventional learning experiences--Conventional verbal persuasion. Furthermore, it should be noted that this indirect effect was small. The observed mediation effect indicated that heterosexual women reported greater Conventional verbal persuasion, and this relationship was at least partially explained by heterosexual women’s greater reported conformity to feminine gender-role norms.
In addition, sexual orientation did demonstrate a small but significant positive relationship with interests. The direct relationship between sexual orientation and interests in Conventional occupations can potentially be explained by considering the perception of “pink collar” occupations within the lesbian community. According to Morgan and Brown (1991), the lesbian community tends to devalue traditionally female occupations, due in part to the lower pay offered by these occupations. This may in turn translate into lower interests in these occupations for lesbian women. This is merely speculation and future research is needed to replicate this interesting but modest finding.

Model Fit for Lesbian Women and Structural Invariance

In examining a subset of the larger Conventional model in a sample of lesbian women, all four indices of fit indicated that this model fit the data well. In examining the model further, it was apparent that some portions of the model fit better than others. The relationship between Conventional self-efficacy and outcome expectations, and that between Conventional outcome expectations and interests, were strong and positive. Although significant, the direct effect of Conventional self-efficacy on Conventional interests was small. Of the four learning experiences, only Conventional performance accomplishments had a significant positive effect on Conventional self-efficacy, and only Conventional vicarious learning was significantly related to Conventional outcome expectations. Furthermore, the relationship between Conventional vicarious learning and Conventional outcome expectations was in the negative direction for lesbian women, and non-significant for heterosexual women. For lesbian women, having more opportunity to observe people engage in Conventional activities served to lower, rather than bolster,
their beliefs that they could get what they wanted from pursuing a Conventional occupation.

This finding seems consistent with Morgan and Brown’s (1991) assertion that some lesbian communities devalue “pink-collar” or traditionally female-occupations. Indeed, occupations in the Conventional domain tend to be gender-typed as more appropriate for females (Lapan, Adams, Turner, & Hinkelman, 2000). Therefore, it is possible that lesbian women hold lower outcome expectations for these traditionally female-typed jobs, given the potential social consequences of their choice in the lesbian community. In addition, Morgan and Brown also speculate that lesbians may gravitate away from occupations that are traditionally held by women for economic reasons. Female-dominated occupations tend to pay less than those held by men, and lesbian women, who cannot rely on a male partner’s higher wages, may expect that a Conventional occupation will not fulfill their need to make a higher wage. Further research is needed to ensure that this finding is not specific to this dataset.

The test of structural invariance was significant for the Conventional model, indicating that constraining the direct paths in the model to be consistent across lesbian and heterosexual women resulted in worse model-data fit. In examining the individual paths in the model, releasing the constraint on the path from Conventional vicarious learning to Conventional outcome expectations improved the fit of the constrained model relative to the unconstrained model enough that it no longer resulted in significantly worse fit. As noted, this path was significant and negative for lesbian women, but it was not significant and in the positive direction for heterosexual women.
Summary

Overall, the Conventional model provided minimal support for the hypothesis that sexual orientation impacts vocational learning experiences indirectly via feminine gender-role conformity. While the evidence for model-data fit was mixed for the full sample, sexual orientation did impact one Conventional learning experience type (verbal persuasion) indirectly via feminine gender-role conformity. While all four fit indices indicated a good fit of the Conventional model to the data from lesbian women, some misfit in the model was also noted. The test of structural invariance revealed that the Conventional model is not equivalent across sexual orientation.

Implications for Theory, Research, and Practice

This study contributes to the small but growing empirical and theoretical literature examining the precursors of lesbians’ vocational interests. The current study supported the significance of sexual orientation, gender-role conformity, learning experiences, self-efficacy, and outcome expectations as precursors to lesbians’ vocational interests. Future studies could continue to explore other possible antecedents to lesbians’ vocational interests.

As noted, one potential precursor that was not examined in the current study is masculine gender-role conformity. Given that previous research has found that masculine gender-role conformity impacts vocational learning experiences (Tokar, Thompson, Plaufcan & Williams, 2007), and that lesbian women tend to score higher on measures of masculinity than heterosexual women (Pillard, 1991), this seems like an important avenue for future research. It will be important to examine current measures of adherence to masculinity norms for their appropriateness for both lesbian and
heterosexual women. For example, the Conformity to Masculinity Norms Inventory (CMNI; Mahalik, Locke, Ludlow, Diemer, Scott, Gottfried, & Freitas, 2003) contains a scale called “Disdain for homosexuality” that could be offensive to lesbian women.

In terms of the SCCT model, consistent with predictions, self-efficacy, outcome expectations and interests were strongly positively related in each RIASEC domain, with one exception (Investigative self-efficacy was not related directly [although it was related indirectly] to Investigative interests for heterosexual women). Consistent with previous research (Schaub & Tokar, 2005), path coefficients from learning experiences to outcome expectations were generally smaller (values ranged from -.23 to .19, absolute $Mdn = .09$) than path coefficients from learning experiences to self-efficacy (values ranged from -.02 to .40, absolute $Mdn = .15$). While Schaub and Tokar (2005) found that only Realistic and Social LEQ summary scores were significantly related to Realistic and Social outcome expectations, respectively, the current study found significant direct relationships between at least one type of learning experience and corresponding outcome expectations in each of the six RIASEC domains.

While the current findings generally support the use of an established theory of vocational development, SCCT, with lesbian women, some precautions are warranted. Learning experiences have been found to play an important role in giving rise to self-efficacy beliefs and outcome expectations; however, the current study found that the contributions of each of the four-types of learning experiences varied considerably. For example, while performance accomplishments were a consistent predictor of self-efficacy and outcome expectations, vicarious learning was largely unrelated to self-efficacy or outcome expectations. It will be important for future researchers to examine these
sources of self-efficacy information separately, instead of summing them as total 
RIASEC learning experiences (e.g., Schaub & Tokar, 2005; Tokar et al., 2007), which 
might obscure otherwise significant findings.

Across the Social, Enterprising and Conventional models, significant negative 
relationships were observed between learning experiences and outcome expectations. 
This finding has been found in previous research with samples of women (Williams & 
Subich, 2006), but is inconsistent with SCCT propositions. Perhaps, for women and 
certainly lesbian women, or any oppressed group, there is the potential to face 
discrimination or an unfriendly environment when engaging in or observing career-
related activities. These experiences, when they do occur, may serve to lower lesbians’ 
outcome expectations rather than raise them. Because Social and Enterprising 
occupations involve working with other people, there could be a greater potential to face 
prejudice in these activities. This is just a hypothesis, and further research is needed to 
gain a better understanding of lesbians’ vocationally related learning experiences and 
their potential impact on self-efficacy and outcome expectations.

Despite the finding that SCCT was largely invariant across sexual orientation, it 
seems that some important differences might be obscured if samples of lesbian and 
heterosexual women are combined in future research. As noted throughout this 
discussion, these differences have implications for interventions aimed at increasing 
women’s self-efficacy beliefs. Recall that the relationship between self-efficacy and 
interests is one of the most robust findings in the SCCT literature. When the samples of 
lesbian and heterosexual women were combined, Investigative self-efficacy was 
significantly related to Investigative interests. When examined separately, this

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relationship did not hold for heterosexual women. Similarly, Conventional vicarious learning experiences were related to lower Conventional outcome expectations for lesbian women, but not for heterosexual women. These and other important differences could be lost by assuming that the experiences of lesbian and heterosexual women are identical.

Because SCCT shows promise in accounting for the formation of lesbians’ vocational interests, future researchers can have increased confidence in using SCCT with lesbian women. In addition, researchers can examine the vast empirical research base on SCCT for its relevance to lesbian women. Specifically, some research has examined the role of contextual supports and barriers in the translation of vocational interests into choice goals (e.g., Lent, Brown, Sheu, Schmidt, Brenner, Gloster, Wilkins, Schmidt, Lyons, & Treistman, 2005). As noted, lesbian women in the current study expressed more interests than heterosexual women in Realistic occupations, but it is unclear if this translates into a difference in choice goals.

In SCCT, characteristics of the environment can act as moderators between interests and choice goals (Lent, Brown, & Hackett, 1994). The theoretical research has proposed many potential barriers that lesbian women could face in translating interests into choice goals, including sexual identity confusion (Fassinger, 1996; Hetherington & Orzek, 1989; Morgan & Brown, 1991; Morrow, Gore, & Campbell, 1996), conflicts with parents and peers (Morrow, Gore, & Campbell, 1996), discrimination and homophobia (Morgan & Brown, 1991; Morrow, Gore, & Campbell, 1996), and occupational stereotyping within and outside of the lesbian community (Hetherington & Orzek, 1989; Morgan & Brown, 1991; Morrow, Gore, & Campbell, 1996). While these researchers
have speculated that sexual minorities will not have a smooth transition from the formation of interests to enacting choice goal behaviors, empirical studies are needed that examine this transition.

The findings of this study have implications for vocational counseling with lesbian women. Given that their sexual orientation was found to impact lesbians’ learning experiences, self-efficacy, outcome expectations and interests, it is important for counselors to talk to their lesbian clients about how they see their sexual orientation influencing their career. It is also important for vocational counselors to consider the intersection of sexual orientation and gender. Given lesbians’ greater interests in largely male-dominated Realistic occupations, how might a lesbian client feel about being a minority on both dimensions (i.e., female and lesbian) in that field? What supports and resources does she have or can she seek out to cope with that situation? What barriers might she anticipate?

**Limitations**

While a strength of this study is that the data were collected from women attending approximately 69 colleges across the U.S., it should be kept in mind that the sample was predominately drawn from women involved in either campus LGBT or women’s development centers. Because of this, the lesbian women in the sample are more likely to be “out” on campus, and the majority of women in the sample were actively involved in campus organizations that support women and sexual minorities. It could be argued that because the sample was drawn from women’s development centers, the women in this sample were, as a group, less gender conforming than the general population of college women. However, this does not appear to be the case, as the mean
CFNI score for this sample ($M = 143.26$, $SD = 21.86$) is comparable to that found in another sample of college women ($M = 145.39$, $SD = 22.47$; Tokar, Thompson, Plaufcan, & Williams, 2007). Given that the sample is comprised of women enrolled in institutions of higher learning, the generalizability of the findings is limited to this population.

An additional limitation of the current study is that all of the data were collected at one point in time. In SCCT, it is presumed that learning experiences give rise to self-efficacy beliefs and outcome expectations, but the current data relied on retrospective recall of these early career-related learning experiences. It is possible that some early learning experiences are more salient, and/or more easily recalled based on one’s current vocational or sexual orientation identity. In addition, previous research has uncovered a process of “recycling” in the career exploration of lesbian women (e.g., Boatwright, Gilbert, Forrest, & Ketzenberger, 1996). This recycling process can occur when a lesbian woman first identifies herself as a sexual minority, and involves returning to the process of identity formation to integrate the newly discovered sexual identity into the overall self-concept. This process can sometimes involve a re-evaluation of career-related identity and vocational choices (Boatwright, Gilbert, Forrest, & Ketzenberger, 1996). Given the “snapshot” of data in the current study, it is impossible to fully understand how and if this recycling process impacts important career related variables, such as self-efficacy, outcome expectations, or interests.

**Summary**

The goal of the current study was to better understand the role of sexual orientation as a precursor to lesbians’ vocational interests. First, sexual orientation was examined as an antecedent variable, along with gender-role conformity, that directly and
indirectly impacts learning experiences, self-efficacy, outcome expectations, and interests. Next, the adequacy of the socio-cognitive variables specified in SCCT to explain lesbians’ vocational interests was assessed. Finally, a direct comparison was made between lesbian and heterosexual women to determine if the relations among the set of socio-cognitive variables specified in SCCT is invariant across sexual orientation.

Overall, my findings support sexual orientation as an important person input variable in SCCT. In the Artistic, Social, Enterprising and Conventional domains, sexual orientation impacts learning experiences indirectly via conformity to feminine gender-roles. In addition, sexual orientation has a direct impact on women’s vocational interests in the Enterprising and Conventional domains. The present findings also suggest that the socio-cognitive variables specified in SCCT are helpful in understanding the vocational interests of lesbian women. Finally, the model posited by SCCT appears to be largely invariant across sexual orientation.
REFERENCES


The effects of gender, race/ethnicity and sexual orientation. University of Illinois at Urbana-Champaign, Psychology Department.


APPENDIX A
LEARNING EXPERIENCES QUESTIONNAIRE
Schaub (2003)

Using the following scale, write the number corresponding to your response on the line next to the statement. Please respond to ALL of the statements.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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1. I performed well in biology courses in school.
2. People whom I respect have encouraged me to work hard in math courses.
3. I remember seeing my family plan out the details of vacations.
4. I have made simple car repairs.
5. While growing up, I saw people whom I admire work in youth ministry.
6. I have become nervous while solving math problems.
7. I have become uptight while trying to repair something that was broken.
8. I have seen people whom I respect read business magazines.
9. I have seen family members perform work which involved organizing information.
10. People I respect have urged me to learn how to fix things that are broken.
11. I was successful performing science experiments in school.
12. In school, I saw teachers whom I admired work on science project.
13. I have felt uneasy when people would come to me with their problems.  
14. I have seen people whom I trust successfully manage a business.  
15. The artwork I have created usually turned out well.  
16. I remember my family telling me that it is important to be able to solve science problems.  
17. People whom I looked up to told me that it is important to read scholarly articles.  
18. I remember watching members of my family create art.  

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<thead>
<tr>
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<th>Disagree</th>
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<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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19. My teachers have encouraged me to explore jobs in the helping professions (e.g., counseling).  
20. I have kept accurate records of my financial documents.  
21. I have been able to sell a product effectively.  
22. I have observed members of my family build things.  
23. I have made repairs around the house.  
24. I have become anxious while learning new computer software.  
25. I received good grades in my art courses in school.  
26. I have become nervous when working on mechanical things (e.g., appliances).  
27. I have seen people whom I respect enter the teaching profession.  
28. I have done a good job at proofreading my papers for mistakes.  
29. I have seen my parents keep organized records of their important financial documents.  
30. I have been successful when I used tools to work on things.  
31. I have felt anxious when I had to act in a play.
____ 32. I have been successful at caring for children.
____ 33. I have listened to members of my family speak in public.
____ 34. I received high scores on the math section of my college entrance exam (e.g., SAT).
____ 35. I have felt nervous when I had to sell something.
____ 36. I have been successful at teaching people.
____ 37. I have felt nervous while debating a topic.
____ 38. I watched people whom I respect work in the outdoors.
____ 39. I have felt anxious about creating artwork.

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<th>Strongly Disagree</th>
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____ 40. Teachers I admired encouraged me to take classes in which I can use my mechanical abilities.
____ 41. I watched my friends as they participated in school plays.
____ 42. People whom I admire have told me that it is important to learn new computer software.
____ 43. While growing up, I saw people I respected using math to solve problems.
____ 44. I have felt anxious while taking a science course in school.
____ 45. I have seen people whom I respect participating in activities that require math abilities.
____ 46. I have seen people whom I respect enter politics.
____ 47. I have become nervous while teaching something new to a classmate.
____ 48. I have felt uneasy while using tools to build something.
____ 49. I have felt anxious while organizing resources for a term paper.
____ 50. I have seen people whom I admire dedicate their lives to helping others.
51. I recall seeing adults whom I admire working in a research laboratory.
52. I have successfully persuaded people to do things my way.
53. I have done a good job at writing poetry.
54. People whom I respect have encouraged me to play a musical instrument.
55. I have observed people whom I admire perform volunteer work.
56. I have felt uneasy while learning new topics in biology courses.
57. I have easily understood new math concepts after learning about them in class.
58. My parents have encouraged me to pursue jobs that involve keeping track of records.
59. I observed people whom I respect repair mechanical things.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
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</tbody>
</table>

60. My family encouraged me to take social science courses (e.g., psychology).
61. Teachers whom I respect have told me that it is important to have good organizational skills.
62. I have demonstrated skill at conducting research for my term papers.
63. While growing up, I watched adults whom I respect fix things.
64. I have seen people whom I admire write fiction stories.
65. Reading scientific articles has made me feel uneasy.
66. I have felt anxious while performing basic repairs on a car.
67. My family has encouraged me to find a job which involves performing basic office tasks.
68. I have accurately balanced a checkbook.
69. I have been successful at creating a sculpture with clay.
My family taught me that it is important to develop my interpersonal communication skills.

I have watched people whom I respect perform detail-oriented work.

I have been able to hold a conversation with all types of people.

I have felt nervous learning how to operate office machines.

During school, I admired teachers whom I saw create art.

Teachers whom I respect have encouraged me to take a business management course.

Adults whom I admire have urged me to enter a profession in which I manage others.

I have been successful at playing a musical instrument.

I have listened well to people who are having personal difficulties.

Teachers whom I respect have encouraged me to take an art class.

I have done a good job at things that involved physical labor (e.g., landscaping).

People whom I respect have encouraged me to develop my leadership skills.

I have felt uneasy about taking a leadership role in a group.

I have done a good job at operating new computer programs (e.g., word processing).

I have felt uptight while entering data at a computer terminal.

I have felt dread while using math in a job.

During school, I have felt uptight while working as a part of a small group.

While growing up, I recall seeing people I respected reading scientific articles.
88. I have seen people whom I respect hold jobs which involved performing routine office work.

89. I remember feeling anxious while working on something that required manual labor.

90. I have done a good job at performing basic office work (e.g., filing).

91. Family members have urged me to learn how to sing.

92. People whom I trust have told me that it is important to be able to persuade others to do things.

93. I have become anxious initiating conversations with people I do not know.

94. I have felt uptight while writing a short story for school.

95. I have been a successful leader in school.

96. My friends have encouraged me to use my research abilities.

97. Teachers whom I admire have encouraged me to take science courses.

98. I have seen people whom I admire lead others.

99. I remember feeling uptight when I had to keep clear, precise records.

100. I observed people whom I admire work in a garden.

101. While growing up, adults I respected encouraged me to work with tools.

102. While growing up, I listened to family members play musical instruments.

103. People whom I respect have encouraged me to be a detail-oriented person.

104. I have felt uneasy while supervising the work of others.

105. I have done well in building things.

106. People whom I admire have encouraged me to be a salesperson.

107. I have done well at public speaking.
108. While growing up, adults whom I admired told me that it is important to be a good writer.

109. I have felt uneasy while drawing something.

110. I have felt uncomfortable while playing a musical instrument for other people.

111. Friends have urged me to act in a play.

112. I have become nervous while developing new friendships.

113. People whom I look up to have urged me to pursue activities that require manual dexterity.

114. I have felt anxious when I attempted to persuade someone to do things my way.

115. I have seen people I know enter work in the helping professions (e.g., social work).

116. People whom I respect have encouraged me to perform volunteer work.

117. I earned good grades in social science courses.

118. Family members have encouraged me to pursue activities that involve working outdoors.

119. My friends have urged me to help others resolve their personal difficulties.

120. I have successfully supervised the work of others.
APPENDIX B

SELF-EFFICACY MEASURE
Occupational Outcome Expectations (OOE)
Gore and Leuwerke (2000)
Adapted by Lent, Brown, Nota, & Soresi (2003)

**Instructions:** For each of the occupations listed below, indicate **HOW MUCH CONFIDENCE YOU HAVE IN YOUR ABILITY TO BECOME A SUCCESSFUL WORKER IN EACH OF THESE OCCUPATIONS**, using the 0-9 scale.

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APPENDIX C

OUTCOME EXPECTATIONS MEASURE
Occupational Outcome Expectations (OOE)
Gore and Leuwerke (2000)
Adapted by Lent, Brown, Nota, & Soresi (2003)

Often people consider various positive outcomes when thinking about possible occupational choices. For example, one person might consider how much authority, independence, or creativity would be involved in a given occupation. Another person might consider things such as security, working conditions, prestige, the opportunity to help other people, or the level of interaction with co-workers.

**Instructions:** For each of the occupations listed below, rate the degree to which you would GET WHAT YOU WANTED from that occupation, using the 0-9 scale.

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</table>
Instructions: For each of the occupations listed below indicate **HOW MUCH YOU THINK YOU WOULD LIKE OR DISLIKE THE WORK ACTIVITIES THAT PEOPLE IN EACH OF THESE OCCUPATIONS PERFORM** on a 9-point scale.

<table>
<thead>
<tr>
<th>Occupation</th>
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<th>Very Much</th>
</tr>
</thead>
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<td>Auto Mechanic</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
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<td>Carpenter</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>Fish and Wildlife Specialist</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>Truck Driver</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
<td></td>
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<tr>
<td>Bus Driver</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>Electrician</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>Biologist</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
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<td>Astronomer</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>Anthropologist</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>Chemist</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Writer of Scientific Articles</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
<td></td>
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<tr>
<td>Geologist</td>
<td>0 1 2 3 4 5 6 7 8 9</td>
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<td>Scientific Research Worker</td>
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<td>Poet</td>
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<tr>
<td>Musician</td>
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<td>Novelist</td>
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<td>Actor/Actress</td>
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<td>Journalist</td>
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<td>Singer</td>
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<td>Sociologist</td>
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<tr>
<td>High School Teacher</td>
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<tr>
<td>Juvenile Delinquency Expert</td>
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<tr>
<td>Marriage Counselor</td>
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<td>Social Science Teacher</td>
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<td>Youth Camp Director</td>
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<td>Social Worker</td>
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<td>Advertising Executive</td>
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<td>Manufacturer’s Representative</td>
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<td>Business Executive</td>
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<td>Restaurant Manager</td>
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<td>Sales Person</td>
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<td>Business Teacher</td>
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<td>Accountant</td>
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<td>Credit Investigator</td>
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<td>Bank Teller</td>
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<td>Tax Expert</td>
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<tr>
<td>Financial Analyst</td>
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<tr>
<td>Payroll Clerk</td>
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</tbody>
</table>
APPENDIX E

CONFORMITY TO FEMININE NORMS INVENTORY
Mahalik, Morray, Coonerty-Femiano, Slattery, Smiler, & Ludlow (2005)

Please read carefully

The following pages contain a series of statements about how people might think, feel or behave. The statements are designed to measure attitudes, beliefs, and behaviors associated with both traditional and non-traditional feminine gender-roles. For example, the statements are about issues such as appearance, taking care of others, sexuality, and relationships.

Thinking about your own actions, feelings and beliefs, please indicate how much you personally agree or disagree with each statement by circling SD for "Strongly Disagree", D for "Disagree", A for "Agree", or SA for "Strongly agree" to the right of the statement.

EXAMPLE ITEM:

It is important to let people know they are special

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
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</thead>
<tbody>
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</table>

Circle SD if you strongly disagree with the statement.
Circle D if you disagree with the statement.
Circle A if you agree with the statement, or
Circle SA if you strongly agree with the statement

There are no right or wrong responses to the statements. You should give the responses that most accurately describe your personal actions, feelings and beliefs. It is best if you respond with your first impression when answering.
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>It is important to let people know they are special</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>2</td>
<td>I would baby-sit for fun</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>3</td>
<td>I would be happier if I was thinner</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>4</td>
<td>I would feel extremely ashamed if I had many sexual partners</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>5</td>
<td>I am always trying to lose weight</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>6</td>
<td>I don’t seek recognition for my efforts</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>7</td>
<td>When I have a romantic relationship, I enjoy focusing my energies on it</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>8</td>
<td>There is no point to cleaning because things will get dirty again</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>9</td>
<td>I am not afraid to hurt people’s feelings to get what I want</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>10</td>
<td>Taking care of children is extremely fulfilling</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>11</td>
<td>I would be perfectly happy with myself even if I gained weight</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>12</td>
<td>If I were single, my life would be complete without a partner</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>13</td>
<td>I rarely go out of my way to act nice</td>
<td>SD</td>
<td>D</td>
<td>A</td>
<td>SA</td>
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</tbody>
</table>

*Please check to make sure you have answered all the items*
Use the following rating scale to indicate how open you are about your sexual orientation to the people listed below. Try to respond to all of the items, but leave items blank if they do not apply to you.

1 = person **definitely** does NOT know about your sexual orientation status
2 = person **might** know about your sexual orientation status, but it is NEVER talked about
3 = person **probably** knows about your sexual orientation status, but it is NEVER talked about
4 = person **probably** knows about your sexual orientation status, but it is RARELY talked about
5 = person **definitely** knows about your sexual orientation status, but it is RARELY talked about
6 = person **definitely** knows about your sexual orientation status, and it is SOMETIMES talked about
7 = person **definitely** knows about your sexual orientation status, and it is OPENLY talked about
0 = not applicable to your situation; there is no such person or group of people in your life

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</thead>
<tbody>
<tr>
<td>1. mother</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2. father</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3. siblings (sisters, brothers)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4. extended family/relatives</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>5. my new straight friends</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>6. my work peers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>7. my work supervisor(s)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>8. members of my religious community (e.g., church, temple)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>9. leaders of my religious community (e.g., church, temple)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>10. strangers, new acquaintances</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>11. my <strong>old</strong> heterosexual friends</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
APPENDIX G
DEMOGRAPHIC QUESTIONNAIRE

Please complete each item about you and your background:

1. Please select the option that best represents your racial/ethnic group:
   - [ ] African American/Black
   - [ ] Asian American
   - [ ] Latino/a American
   - [ ] Native American/Indian
   - [ ] European American/White
   - [ ] Bi/Multiracial American
   - [ ] Other ____________________

2. How old are you? ________

3. Please indicate your gender:
   - [ ] Female
   - [ ] Male

4. Please select the option that best represents your sexual orientation:
   - [ ] Attracted exclusively to the same sex/Lesbian
   - [ ] Attracted mostly to the same sex
   - [ ] Equally attracted to the same and opposite sex/Bisexual
   - [ ] Attracted mostly to the opposite sex
   - [ ] Attracted exclusive to the opposite sex/heterosexual

5. What college/university are you currently attending? _______________________

6. Please select your current academic standing:
   - [ ] Freshman
   - [ ] Sophomore
   - [ ] Junior
   - [ ] Senior
   - [ ] Post-Baccalaureate
☐ Graduate Student
☐ Other _____________

7. What is your current or intended major? _____________________
8. What is your overall GPA? ______________
APPENDIX H
HUMAN SUBJECTS APPROVAL

NOTICE OF APPROVAL

January 6, 2010

Melissa R. Plaxican
319 Potomac Circle 101
Aurora, CO 80011

From: Sharon McWhorter, IRB Administrator

Re: IRB Number 201000102 "Social Cognitive Predictors of Lesbians' Vocational Interests"

Thank you for submitting your IRB Application for Review of Research Involving Human Subjects for the referenced project. Your application was approved on January 4, 2010. Your protocol represents minimal risk to subjects and matches the following federal category for exemption:

☐ Exemption 1 - Research conducted in established or commonly accepted educational settings, involving normal educational practices.

☒ Exemption 2 - Research involving the use of educational tests, survey procedures, interview procedures, or observation of public behavior.

☐ Exemption 3 - Research involving the use of educational tests, survey procedures, interview procedures, or observation of public behavior not exempt under category 2, but subjects are elected or appointed public officials or candidates for public office.

☐ Exemption 4 - Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens.

☐ Exemption 5 - Research and demonstration projects conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine public programs or benefits.

☐ Exemption 6 - Taste and food quality evaluation and consumer acceptance studies.

Annual continuation applications are not required for exempt projects. If you make changes to the study's design or procedures that increase the risk to subjects or include activities that do not fall within the approved exemption category, please contact me to discuss whether or not a new application must be submitted. Any such changes or modifications must be reviewed and approved by the IRB prior to implementation.

Please retain this letter for your files. If the research is being conducted for a master's thesis or doctoral dissertation, the student must file a copy of this letter with the thesis or dissertation.

Cc: David Tokar - Adviser
Cc: Sieghard Woods - IRB Chair

☐ Approved consent form/s enclosed

Office of Research Services and Sponsored Programs
Akron, OH 44325-2102
330-972-7666 •
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