ABSTRACT

Title of Dissertation: CAREER BARRIERS OF COLLEGE WOMEN
          ACROSS RACIAL/ETHNIC GROUPS:
          EXAMINATION OF THE PERCEPTION OF
          BARRIERS SCALE

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The purpose of the study was to examine the factor structure, measurement

invariance, and psychometric properties of a commonly used measure of perceived

career barriers (The Perception of Barriers Scale; Luzzo & McWhirter, 2001) with a

sample of racially diverse college women. The results supported a nine-factor

structure of the Perception of Barriers Scale indicating different sources of barriers. In

general, configural, metric, and scalar invariance of the Perception of Barriers

subscales were found across Asian American, African American, Latina American,

and White American college women for the nine-factor structure. All three groups of

women of color reported higher career barriers due to racial discrimination, higher

educational barriers due to finances concerns, and higher educational barriers due to

lack of confidence and skills than White women. The results also demonstrated the

potential difference in salient barriers across Asian American, African American, and

Latina American women. The reliability estimates were satisfactory and construct

validity was supported by negative associations among the scores on several Perception of Barriers subscales and a career-self-efficacy measure. The findings suggested that college women experience barriers from various sources when pursuing their career and educational goals.

CAREER BARRIERS OF COLLEGE WOMEN ACROSS RACIAL/ETHNIC
GROUPS:
EXAMINATION OF THE PERCEPTION OF BARRIERS SCALE

by

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Chapter 1: Introduction

Although the proportion of women and racial/ethnic minorities in the labor force in the United States has increased in the last few decades, the occupational disparities between women and men and across racial/ethnic groups have been persistent (Byars-Winston, Fouad, & Wen, 2015). Various external and internal barriers continue to prevent women from having access to diverse occupations, achieving career success, and utilizing their talents and abilities (Fassinger, 2008). Particularly, the underrepresentation of racial/ethnic minority women has continued in leadership positions and fields associated with high social status. For example, there are only 23 female chief executive officers in the 500 largest companies in the United States and only two of them are racial/ethnic minority women (Catalyst, 2015). Racial/ethnic minority women often encounter more challenges than White women and men and racial/ethnic minority men, such as experiencing both sexual and ethnic harassment (Berdahl & Moore, 2006). Importantly, systemic sexism and racism not only influence women in the workplace but also prevent young women from pursuing non-traditional and prestigious careers when they consider their future careers (Betz, 2002; Cook, Heppner, & O'Brien, 2002). However, there has been lack of consensus regarding what types of barriers exist for college women and which barriers are salient for women in different racial/ethnic groups. Thus, the purposes of the present study were to examine the factor structure of a commonly used measure of perceived career barriers and to investigate measurement invariance across different racial/ethnic groups of college women. The findings of this study could improve the assessment of salient barriers for college women across racial/ethnic groups and

inform the development of specific interventions to eliminate barriers for women of color.

Several theories have explained how environmental factors can influence one's choice and behaviors via perceived barriers. Particularly, the Expectancy Value Model of Achievement-Related Task Choices has highlighted the role of a broader socio-political context in women's achievement-related choices (Eccles, 2009; Eccles, 2011). According to Eccles' model, women are likely to aspire to a career domain for which they have the highest expectation for success and the greatest subjective value (Eccles, 2009; Eccles, 2011; Wigfield & Eccles, 2000). Women's expectations and values are shaped by a variety of gender socialization processes (e.g., gender-role related beliefs and input from parents, teachers, siblings, peers, and media). Accordingly, non-traditional careers for women that are not consistent with their gender role schema might not become "a part of each individual's field of possible choices" (Eccles, 2011, p. 196). Thus, the model supports that gender role expectations for women can decrease their access to diverse opportunities via limited perception of viable options.

Although Eccles' model contributes to the conceptualization of the role of gender socialization processes in women's perception of barriers, this model does not fully address that racial/ethnic minority women's experiences are grounded in their collective identity as members of a racial/ethnic minority group. Therefore, Social Cognitive Career Theory (SCCT; Lent & Brown, 2013; Lent, Brown, & Hackett, 1994) was included as a second theoretical framework to highlight the role of environmental factors and perceived barriers in women's career development. The

SCCT model posits that person inputs (e.g., race, gender, personality) and background contextual factors (e.g., range of potential academic-career role models) influence self-efficacy beliefs and outcome expectations through prior learning experiences. In turn, self-efficacy beliefs and outcome expectations are translated into career interests, choice goals, choice actions or performance.

SCCT posits that contextual variables such as environmental barriers play an important role in determining individual's career interests, choices, and performance through several paths. First, individuals' environment can impact their vocational outcomes via distal contextual affordances (e.g., lack of financial resources) that can influence learning experiences. Then, these learning experiences are likely to shape the development of self-efficacy beliefs or outcome expectations that lead to relevant interests, goals, and actions. For example, gender role socialization processes can influence women's interests in gender stereotyped activities by discouraging experiences that may lead to strong self-efficacy beliefs and positive outcome expectations regarding traditionally masculine activities. Second, proximal contextual variables (such as perceived environmental supports and barriers related to choice goals and actions) can have a direct effect on developing interests or making a career choice. For example, family members' negative attitudes about college can directly influence lack of interests or goals for academic success. Third, contextual factors can be indirectly related to the career outcomes through the social-cognitive elements (self-efficacy beliefs, outcome expectations, and personal goals). Empirical findings supported that the proximal contextual supports and barriers promoted choice goals both directly and via indirect paths through self-efficacy, but the indirect path

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presented a stronger effect than the direct path (Lent, Brown, Schmidt, Brenner, Lyons, & Treistman, 2003; Sheu, Lent, Brown, Miller, Hennessy, & Duffy, 2010). Previous studies on racial/ethnic minority women's career development also demonstrated an indirect effect of perceived barriers via self-efficacy beliefs (e.g., Flores & O'Brien, 2002; Rivera, Blumberg, Chen, Ponterotto, & Flores, 2007).

Both Eccles' model and SCCT support the importance of studying perceptions of the factors that could negatively impact women's vocational choices and behaviors. Within vocational psychology, "career barriers" has been used as an overarching term to refer to these factors that interfere with the career development process (Swanson, Daniels, & Tokar, 1996). Historically, the concept of barriers was introduced to explain a pervasive ability-attainment gap in women's career progress. The early literature on career barriers highlighted how external factors (e.g., stereotypes about women's competence) create barriers for women when pursuing diverse achievement-directed behaviors (e.g., O'Leary, 1974). Subsequently, empirical studies have applied the construct of career barriers to advance understanding of the vocational choices and actions of diverse populations including women and men, racial/ethinic minorities, college students, and adolesents (Chen & Fouad, 2012; Kenny et al., 2007; Lent et al., 2002; McWhirter, Torres, Salgado, & Valdez, 2007; Swanson & Woitke, 1997). Findings from these studies generally indicated that any individual can perceive barriers in career development, but the experience of career barriers is more salient and impactful to traditionally marginalized populations.

Based on previous literature, career barriers are conceptualized by the following characteristics in the current study. First, it is assumed that individuals' experiences of career barriers reflect the opportunity structure in the world of work (Astin, 1984). Counseling psychologists have been interested in understanding how individuals' experience of career barriers interact with their social and environmental context rather than viewing barriers as a personal attribute (Fassinger, 2008; Lent et al., 2000). Social oppression can create barriers in the form of restricted opportunities, discrimination, or stereotypes toward minority groups such as women of color (Fassinger, 2008; Hite, 2004; Leskinen, Rabelo, & Cortina, 2015). According to a meta-analysis of the role of race/ethnicity in career choices, racial and ethnic minorities perceived fewer career opportunities and more barriers than their White peers even though they did not differ in most career-relevant constructs including career interests, career aspirations, and confidence and skills in career decision-making (Fouad & Byars-Winston, 2005). Given the wide challenges that traditionally-marginalized people encounter at workplace, we believe that career barriers are construed in an existing social hierarchy.

Second, we focus on how people construct their experience of barriers based on their individual experience, expectations, and perceptions rather than external barriers *per se*. Lent, Brown, and Hackett (2000) noted, "barrier perception measures can engage beliefs about the self or environment that extend beyond the mere presence or absence of particular barriers" (p. 41). Past experiences of barriers, vicariously acquired information on barriers, and one's confidence in coping with barriers can shape the perception of barriers (Lent et al., 2000). Based on the social

constructivist approach, it is hypothesized that the perception of barriers dynamically reflects individual's phenomenological experience of the reality. This assumption emphasizes that the perception of barriers more so than the actual barriers can play a significant role in vocational choices and outcomes (Swanson & Woitke, 1997). It is aligned with findings on social class indicating that subjective social class (e.g., perceived location in an economic hierarchy) is more related to psychological experiences (such as life satisfaction) than objective measures of social class (e.g., income; Liu, Ali, Soleck, Hopps, & Pickett Jr, 2004). Also, the social constructivist view on perceptions of barrier focuses on both subjective and objective aspects of barriers as a target of interventions for counseling psychologists (Fassinger, 2008).

Additionally, it is important to position the perception of barriers in a temporal and situational context to enhance its conceptual clarity. As highlighted in the SCCT model, the environment factor could have proximal or distal influence on vocational attitudes, choices, and behaviors (Lent et al., 2000). Particularly for young college women, some barriers could have a more distal influence on their future career aspirations while other barriers could have a proximal effect on achievement of developmental career goals. For example, a college woman might perceive gender discrimination as a barrier to achieve her future career goals (e.g., being promoted as a senior manager), but she might not strongly anticipate encountering gender-based barriers in completing proximal career developmental tasks (e.g., choosing business as her major in college). On the contrary, certain barriers (e.g., barriers due to lack of financial resources) could be more significant regarding proximal career goals (e.g., going to a medical school) than future goals (e.g., becoming a leader in the medical

field). Conceptualizing career barriers related to the context (e.g., sources of barriers or temporal career developmental goals) also is important when understanding the dynamic nature of the construct rather than assuming a static and non-changing internal attribute. In this sense, the perception of career barriers can be distinguished from personal variables such as negative affect or low self-esteem. Similarly, contextualizing career barriers as a psychological experience that occurs in the process of career development can be useful in differentiating the construct from other related constructs (e.g., racism or stigma consciousness).

Several measures of barriers exist in the vocational literature to reflect diverse dimensions of perceived barriers. The Perception of Barriers Scale (POB; Luzzo & McWhirter, 2001; McWhirter, 1997) was developed to investigate the role of barriers as related to both career and academic achievement. The initial version of the scale was constructed for Mexican American and White adolescents to understand barriers perceived prior to college (McWhirter, 1997). Later, the Perception of Barriers Scale was revised to assess career and educational barriers for college students (Luzzo & McWhirter, 2001). Particularly, the authors intentionally added items addressing childcare concerns for college women (Luzzo & McWhirter, 2001). The modified scale includes a comprehensive list of barriers that college students may encounter in pursuing current educational aspirations and future career goals based on previous literature that addressed racial/ethnic and gender discrimination, childcare-related concerns, lack of financial supports, lack of support from family, lack of preparation in college, and lack of confidence and skills as a barrier (Luzzo & McWhirter, 2001; McWhirter, 1997). The authors suggested that the measure could be used for diverse

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groups of college students to assess perceived barriers, assuming that categorization of barriers would be equivalent across groups although the saliency of the barriers differ across groups.

Although other measures assessing career barriers were available, this study particularly focused on evaluating the efficacy of the Perception of Barriers Scale for college women for the following reasons. First, the measure provided a comprehensive assessment of career barriers that was not limited to certain domains such as engineering or math-related careers (e.g., Fouad, Hackett, Smith, Kantamneni, Fitzpatrick, Haag, & Spencer, 2010; Lent, Brown, Brenner, Chopra, Davis, Talleyrand, & Suthakaran, 2001) or to a particular racial/ethnic group (e.g., the Occupational Barriers Scale for Asians; Chen & Fouad, 2012). The original authors also included items on the measure that were relevant to young women *and* minorities by considering the intersectionality of social identities (e.g., items related to childcare concerns). Second, the Perception of Barriers Scale aimed to directly evaluate the *likelihood* of particular barriers in future career and current education, whereas another widely used scale, the Career Barriers Inventory (Swanson et al., 1996; Swanson & Tokar, 1991), focused on the *impact* of career barriers that can be potentially confounded with efficacy beliefs in coping with such barriers (Lent, Brown, & Hackett, 2000). Although the perceived likelihood of encountering barriers was highly associated with the perception of difficulty to overcome the barriers ($r =$ .66 in McWhirter et al., 2007), we believe the likelihood format is less compounded with the efficacy beliefs than the impact form. Third, the length of the Perception of Barriers Scale (32 items) offered an advantage in increasing completion rates,

whereas the Career Barriers Inventory is relatively long (70 items). Additionally, most studies about the career barriers faced by racial/ethnic minority individuals have used the Perception of Barriers Scale (Flores & O'Brien, 2002; Lopez & Ann-Yi, 2006; Wright, Perrone-McGovern, Boo, & White, 2014).

However, although the Perception of Barriers Scale has been used widely in research regarding the career development of minority populations, the factor structure and measurement invariance of the scale have never been investigated. The authors of the Perception of Barriers Scale originally designed two dimensions of perceived barriers: (1) barriers to current educational aspirations and (2) barriers to future career achievements. Prior research found a potential difference between career-related barriers and educational-related barriers by demonstrating that college women perceived more barriers than men in pursuing their future career goals, but they did not perceive more barriers than men in relation to their current educational aspirations (Raque-Bogdan, Klingaman, Martin, & Lucas, 2013). However, the finding cannot be unambiguously interpreted given that educational barriers focus on the perception of current experiences while career barriers are framed as anticipation of future experiences.

Several researchers argued for categorizing different types of barriers to better understand how each barrier plays a unique role in vocational behaviors (Lent et al., 2000; McWhirter et al., 2007; Swanson et al., 1996). Relatedly, several studies constructed domain-specific subscales when using the Perception of Barriers Scale such as barriers related to economic concern (Gonzalez, Stein, & Huq, 2013) or career barriers related to gender and racial/ethnic discrimination (Constantine,

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Wallace, & Kindaichi, 2005; Flores & O'Brien, 2002). These previous studies

suggested that the Perception of Barriers Scale might be better represented with

several subscales of barriers that were related to specific concerns rather than the

author-hypothesized two-factor structure. Therefore, this study seeks to improve the

assessment of career barriers by exploring the latent structure of the Perception of

Barriers Scale.

Competing measurement models were specified based on the previous

literature. First, a single factor model (Model 1: see Figure 1) was tested assuming a

general barriers factor. As suggested by the original authors, a two first-order factor

model also was hypothesized composed of career barriers and educational barriers.

Next, a first-order nine factor model indicating different domains of perceived

barriers was proposed as an alternative factor model. The items were categorized into

nine domains including: (a) Career Barriers Due to Gender Discrimination, (b) Career

Barriers Due to Racial Discrimination, (c) Career Barriers Due to Children/Future

Family Concerns, (d) Educational Barriers Due to Financial Concerns, (e)

Educational Barriers Due to Lack of Support or Interpersonal Problems, (f)

Educational Barriers Due to Lack of Confidence or Skills, (g) Educational Barriers

Due to Relationship or Childcare Concerns, and (h) Educational Barriers Due to

Gender Discrimination, and (i) Educational Barriers Due to Racial Discrimination

(Model 3; see Figure 3). The nine domains were developed by identifying the content

of the items and cross-checking the domains with previous studies on career barriers

(e.g., Lent et al., 2002, McWhirter et al., 2007). A second-order model (Model 4; see

Figure 4) with two higher factor (career barriers and educational barriers) and nine

domain factors (as described in the Model 3) also was considered as an alternative model.

The second purpose of the study was to evaluate the measurement invariance of the Perception of Barriers Scale across different racial/ethnic groups. Measurement invariance (or equivalence) indicates that the underlying measurement model of the latent construct is equivalent across different populations such as gender, race/ethnicity, socioeconomic status, or generational status groups (Byrne, Shavelson, & Muthén, 1989; Cheung & Rensvold, 2002; Dimitrov, 2006; Vandenberg & Lance, 2000). Since we cannot assume that the measure assesses the intended construct in a reliable and valid manner for every group, violations of measurement equivalence can result in invalid interpretations of the research findings. Testing measurement invariance is especially important when assessing career barriers across racial/ethnic groups given that scholars have been interested in examining racial/ethnic difference in perceived career barriers (e.g., Lopez & Ann-Yi, 2006, Luzzo & McWhirter, 2001). For example, Lopez and Ann-Yi (2006) compared scores on the Perception of Barriers Scale among African, Latina, and White American college women and reported that African American college women perceived more career barriers than White and Latina college women. However, if the measure captures latent constructs differently across racial/ethnic groups, group comparisons related to the latent constructs would be meaningless. Vandenberg and Lance (2000) noted that "unambiguous interpretation of observed mean differences is dependent on the between-group equivalence of the underlying measurement model" (p. 9). Thus, the

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demonstration of measurement equivalence functions as a logical prerequisite to draw meaningful scientific comparisons in future analyses of perceived barriers.

Indeed, adequately capturing the meaning of psychological constructs has been especially emphasized in the multicultural research related to diverse populations (Miller & Sheu, 2008). Encountering barriers can be qualitatively different experiences for women across different racial/ethnic groups. For example, barriers related to racial/ethnic discrimination would be less relevant to White college women than college women of color. Among women of color, women in different racial/ethnic minority groups (African, Asian, and Latina American) might have unique experiences related to stereotypes, gender-roles expectations, and challenges based on a particular racial identity (Miville & Ferguson, 2014). For example, the literature highlighted that being stereotyped as a model minority or perpetual foreigner is salient marginalized experiences for Asian Americans (Shen, Wang, & Swanson, 2011). African Americans are more likely to experience assumptions of being intellectually inferior or criminals (Lewis & Neville, 2015). For Latina Americans, lack of available family social capital emerged as an important barrier for educational attainment (Martin, Simmons, & Yu, 2013). Since different types of gender-role expectations, experiences of stereotypes, and environmental factors can influence perceptions of barriers, the invariance of the measurement properties of the Perception of Barriers Scale across racial/ethnic groups should be investigated prior to using the instrument to compare different groups.

In addition, it is critical to examine construct validity. Thus, the current study tested the relationships among the subscales of the Perception of Barriers Scale and a

measure of career self-efficacy beliefs. Career self-efficacy beliefs are defined as confidence in one's ability to complete tasks necessary for career choice and development such as self-appraisal, gathering occupational information, goal selection, planning, and problem solving (Betz, Klein, & Taylor, 1996). A moderate negative association between perceived barriers and career self-efficacy beliefs was demonstrated in multiple samples (Rivera et al., 2007; Sheu et al., 2010; Wright et al., 2014). It was hypothesized that the subscales on the Perception of Barriers Scale would be associated negatively with the Career Decision-Making Self-Efficacy Scale-Short form (CDSES-SF: Betz et al., 1996) based on the SCCT model. SCCT posited that perceived barriers are likely to influence career outcomes (interests, goals, and actions) via self-efficacy beliefs (Lent, Brown, Sheu, Schmidt, Brenner, Gloster, Wilkins, Schmidt, Lyons, & Treistman, 2005). However, we did not expect to find a strong association between the two scales because (1) some individuals might preserve their confidence in abilities by attributing experiences of barriers to external factors rather than internal attributes, and (2) people with high confidence could be less influenced by perceptions of external constraints (Major, Kaiser, & McCoy, 2003). Thus, more perceived barriers in pursuing women's career and educational goals were assumed to be moderately associated with a lower level of confidence in achieving their career goals. Additionally, reliability estimates were investigated for each subscale.

In summary, the overall purpose of the study was to examine the efficacy of the Perception of Barriers Scale when used with a sample of diverse college women. For this purpose, the factor structure of the Perception of Barriers Scale was

examined. Next, the study investigated its measurement invariance across different racial/ethnic groups of college women (African American/Asian American/Latina American/White American women). Finally, reliability and validity estimates were examined.

Specifically, it was hypothesized that the Perceptions of Barriers Scale would have a multi-dimensional factor structure when used with college women due to prior research that used several subscales of this instrument. Conceptually relevant alternative models were compared in terms of goodness-of-fit indices. After confirming the baseline measurement model, the measurement invariance of the Perceptions of Barriers Scale was investigated across Asian, African American, Latina, and White college women. Specific hypotheses regarding different levels of measurement invariance (e.g., configural, metric, and scalar invariance) were not proposed given the lack of prior research indicating how different racial/ethnic groups of women might interpret the items. In addition, the subscales of the Perceptions of Barriers Scale were expected to demonstrate adequate reliability (i.e., greater than .70 for each scale). Moreover, it was hypothesized that the subscales of the Perceptions of Barriers Scale would be correlated negatively with the total score of the Career Decision Self-Efficacy scale.

In conclusion, the findings of this study can advance the assessment of barriers that college women experience in their career development and assessed whether these barriers were equivalent across racial/ethnic groups. This work can be used to investigate further the role of barriers in limiting the career aspirations and access to diverse occupations for racial/ethnic minority women. Ultimately, the

research findings could facilitate efforts to eliminate barriers particularly related to

systemic sexism and racism, so all college women can achieve their vocational and

occupational potential.

Chapter 2: Method

Procedure

  This study used an archival data set. The original data were collected as follows after receipt of IRB approval. The registrar at a large Mid-Atlantic university provided a list of email addresses for the incoming first-year students to a research unit at the University Counseling Center. After their participation in first-year orientation and prior to the start of the semester, students received an invitation to participate in an online survey from the University Counseling Center with a link to a consent form and the survey. Three to four reminders were sent to those who had not completed the survey during the summer and the survey link was closed on the morning of the first day of class. The survey consisted of about 200 questions including demographic questions and scales related to college adjustment. The survey took approximately 25 to 35 minutes and participants were told that they could stop participation at any time. The data sets from the 2010, 2011, 2013, and 2015 academic years were included in this research. The response rates ranged from 45% to 58%. Surveys containing responses to more than 90% of the items were retained for analysis. After excluding participants who had more than 10% missing data, the percentage of missing items ranged from .01% to 6.2%. To impute missing values, the expectation maximization method was used (Schlomer, Bauman, & Card, 2010).

Participants

  The sample was selected from the archival data using the following inclusion criteria: participants who self-identified as "woman" (49.23% of the initial data pool), reported that their ages were between 17 and 20-years-old (93.49% of the initial data

pool), and responded to more than 90% of the items: 4,195 women met the inclusion

criteria. Included in the sample were 957 women who participated in the survey in

2010 (22.81%), 1,298 (30.94%) in 2011, 1,017 in 2013 (24.24%), and 923 (22.00%)

in 2015. In terms of race/ethnicity, 2,296 students (56.89%) identified as White, 688

(18.20%) as Asian, 541 (14.60%) as African American, and 373 (10.30%) as Latina

(77 did not report their racial/ethnic groups (1.8%)). Moreover, 219 women endorsed

other racial groups who were not included in this study (e.g., Multiracial, American

Indian, Alaska Native, Pacific Islander, and Unknown). Thus, the final sample was

composed on 3,898 women who identified as White, Asian, African American, or

Latina.

 The majority of participants reported that their parents were born in the United

States (63.49% of the mothers and 62.54% of the fathers); 33.01% of the mothers and

32.27% of the fathers were born in a foreign country (3.48% and 5.18% of the

responses were missing, respectively). Most of the parents were college-educated

(70.54% for mother and 72.4% for father) and 7.26% of the participants identified

themselves as a first-generation college student. In terms of sexual orientation, the

majority (94.05%) of the participants identified as heterosexual.

Measures

 Perceived career barriers. The Perception of Barriers Scale (Luzzo &

McWhirter, 2001; McWhirter, 1996) was used to assess perceived career barriers of

college women (see Appendix B). The Perception of Barriers Scale is a 32-item scale

that consists of items evaluating career-related and education-related barriers. Items

were rated on 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly*

agree) and summed for each subscale. High scores indicated high levels of perceived career barriers. An example item is "People's attitudes about my race are currently a barrier to my educational aspirations." The Cronbach alpha for the total scale was .90 (Luzzo & McWhirter, 2001). The Career-Related Barriers and Education-Related Barriers subscales were correlated negatively with a measure of career decision-making self-efficacy and were correlated positively with a measure of career indecision for White, African American, and Latina college women (Lopez & Ann-Yi, 2006).

Career decision-making self-efficacy. The Career Decision-Making Self-Efficacy Scale-Short form (CDSES-SF: Betz et al., 1996) was used to assess confidence in completing tasks necessary for career decision-making (see Appendix C). The CDSES-SF consists of 25 items measuring the five career-choice competencies including self-appraisal, gathering occupational information, goal selection, planning, and problem solving. The participants were asked to rate their confidence on a Likert scale ranging from 1 (*no confidence at all*) to 5 (*complete confidence*). A total score was computed by summing the 25 items. High scores reflected strong confidence in career decision-making. A sample item was "Choose a major or career that will fit your interests." The Cronbach alpha ranged from .78 to .87 across five subscales with a sample of predominately White college students (Betz, Hammond, & Multon, 2005). The metric equivalence of the CDSES-SF across Asian Americans and Europeans was supported in a previous study (Miller, Roy, Brown, Thomas, & McDaniel, 2009). Partial support for the reliability and validity of this scale for African American students has been reported through moderate internal

consistency of the five subscales (Chaney, Hammond, Betz, & Multon, 2007) and

correlations between the CDSES-SF scores and a measure of career commitment with

a sample of African American college students (Chung, 2002). In the current study,

the Cronbach's alpha for the 25 items was .96 for Asian, .97 for African American,

.96 for Latina, and .96 for White women.

Demographic questions. Basic demographic information was obtained

including age, race/ethnicity, gender, sexual orientation, and parents' education levels

(see Appendix D).

Analytic approaches

The first step was to explore the baseline factor structure of the Perception of

Barriers Scale by comparing alternative measurement models (Model 1: single-factor

model; Model 2: two-first-order-factor model; Model 3: nine first-order factor model;

Model 4: second-order model with two higher-order factors and nine first-order

factors). One hundred women from each racial/ethnic group (400 women in total)

were selected randomly to run an initial confirmatory factor analysis (CFA) with

Mplus Version 7 (Muthén & Muthén, 2012). After evaluation of all models, the better

fitting model was used as the baseline model for evaluating measurement invariance

across different racial/ethnic groups of women.

The next step involved sequential processes of testing measurement

invariance of the Perception of Barriers Scale for African American, Asian, Latina,

and White college women. The processes include evaluating whether the factor

configuration, loadings, and item intercepts are equivalent across groups as outlined

by previous literature on measurement invariance (Sass, 2011; van de Schoot, Lugtig,

& Hox, 2012; Vandenberg & Lance, 2000). The most common procedures for testing measurement invariance are the forward approach where model constraints are added sequentially (see the following paragraph). This sequential approach provides more information regarding measurement differences across groups than testing factor loading and intercepts simultaneously (Sass, 2011).

Specifically, a multi-group CFA was conducted to test whether the baseline model fit for each racial/ethnic group separately (configural invariance). Next, it was tested that the factor loadings were equivalent across groups and the intercepts were allowed to differ (metric invariance). Then, the factor loadings and intercepts were constrained to be equal across groups (scalar invariance). It is important to note that groups can be compared on the latent variables with different amounts of error between groups if scalar invariance is established (van de Schoot et al., 2012).

To assess the fit of the hypothesized models, chi-square tests and goodness-of-fit indexes were used. The chi-square test provided information regarding the difference between the sampled and hypothesized covariance matrices, but the chi-square test is known to be sensitive to non-normality in the data and sample size. Thus, the study also aimed to determine the model fit based on the comparative and absolute fit indices (Kline, 2010). The comparative indices provided information regarding the fit of the measurement model compared to the null model (e.g., Comparative Fit index: CFI), whereas the absolute indices examined the relative fit of the measurement model relative to a perfectly fitting model (e.g., Root Mean Square Error of Approximation: RMSEA; Standardized Root Mean Square Residual: SRMR). CFI values greater than or equal to .90, RMSEA values less than or equal to

.08, and SRMR values less than or equal to .08 were considered to reflect acceptable fit of the model to the data (Hu & Bentler, 1998; Hu & Bentler, 1999).

The null hypotheses of invariance were tested by evaluating the fit of a restricted model relative to the less restrictive baseline model. The relative fit of the different measurement models was compared using (a) Satorra and Bentler's (2001) scaled chi-square difference tests, and (b) changes in alternative fit indices (Chen, 2007). The chi-square difference test indicated whether the decrease in fit associated with a more constrained model was statistically significant. The more constrained model was preferred if the constraints on a parameter (e.g., factor loadings, intercepts, and error variance) did not lead to a significant decrease in fit. Since the chi-square difference test is sensitive to sample size, the changes in CFI, RMSEA, and SMRM were considered as an alternative index for meaningful decrease in fit (Chen, 2007). For the factor loading invariance, a change of $\geq-.010$ in CFI, a change of $\geq.015$ in RMSEA, or a change of .030 in SRMR were considered indicative of a significant decrease in fit between models. For the intercept invariance, a change of $\geq-.010$ in CFI, a change of $\geq.015$ in RMSEA, or a change of .010 in SRMR would indicate non-invariance.

Finally, the reliability estimates and construct validity of the Perception of Barriers subscales were tested. Two types of reliability estimates (Cronbach alpha and composite reliability) were calculated for each subscale. To examine the construct validity of the Perception of Barriers Scale, bivariate correlations among the Perception of Barriers subscale scores and the CDSES-SF total score across racial/ethnic groups were reported.

Chapter 3: Results

Identifying baseline model

In terms of multivariate normality assumptions, the descriptive statistics indicated that the data set was moderately skewed (from -.31 to 1.75) and kurtotic (from -1.01 to 3.30). Thus, maximum likelihood parameter estimators were used because they are less affected by non-normality when reporting the results (e.g., MLM in Mplus).

Four competing models were tested to identify the baseline model of the Perception of Barriers Scale with 400 women (100 randomly selected women from each racial group). To parametrize the CFA model, the latent variance was constrained and all factor loadings and intercepts were freely estimated. In the single factor model, 32 items were specified as indicators of a single latent barrier factor (Model 1). In the two-first-order-factor model, first 11 items were specified to indicate career-related barriers and other 21 items were specified to reflect education-related barriers (Model 2). The nine-first-order-factor model was created as follows: (a) items 1, 3, 5, and 7 were specified to indicate career barriers due to gender discrimination, (b) items 2, 4, 6, and 8 were specified to reflect career barriers due to racial discrimination, (c) items 9, 10, and 11 were specified as indicators of career barriers due to children/future family concerns, (d) items 12, 30, and 32 were specified as indicators of educational barriers due to financial concerns, (e) items 13, 15, 16, 17, 21, and 31 were specified to indicate educational barriers due to lack of support or interpersonal problems, (f) items 14, 18, 19, and 20 were specified to reflect educational barriers due to lack of confidence or skills, (g) items 26, 27, 28,

and 29 indicated educational barriers due to relationship/childcare concerns, (h) items

22 and 23 reflected educational barriers due to gender discrimination, and (i) items

24 and 25 were specified to refer educational barriers due to racial discrimination

(Model 3). Lastly, a second-order model was designed to include two higher-order

factors (career barriers: items 1 through 11; educational barriers: items 12 through 32;

Model 4) and nine first-order factors as described in the Model 3.

The chi-square goodness-of-fit statistic and alternative model fit indices for all

models are presented in the Table 1. The resulting chi-square statistic for all

hypothesized models was significant indicating that the null hypothesis of perfect fit

was rejected. The alternative goodness-of-fit indices of Model 1 and Model 2 did not

demonstrate acceptable fit as well. However, the alternative fit indices indicated an

acceptable model fit for Model 3 (SBx^2 = 830.520, df = 428, $p < .001$; CFI = .938;

RMSEA = .048 [90% CI: .044 - .053]; SRMR = .053). Model 4 showed good fit

except for the SRMR (SBx^2 = 1134.936, df = 454, $p < .001$; CFI = .911; RMSEA =

.057 [90% CI: .052 - .061]; SRMR = .081).

Next, two models were compared because only Model 3 (nine first-order

factors), and Model 4 (two higher-order factors and nine first-order factors) had

alternative fit indices that were close to the criteria described earlier. Between Model

3 and Model 4, Model 3 demonstrated a significantly better fit (ΔSBx^2 = 196.859, Δdf

= 26, $p < .001$, ΔCFI = -.027). The results showed that there was a significant

improvement of fit when Model 3 and Model 4 were compared, with Model 3

demonstrating the best fit.

Thus, Model 3 was chosen as a baseline model based on several considerations. First, Model 3 had superior fit compared with other alternative models. Second, the nine first-factor structure had the conceptual advantage of including the specific domains of barriers. Therefore, it was concluded that the specific domain-related factor can provide further explanation regarding how individuals experience barriers from different sources (e.g., educational barriers due to financial concerns).

In Model 3, factor loadings ranged from .61 to .94 ($p < .001$). The Pearson correlations among subscales ranged from .04 to .69 (see Table 2). The highest correlation was found between the scores on the Educational Barriers Due to Gender Discrimination and Educational Barriers Due to Racial Discrimination subscales ($r = .69$, $p < .001$).

Measurement invariance testing across Asian, African American, Latina, and White women

To test measurement invariance, the participants who were not included in the initial CFA were considered for the subsequent analyses. Given that unbalanced sample size among groups can influence the parameter estimation process in multigroup confirmatory analysis (Chen, 2007; Cheung & Lau, 2011), an equal number of women from each racial/ethnic group was selected for the analyses. Thus, tests of measurement invariance included 300 randomly selected women from each racial/ethnic group (a total of 1,200 participants; 300 Asian, 300 White, 300 African American, and 300 Latina women).

To test configural invariance, a multigroup CFA was performed with Model 3 without any equality constrains. The results of configural invariance testing showed acceptable model fit (SBx^2 = 3122.242, df = 1,712, p <.001; CFI = .930; RMSEA = .049 [90% CI: .049 - .055]; SRMR = .060). All the estimated model parameters were significant for all racial/ethnic groups (Table 3). Next, a model was tested where only the factor loadings are constrained but the intercepts were allowed to differ between groups (metric invariance). Chi-square difference testing using the Satorra-Bentler Scaled Chi-Square Comparisons suggested that the metric model was not different from the configural model (ΔSBx^2 = 80.481, Δdf = 69, p =.16). The CFI, RMSEA, and SRMR for the configural versus metric invariance models yielded the following: ΔCFI = -.002, ΔRMSEA = -.001, and ΔSRMR = .002. Based on Chen's (2007) criteria, the changes of these values did not indicate a meaningful decrease in fit.

Next, a model was tested where the factor loadings and intercepts were equal across groups (scalar invariance). Chi-square difference testing using the Satorra-Bentler Scaled Chi-Square Comparisons showed a difference between the metric and scalar invariance model (ΔSBx^2 = 116.504, Δdf = 69, p = .0003). The CFI, RMSEA, and SRMR for the metric versus scalar invariance models yielded the following findings: ΔCFI = -.004, ΔRMSEA = .001, and ΔSRMR = .002. The changes in all alternative fit indices suggested that there was no meaningful decrease in fit indices, suggesting scalar invariance. Although the chi-square difference testing did not support measurement invariance, it was concluded that the Perception of Barriers Scales presented preliminary evidence for configural, metric, and scalar invariance

across different racial/ethnic groups of college women because the changes in alternative fit indices were acceptable (Table 4).

Latent mean comparisons across Asian, African American, Latina, and White women

The observed mean scores and standard deviation of the Perception of Barriers subscales across four racial/ethnic groups are presented in Table 5. Given that initial support for scalar invariance was found, latent means were compared across White, Asian, African American, and Latina college women (300 women in each racial/ethnic group). First, the latent means of the nine subscales of Asian American women were set to 0 (Table 6). To compare every possible pair between two groups, the latent means were set to 0 for African American women, Latina women, and White women sequentially (Tale 7). Based on each group comparison results, Table 8 summarized the group differences. African American women reported a higher mean for career barriers due to gender discrimination ($p < .001$) than Latina, Asian, and White women. African women reported a higher mean than Asian women, Latina, and White women for career barriers due to racial discrimination ($p < .05$). Asian women reported higher mean than Latina women and Latina women reported higher mean than White women in terms of career barriers due to racial discrimination ($p < .05$). There were no group differences in scores on career barriers due to children/future family. All groups of women of color reported higher scores in educational barriers due to financial concerns than White women ($p < .01$), and Latina women reported higher mean scores than African American and Asian women ($p < .05$). Asian women endorsed higher scores on the educational

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barriers due to lack of support/interpersonal problems than White women ($p < .05$).

All minority groups reported higher scores on educational barriers due to lack of

confidence and skills than White women ($p < .01$). Asian women endorsed higher

perceptions of educational barriers due to relationship/childcare concerns than

African American women ($p < .05$). In terms of educational barriers due to gender

discrimination, Asian women reported a higher mean score than Latina women ($p <$

$.05$). All groups of women of color reported higher scores in educational barriers due

to racial discrimination than White women ($p < .001$).

Reliability and construct validity analysis

  Reliability. Reliability estimates were calculated with the total sample ($N =$

3,898). The Cronbach alpha coefficients were .90 for the Career Barriers Due to

Gender Discrimination subscale, .93 for the Career Barriers Due to Racial

Discrimination subscale, .81 for the Career Barriers Due to Children or Future Family

subscale, .81 for the Educational Barriers Due to Financial Concerns subscale, .86 for

the Educational Barriers Due to Lack of Support/Interpersonal Problems subscale, .84

for the Educational Barriers Due to Lack of Confidence or Skills subscale, .87 for the

Educational Barriers Due to Relationship/Childcare Concerns subscale, .90 for the

Educational Barriers Due to Gender Discrimination subscale, and .93 for Educational

Barriers Due to Racial Discrimination subscale (Table 9). In terms of composite

reliability, the reliability estimates ranged from .81 to .93, supporting good reliability

of the subscales.

  Construct validity. To examine the construct validity of the Perception of

Barriers Scale, correlations were calculated between the scores of the Perception of

Barriers subscales and the Career Decision-Making Self-Efficacy Scale Short-Form

(CDSES-SF) across groups. About half of the participants were included in this

analysis (data collected in 2011 and 2013) as the CDSES-SF was not administered in

2010 and 2015. Thus, this sample consisted of 383 Asians, 327 African Americans,

214 Latinas, and 1,226 White women.

Before conducting the correlation analysis, the mean scores of the CDSES-SF

were compared across racial/ethnic groups (Table 10). The one-way ANOVA results

indicated that there was a difference among the scores of CDSES-SF of four

racial/ethnic groups ($F(3, 2146) = 13.33$, $p <.001$). In the post hoc multiple

comparisons with Bonferronni tests, Asian women reported lower career self-efficacy

than African American, Latina, and White women. African American women

reported higher career self-efficacy than Asian, Latina, and White women. There

were no differences in the CDSES-SF scores among Latina and White women.

The Pearson correlation tests results across racial/ethnic groups are presented

in Table 11. For Asian women, there were negative associations between the scores

of the CDSES-SF and the Career Barriers Due to Childcare/Future Family ($r = -.12$, p

$< .05$), Educational Barriers Due to Finance Concerns ($r = -.20$, $p < .001$),

Educational Barriers Due to Lack of Support/Interpersonal Problems ($r = -.27$, $p <$

$.001$), Educational Barriers Due to Lack of Confidence or Skills ($r = -.42$, $p < .001$),

Educational Barriers Due to Gender Discrimination ($r = -.13$, $p < .05$), and

Educational Barriers Due to Racial Discrimination subscale ($r = -.18$, $p < .001$). For

the African American women, the scores of CDSES-SF were related negatively to the

Career Barriers Due to Childcare/Future Family ($r = -.16$, $p < .01$), Educational

Barriers Due to Finance Concerns ($r = -.18, p < .01$), Educational Barriers Due to

Lack of Support/Interpersonal Problems ($r = -.34, p < .001$), Educational Barriers

Due to lack of Confidence or Skills ($r = -.31, p < .001$), Educational Barriers Due to

Relationship/Childcare Concern ($r = -.26, p < .001$), Educational Barriers Due to

Gender Discrimination ($r = -.29, p < .001$), and Educational Barriers Due to Racial

Discrimination subscale ($r = -.22, p < .001$). The scores of CDSES-SF of the Latina

women were associated negatively with the Career Barriers Due to Childcare/Future

Family ($r = -.20, p < .01$), Educational Barriers Due to Finance Concerns ($r = -.18, p$

$< .01$), Educational Barriers Due to Lack of Support/Interpersonal Problems ($r = -.31$,

$p < .001$), Educational Barriers Due to Lack of Confidence or Skills ($r = -.42, p <$

$.001$), Educational Barriers Due to Relationship/Childcare Concern ($r = -.26, p < .01$),

Educational Barriers Due to Gender Discrimination ($r = -.18, p < .01$), and

Educational Barriers Due to Racial Discrimination ($r = -.20, p < .01$). For White

women, the correlations among the CDSES-SF and all subscales of the Perception of

Barriers were negative ($r = -.15$ to $-.42, p < .001$).

Chapter 4: Discussion

The purpose of this study was to examine the factor structure, measurement invariance, and psychometric properties of the Perception of Barriers Scale with a sample of diverse college women. The results supported the nine-factor structure of the Perception of Barriers Scale indicating different sources of barriers depending on the temporal dimension (barriers to future versus current goals). In general, configural, metric, and scalar invariance of the Perception of Barriers subscales were found across four racial/ethnic groups of college women (i.e., Asian, African American, Latina, and White) when the scale was modeled to have a nine-factor structure. Furthermore, these nine subscales had adequate reliability and construct validity (as demonstrated by negative relationships between perceived barriers and career self-efficacy). These findings are significant because countless instruments are used in psychological research with diverse groups of people after having been developed for White participants without ever investigating the factor structure, measurement invariance and psychometric properties of the measures for use across racial/ethnic groups.

Multidimensional Structure of the Perception of Barriers Scale

One of the salient findings from the current study was that the Perception of Barriers Scale has multidimensional characteristics rather than one or two domains, providing support for the initial hypothesis. It is noteworthy that the nine-factor structure of the Perception of Barriers Scale was stable and consistent when different samples were used for the initial CFA and measurement invariance testing and four racial/ethnic groups of women were tested. Although a single- or two- factor model of

this measure was widely used in past research (e.g., Lopez & Ann-Yi, 2006; Wright et al., 2014), these models did not seem to represent how college women construct their perception of barriers. Indeed, the conceptualization of barriers from multiple domains was consistent with previous studies supporting a wide range of barriers encountered by women (e.g., Fouad et al., 2010; Swanson & Tokar, 1991; McWhirter et al., 2007).

As hypothesized in its conceptual model, college women appear to perceive barriers based on the temporal context where the barriers occur. The empirical data supports that college women have different perceptions of barriers depending on the temporal career goals (e.g., current educational goals versus future career goals) and the sources of barriers (e.g., racial discrimination). The nine-factor structure can be used to examine how different types of barriers impact diverse women's vocational behaviors in future studies. Moreover, assessing nine components of barriers could be extremely useful in clinical and educational settings to assist in identifying and reducing barriers to academic and vocational success, especially among students who are at-risk for underachievement.

However, it is important to note that there was considerable overlap across the nine factors of the Perception of Barriers Scale. The high correlations among several factors might indicate conceptual similarities, but it also is possible that common psychological processes could interact with women's perception of different types of barriers. For example, the high correlation between scores on the Educational Barriers Due to Gender Discrimination and Educational Barriers Due to Racial Discrimination subscales might reflect that women with high stigma consciousness (Pinel, 1999)

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might be aware of these types of discrimination. More possible is the fact that some barriers are likely to co-occur in real life. Particularly for racial/ethnic minority women, gender discrimination and racial discrimination can be simultaneously experienced in the workplace as gendered racism (Hall, Everett, & Hamilton-Mason, 2012). Similarly, lack of support from others and lack of confidence in one's abilities and skills can be closely intertwined for college women given the importance of interpersonal influences on women's academic and career development (Fried & MacCleave, 2009). Therefore, the different domains of barriers can be considered distinct but interrelated constructs: additional studies are needed to clarify the relations among the subscales of the Perception of Barriers Scale.

Measurement Invariance of the Perception of Barriers Scale

Of significant importance were the findings that the measurement structure of the Perception of Barriers Scale appeared equivalence across Asian, African American, Latina, and White college women. Configural and metric invariance was supported suggesting the nine-factor structure of the Perception of Barriers can be used to compare the correlations across Asian, African American, Latina, and White college women. This finding is significant because it allows researchers to compare, with confidence, similarities or differences due to perceived barriers across diverse groups of women.

In terms of interpreting scalar invariance, tentative interpretations are necessary because there was mixed support from traditional chi-square difference testing and alternative fit indices for scalar invariance across groups. From a liberal perspective focusing on the change of alternative fit indices, it appears that the nine-

factor solution of the Perception of Barriers Scale supports scalar invariance meaning that college women with the same underlying level of perceived barriers would present equivalent observed item scores regardless of racial/ethnic groups. Again, this finding provides support to researchers and practitioners who now can use the Perception of Barriers Scale as a reliable and valid instrument for women in four racial/ethnic groups.

The preliminary findings related to latent mean comparisons suggested that different groups of women experience different salient barriers. Asian, African American, and Latina college women reported perceiving more barriers than White women with regard to career barriers due to racial discrimination. Research has shown that women of color are more likely to experience harassment and discrimination in relation to race in the workplace than White women (Berdahl, & Moore, 2006). Scores on the Career Barriers Due to Racial Discrimination subscale demonstrated that college racial/ethnic minority women recognized the discrimination that they are likely to face in the workplace. Future studies can explore further what types of experiences, such as experiences of repetitive stereotype threat (Deemer, Thoman, Chase, & Smith, 2013), are closely related to career barriers due to racial discrimination for racial/ethnic minority women.

Additionally, financial concerns emerged as a domain that differentiated women of color and White women. College students from families of lower socioeconomic statuses are more likely to have lower GPAs and less educational attainment than those from families with high socioeconomic statuses (Walpole, 2003). Also, lack of financial resources and having to work while attending school

can be sources of stress and anxiety (Mounsey, Vandehey, Diekhoff, 2013). Given that the effects of low socioeconomic statuses or fewer financial resources on women's career achievement have received limited attention in the literature, perceived educational barriers due to financial concerns should be an area for future research and intervention. For example, future studies should pay more attention to the role of barriers due to financial concern in understanding the career aspirations of racial/ethnic minority women (e.g., Howard, Carlstrom, Katz, Chew, Ray, Laine, & Caulum, 2011).

It also is important to note that racial/ethnic minority women reported higher perceptions of barriers due to lack of confidence and skills. Experiences of discriminatory environments can lead to "internalized oppression" (Fassinger, 2008, p. 257) that can be characterized as low self-confidence. Thus, perceived educational barriers due to lack of confidence or skills should be examined in future research as a potential predictor of internalized barriers in racial/ethnic minority women.

Additionally, the findings indicated that differences in perceived barriers existed across minority groups. Career barriers due to gender discrimination and racial discrimination were more salient for African American women than Asian and Latina women in this study. African American women have experienced occupational oppression based on longstanding racial and gender discrimination (Hall et al., 2012), thus young African American women are more likely to identify discriminatory practice as noticeable barriers than other groups of women.

Relatedly, in this study, Asian women reported more career and educational barriers due to racial discrimination than Latina women. Asian women face unique

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experiences based on stereotypes, biases and expectations related to being perceived as the "model minority" that may result in barriers to career or educational achievement (Cheryan & Bodenhausen, 2000). Similarly, Asian female leaders often experience dismissive attitudes from others when they display power due to common submissive Asian women stereotypes (Turner, 2002). Additionally, it was notable that Asian American students reported the lowest confidence regarding exploring career options and making career choices across all groups of women. This result was consistent with prior research that found that students with Asian cultural backgrounds tended to report lower self-efficacy beliefs than non-Asian peers (e.g., Scholz, Doña, Sud, & Schwarzer, 2002), possibly due to cultural values highlighting self-criticism rather than self-enhancement (Heine & Hamamura, 2007).

On the other hand, Latina college students indicated more barriers due to financial concerns than Asian and African American women. This result was consistent with previous research highlighting the importance of financial support with regard to college adjustment for Latina students (Gloria & Castellanos, 2012). Given that Asian, African American, and Latina women may experience different types of salient barriers, future empirical research should examine closely the nature of racial/ethnic group-specific barriers to inform specific and needed interventions.

Relationship between the Perception of Barriers Subscales and the Career Self-Efficacy Measure

As hypothesized in the SCCT model, the negative associations between the scores on the several subscales of the Perception of Barriers Scale and the career self-efficacy measure were found, but the relationships among career barriers due to

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gender discrimination and racial discrimination and career self-efficacy were not significant for minority women, contrary to our hypotheses. It is possible that anticipated barriers due to racial and gender discrimination have a more distal influence on minority women's career self-efficacy whereas educational barriers due to gender or racial discrimination were more directly associated with their career self-efficacy. Alternatively, attributing barriers to distal and external factors could be less relevant to confidence in one's abilities (Major et al., 2003). Another possible explanation is that the existence of a third variable may moderate the relationship between anticipated barriers due to discrimination and career self-efficacy. For example, racial/ethnic minority women with strong work volition, indicating one's capacity to make career choices despite constraints (Duffy, Diemer, & Jadidian, 2011), may not necessarily present low confidence in career decision-making process even when they anticipate career barriers due to discrimination in the future. Future research should include a potential moderator (e.g., work volition) in the analysis to determine how career barriers due to gender or racial discrimination may be related to minority women's confidence in career choices.

Implications for practice

The findings from the current study indicated that accurately accessing diverse barriers related to career or educational goals was critical to understand the career development of college women. Should the findings in this study be replicated, counseling psychologists may create empirically-based interventions to assist college women to discuss their perceptions of salient barriers, the effects of these perceptions on their self-confidence and career plans, and to develop strategies to cope with both

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the perceptions of the barriers and the actual barriers that they likely will encounter in the workplace. In particular, it seems important for counseling psychologists to provide a safe space for racial/ethnic minority women to discuss their perceptions of barriers due to gender/racial discrimination, financial concerns, and lack of confidence and skills. An intervention program can be developed that focuses on increasing access to diverse college resources when racial/ethnic minority women encounter barriers. One study found that first generation college students benefit more from a special intervention program addressing relevant issues for students with diverse background than a standard program focusing on general college adjustment (Stephens, Hamedani, & Destin, 2014). Similarly, minority women may benefit from specifically designed programs to understand the impact of nine different types of barriers and how they might develop effective (and perhaps unique) strategies to cope with these varied barriers to achievement.

Also importantly, counseling psychologists can advocate for the needs of women across different racial/ethnic groups in higher education systems or the labor market. College women's perceptions of barriers may illustrate that oppressive environmental conditions such as racial and gender discrimination could be translated into internal perception of barriers. Thus, counseling psychologists can serve as student advocates for college women who experience barriers due to gender and racial discrimination in achieving their educational or career goals by identifying and addressing the salient areas of perceived barriers for each individual woman.

Limitations and conclusion

The results should be considered in light of the study's limitations. First, the study utilized a convenience sample of incoming female college students, thus the findings cannot be generalized to diverse groups of college women. It is possible that perceptions of barriers may be different depending on experiences across the life span. For instance, researchers have noted that non-traditional female students encounter various difficulties particularly related to their multiple roles (Marsman, 2014). Also, due to the limited number of racial/ethnic groups included in this study, these findings are not generalizable to all minority racial/ethnic groups (e.g., Multiracial women). Therefore, future research needs to examine the utility of the Perception of Barriers Scale with non-traditional college-aged students and Multiracial women.

Another potential limitation of the study is that perceptions of barriers might not be experienced in the same way for college women across different educational levels, majors or career aspirations. College women in non-traditional fields such as STEM might face unique barriers that are more specific to mathematics or science (e.g., Fouad et al., 2010). Additionally, college women with high career aspirations might perceive more barriers related to their career accomplishments than women with fewer career aspirations. Thus, the study cannot confirm the potential interaction between the perception of barriers and contextual variables.

Future research also should test potential moderating variables in the relationship between subjective and actual experiences of barriers to further examine perceptions of barriers. Diverse identities, attitudes, and personality factors could influence what college women perceive as barriers. For example, a previous study

showed that African American college students' values and attitudes toward their racial identity were related to their perception of frequency of racial discrimination experiences (Sellers, & Shelton, 2003). Women with high stigma consciousness might recognize more barriers than those with low stigma consciousness (Pinel, 1999). Similarly, college women with depression or low self-esteem could perceive more barriers than women with high confidence or optimism regardless of frequency of actual obstacles. In these cases, optimistic women might underestimate the barriers and depressed women might perceive insurmountable barriers. Future research can model the potential influence of personality, attitudes, and identities variables in the perception of barriers to examine further the nature of, and outcomes associated with, career barriers.

Several measurement limitations should be noted. First, the limited number of items (2 to 3 items) on several subscales assessing discrimination might not capture the comprehensive representation of the latent construct. Including additional items to capture the entirety of the latent construct might have increased the accuracy of the measurement. Thus, additional research is necessary to examine how the inclusion of additional items on several of the subscales might be used to assess barriers related to discrimination. Additionally, it is possible that a method effect is compounded with the factor structure. The Perception of Barriers scale uses two formats of item statements indicating different temporal dimension (future versus present) and domain areas (career versus education). A method effect associated with wording of the items is commonly observed in psychological measures (e.g., DiStefano, & Motl, 2009). Hence, future studies might consider modeling the method effect to determine

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how the format of item wording is related to the perception of career barriers for college women.

Another methodological limitation was the psychometric properties of the measure used for construct validity across racial/ethnic groups. One study reported metric invariance of the scores on the five-factor model of the Career Decision Self-Efficacy Scale–Short Form between White and Asian American college students (Miller et al., 2009), but measurement invariance (e.g., configural, metric, and scalar invariance) has not been examined for African American and Latina college women. The reliability estimates of the total scores were high across four racial groups in this study, but further examination is needed regarding how the scores function for diverse women. Future studies also may test additional vocational behaviors (e.g., outcome expectations or career aspirations) that further evaluate the construct validity of the Perception of Barriers scale.

In conclusion, the study provided a model for assessing the factor structure, measurement invariance, and psychometric properties of instruments for use with diverse groups. Our work indicated that prior and commonly used subscales of the Perceptions of Barriers Scale may not represent the factor structure of the measure when used with White, African American, Asian, and Latina college women. Indeed, our research supported a nine-factor model, suggesting that college women experience barriers from various sources when pursuing their career and educational goals. Furthermore, this research suggested that young women of color perceived more barriers due to sexism and racism than White women. Future research can use the Perception of Barriers Scale with confidence to explore the effects of perceived

barriers on diverse career and educational outcomes for racial/ethnic minority

women. We hope that our work will inform the development of interventions to

reduce barriers to achievement for all women.

Appendix A: Literature Review

The purposes of this study were to evaluate a measurement of perceived career barriers for college women and to examine the measurement invariance of this measure across racial/ethnic groups of women. The review introduced the historical trend of women's employment in the United States' labor market in recent decades while particularly focusing on gender and race inequality. To understand the social, cultural, and developmental factors that influence women's career choices, two theoretical frameworks were reviewed. Next, the review focused on the construct of interest, career barriers, as a key factor in examining career development of racial/ethnic minority women. The definition of perceived career barriers, relevant conceptual issues, and related research findings were summarized. We described several measurements of career barriers, the Perception of Barriers Scale, and then discuss measurement issues related to the Perception of Barriers Scale. Finally, the research question and hypotheses were presented.

Gender/race inequality in the labor market

The United States population has become more racially and ethnically diverse in recent decades. Nationally, 63.7% of the U.S. population reported being White-only while 16.3% identified as Latina, 12.6% as Black, 4.8% as Asian American, and 0.9% as American Indian (U.S. Census Bureau, 2011). In terms of gender, women comprise about 52% of the U.S. population across different racial/ethnic groups (U.S. Census Bureau, 2011). In an ideal world, people would choose an occupation regardless of their racial/ethnic groups or sex, resulting in proportional representation of all people across a wide range of occupations and positions. However, research

findings on occupational attainment suggested that there are significant differences in the labor market outcomes across racial/ethnic groups and gender (Byars-Winston et al., 2015).

Byars-Winston and her colleagues (2015) studied United States census data between 1970 and 2010 and found that there was limited integration of racial/ethnic minority women into many occupations. In general, the percentage of White men in the total working population dropped from 54% (1970) to 37% (2010) and more women and racial/ethnic minorities participated in the labor market from 1970 to 2010. However, Black, Latina, and American Indian women (and men) were likely to be absorbed into low-skilled, low-wage, and low-status occupations. These findings highlight that the demographic shifts in the United States over the decades have a limited effect in ensuring equal economic participation for women and men for all racial/ethnic groups.

Furthermore, the shifts in the labor market did not benefit women equally in all racial/ethnic groups. Racial/ethnic minority women tended to be integrated into previously female-dominated occupations (e.g., registered nurses, teachers, social workers), whereas the number of White women increased in occupations that were traditionally male-dominated in 1970 (e.g., accounting, economist, veterinarian; Byars-Winston et al., 2015). The wage gap between White women and Black women increased from 8 to 18% between 1980 and 2010, whereas the White-Black wage gap among men was relatively stable (Dozier, 2010). This occurred because White women moved into professional and managerial positions associated with high social status and income, while Black women had limited opportunities to be integrated into

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such occupations and positions. Research has shown that women of color in the professional and managerial fields were likely to perceive fewer opportunities and acknowledgement for promotion, limited access to mentors, and more stereotypes about women in their racial group in the work environment than either White men or women (Giscombe & Mattis, 2002; Hite, 2004). These findings imply that racial/ethnic minority women do not have equal access to diverse career opportunities in the workplace.

Indeed, the labor market is not a race/ethnicity or gender-neutral place. Contemporary workplaces are one of the primary places that social oppression occurs for racial/ethnic minority women, as individuals interact with the social, economic, and political systems through their work (Blustein, 2008). Racial/ethnic minority women are likely to experience pervasive disadvantages in achieving their educational and career goals. Fassinger (2008) summarized such barriers as (a) having limited access to diverse occupations and with segregation into a restricted range of occupations, (b) experiencing discrimination and biases in achieving career success, and (c) having restricted opportunities to utilize their talents and abilities. Thus, it is important for counseling psychologists to focus on these factors that cause the enduring disparities in career achievements between women and men and across racial/ethnic groups during their career development.

Theoretical models of career development for women of color

The limited career opportunities and success for women of color can be caused by systemic sexism and racism in the labor market (Hall, Everett, & Hamilton-Mason, 2012; Leskinen et al., 2015), but vocational psychologists also have

focused on the developmental processes that potentially lead women to avoid certain fields or positions (Betz, 2002; Cook et al., 2002). Betz (2002) described low self-efficacy in pursuing career-related goals, endorsement of occupational and gender stereotypes, narrow career interests, concerns for multiple roles, and difficulties in educational attainments as socialized barriers that restrict women's career choices. Thus, it is critical to understand barriers to developing and pursuing career goals for young women based on theoretical frameworks highlighting the role of a broader socio-political context in women's achievement-related choices (Expectancy Value Model of Achievement-Related Task Choices) and environmental supports and barriers in career choices and development (Social Cognitive Career Theory).

Expectancy Value Model of Achievement-Related Task Choices. The Eccles' Expectancy Value Model of Achievement-Related Task Choices provides a theoretical foundation regarding the impact of social and cultural expectations in women's career achievements (Eccles, 2009; 2011; Wigfield & Eccles, 2000). The model focuses on two sets of beliefs that can influence women's educational and vocational choices including expectations for success (e.g., how well they expect to do in math) and subjective task values (e.g., the extent to which they value being good in math). Women are likely to have motivation and persistence in pursuing activities or options for which they have the highest expectations for success and to which they attach the greatest subjective value. Thus, individuals develop a rank ordering depending on their expectations for success and subjective values across different options and domains (e.g., language, math, and science).

Importantly, Eccles' model highlights that expectancies and values are shaped by a variety of socialization processes. It is assumed that personal identities, that are expressed by a range of beliefs, choices, and behaviors, are grounded in social roles (Eccles, 2009). The input of socializers (e.g., parents, teachers, siblings, peers, and media) plays a critical role in developing social role-related beliefs and perceptions. Women establish their schema regarding appropriate gender roles of men and women from interactions with diverse socializers. When women perceive a gendered value attached to particular domains or activities, it impacts the subjective values related to them. In turn, they are likely to choose an activity or career field that has high subjective values.

The gender socialization process also can influence women's career choices by shaping their perceptions of possible choices. Certain careers that are not consistent with gender role schema might not become "a part of each individual's field of possible choices" (Eccles, 2011, p. 196). Because people make a choice based on several available options rather than consider all potential options, women are likely to make a choice based on restricted viable options. Careers that do not fit in well with their gender role expectations would be never considered. Additionally, they may acquire inaccurate or no information regarding non-traditional careers for women. Thus, understanding the role of perceived viable options is essential to explain gender differences in life choices.

Although Eccles' model contributes to the conceptualization of gender socialization processes in women's life choices, this model does not fully address the intersectionality between gender identity and racial/ethnic identity. Personal identities

of women of color also are grounded in their collective identity as a member of racial/ethnic minority group. Solely focusing on gender role socialization might invalidate the experience of women of color for whom racial/ethnic identity often plays a salient and critical role in their development (Miville, 2013). Given the central role of racial/ethnic identities in the career development, we seek to incorporate an additional comprehensive theoretical model addressing diverse contextual factors in career development and choices by integrating Social Cognitive Career Theory.

Social Cognitive Career Theory. Social Cognitive Career Theory (SCCT; Lent & Brown, 2013; Lent et al., 1994, 2000) provides a unifying model to understand diverse vocational behaviors and outcomes. SCCT was originally designed to describe interest development, career choice, and performance in educational and occupational spheres by applying Albert Bandura's general social cognitive theory (Bandura, 1986) to career development. Briefly, SCCT explains that person inputs (e.g., race, gender, personality) and background contextual factors (e.g., range of potential academic-career role models) influence self-efficacy beliefs and outcome expectations through previous learning experiences. In turn, self-efficacy beliefs and outcome expectations are translated into career interests, choice goals, choice actions, and performance. Although the initial SCCT framework emphasized content aspects of career behaviors, it also has been applied to explain process aspects of career behaviors by focusing on adaptive career behavior in managing career-related tasks (Lent & Brown, 2013).

Particularly, SCCT emphasizes the role of contextual factors such as environmental barriers and supports in its model (Lent et al., 2000). SCCT posits that

contextual influences play an important role in determining individual's career interests, choices, and performance both directly and indirectly. Proximal influences refer to contextual factors that have a direct effect in developing interests or making a career choice, whereas distal influences indicate contextual factors that affect the career outcomes through the social-cognitive elements (self-efficacy beliefs, outcome expectations, and personal goals). For example, gender role socialization processes can influence one's choice process by directly eliminating a certain option or by discouraging learning experiences that may lead to strong self-efficacy beliefs and positive outcome expectations regarding traditionally masculine activities. Empirical findings also supported that the contextual supports and barriers promoted choice goals both directly and via indirect paths through self-efficacy, but the indirect path presented a stronger effect than the direct path (Lent et al., 2003; Sheu et al., 2010).

SCCT exhibited broad utility for explaining career choices and development of women and racial/ethnic minorities (e.g., Deemer, Thoman, Chase, & Smith, 2013; Flores, Navarro, Lee, Addae, Gonzalez, Luna, Jacquez, Cooper, & Mitchell, 2013; Hui, Lent, & Miller, 2013; Lee, Flores, Navarro, & Kanagui-Munoz, 2015; Lent et al., 2005). Importantly, the SCCT model has been applied to explain vocational choices and outcomes of women of color including the prestige of occupational choices of African-American college women (Scheuermann et al., 2014), career considerations of Latina women (Rivera et al., 2007), and career aspirations and career choice traditionality of Mexican American Adolescent women (Flores & O'Brien, 2002). In general, the research findings on women of color supported the role of self-efficacy in career-relevant outcomes.

Although SCCT has provided a useful framework for understanding the psychosocial processes in career choices and development of women of color, the existing literature has focused on the role of self-efficacy beliefs in the process while not fully addressing larger systemic and cultural issues such as racism and sexism. The construct of self-efficacy was developed based on Western cultural values that emphasize on individualistic, independent, and agentic aspects of individuals (Lindley, 2006), thus, it overlooks the function of collectively shared beliefs, values, and experiences of racial/ethnic minority women. Given that experiences of oppressive social conditions play a central role in developing identities for racial/ethnic minority women (Miville, & Ferguson, 2014), this study seeks to closely examine the measurement of perceptions of Career Barriers Due to systemic oppression (e.g., racism and sexism).

Career barriers of racial/ethnic minority women

Definition of career barriers. Career barriers are defined as factors that interfere with the career development process (Swanson et al., 1996). Historically, the construct of career barriers emerged from literature on women's career development to explain the gender gap in occupational achievement (Betz, 2002; Swanson et al., 1996). Although traditional career theories generally assume that individuals have a range of career options and they are motivated to pursue a career to satisfy their career interests and fulfill their vocational identities, vocational psychologists noted that these assumptions cannot fully explain the complex nature of women's career choices (Fitzgerald & Crites, 1980). Accordingly, vocational psychologists began to focus on external and internal barriers as key factors related to the vocational

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behavior of women. For example, early research on barriers highlights that external barriers such as the prevalence of male-centered managerial systems inhibited women's achievement-related behaviors by creating barriers to pursue upward occupational aspirations (O'Leary, 1974). Thus, the concept of career barriers has been utilized to explain a pervasive ability-attainment gap in the career achievement of women.

Since the construct emphasizes factors related to broad social, political, and cultural experiences, it has been applied to explain the career development of racial/ethnic minorities (Luzzo, 1993; Luzzo & Mcwhirter, 2001; McWhirter, 1997; Swanson et al., 1996). In fact, perceived career barriers have been considered the most important component that differentiates the career development of racial/ethnic minority and White students. Results of a meta-analysis on career development of racial/ethnic minorities suggested that racial/ethnic minorities did not differ in their skills and confidence in making a career choice, but they perceived fewer career opportunities and increased barriers compared to White peers (Fouad & Byars-Winston, 2005). Therefore, it is likely that perceived barriers, particularly based on the larger social forces such as racism and sexism, play an essential role in occupational choices and development of racial/ethnic minority women.

While career barriers related to gender or race/ethnicity have been emphasized when explaining the career development of women *or* racial/ethnic minorities, there has been lack of understanding the role of gender *and* race/ethnicity in vocational literature (Byars & Hackett, 1998; McWhirter, 1997). Most studies on women's career development have focused on sexism with a limited integration of the role of

racism in understanding experiences of racial/ethnic minority women. Similarly, vocational literature on ethnic/racial minorities has little focus on the impact of sexism or gendered racism on women of color's experiences. In their study on Mexican American women's career choices and aspirations, Flores and O'Brien (2002) noted that "Given differences in Mexican American women's and men's educational attainment, occupational status, and socialization within the culture, women and men should be investigated separately to understand the effects of cultural and gender role socialization on career decisions" (p. 15). Their argument indicates that it is necessary to investigate perceived career and educational barriers for racial/ethnic minority women separately from men.

Conceptualization of career barriers. Although career barriers have been examined in various empirical studies, there is a lack of conceptual consensus regarding how individuals perceive career barriers (Lent et al., 2000; Swanson et al., 1996). Empirical studies on career barriers have indicated that barriers can be experienced in diverse forms including sex discrimination, lack of confidence, multiple role conflict, racial discrimination, disapproval by significant others, or financial concerns (Lent et al., 2002; Swanson et al., 1996). The issues have been raised in refining conceptualization of different aspects of career barriers include: (a) whether there are different typology of barriers (e.g., internal versus external; interpersonal versus environmental), and (b) whether career barriers are generalized to all career processes or specific to a domain (e.g., pursuing an engineering major; Lent et al., 2000).

Some scholars also identified different forms of barriers such as internal versus external career barriers (Fassinger, 2008; O'Leary, 1974). For example, Fassinger (2008) proposed that barriers could be experienced as external environments (e.g., discriminatory educational practices for marginalized groups) or internalized oppression (e.g., low self-confidence). She also argued that some barriers are more active, direct, and overt (e.g., biased evaluation), whereas some are more passive, indirect, and implicit (e.g., lack of role models). In terms of the impact of barriers, she differentiated a major impact of barriers on outcomes (e.g., harassment) from a relatively minor impact (e.g., lack of encouragement). In her model, she highlighted that all different forms of barriers created cumulative disadvantages for marginalized employees such as women, racial/ethnic minorities, LGBTQ individuals, and people with disabilities.

Meanwhile, several vocational psychologists argued that there external and internal barriers overlap, because interpersonal and contextual conditions are often closely intertwined (Swanson & Tokar, 1991). They claimed that the internal-external dichotomy can oversimplify the entire domain of barriers, thus, it is more useful to utilize the full range of barriers. Although using the wide range of barriers appears to be useful to capture the comprehensive nature of the construct, efforts to refine the conceptual distinctions of various barriers along with continuous empirical examination are required to improve the conceptual understanding of perceived career barriers (Lent et al., 2000).

Another important conceptual issue is whether individuals perceive overarching barriers to their career progress or barriers to a specific domain. For

example, an individual may not experience general barriers in terms of career

exploration or job search processes, but she can experience domain-specific barriers

to pursue a career that requires a doctoral degree in engineering due to financial

concerns or the lack of female role models in the field. Vocational psychologists have

examined both overarching barriers to career and academic success (Kenny et al.,

2007; Luzzo & McWhirter, 2001; Swanson et al., 1996) and domain-specific barriers

in relation to math or engineering (e.g., Fouad et al., 2010; Lent et al., 2005).

Although both general barriers to career progress and domain-specific barriers have

demonstrated their utility, this study primarily focused on the measurement of general

barriers to career and academic success among female college students. Since the

recent vocational literature emphasizes the development of adaptive career behaviors

regardless of its domain (e.g., Lent & Brown, 2013; Savickas & Porfeli, 2012),

further examination of the measurement of perceived career barriers of female college

students can contribute to knowledge regarding facilitating adaptability in career

development.

**The relationship between career barriers and career decision-making
self-efficacy.** One of the key constructs that have been examined related to perceived

career barriers is career decision-making self-efficacy. As mentioned above, the

SCCT model posited that perceived career barriers influence career interests, choice,

performance, and satisfaction through self-efficacy beliefs. The relationship between

perceived barriers and self-efficacy in the SCCT model was supported by several

empirical studies (e.g., Lent et al., 2005; Sheu et al., 2010). For example, Lent and his

collaborators examined the SCCT-based predictors in pursuing an engineer major for

students in engineering programs at historically Black and predominantly White universities. Their findings indicated that perceived social barriers were related negatively to self-efficacy beliefs (Lent et al., 2005).

Based on the recent SCCT model of career self-management (Lent & Brown, 2013), this study evaluated the theorized relationship between women's self-efficacy beliefs in the process of career decision-making and their perception of barriers as support for construct validity of the Perception of Barriers Scale. Career decision self-efficacy generally refers to the belief that one can successfully complete tasks related to making career decisions (Taylor & Betz, 1983). Career decision self-efficacy can be conceptualized with five types of task domains of self- appraisal, gathering occupational information, goal selection, planning, and problem solving that are important for making career decisions (Betz et al., 1996; Taylor & Betz, 1983). The negative correlation between perceived barriers and career self-efficacy has been documented in previous studies (Lopez & Ann-Yi, 2006; Wright et al., 2014).

The role of career barriers in career-related outcomes of racial/ethnic minorities. The role of career barriers has been examined in relation to career outcomes including career interests, career aspirations, prestige of career choices, non-traditional career choices, and career indecision. In general, previous studies implied that perceptions of career barriers may have a negative influence on positive career outcomes for racial/ethnic minorities. For example, perceived barriers were related negatively to college-going self-efficacy and educational aspirations with a sample of Latino adolescents (Gonzalez et al., 2013). College women of color reported higher career indecision when they perceived more career and education-

related barriers (Lopez & Ann-Yi, 2006). African American men and women who

endorsed more internalized racism, which can be one form of career barriers,

presented lower career aspirations than those who did not (D. L. Brown & Segrist,

2015). Moreover, when Mexican American female adolescents perceived higher

career barriers, they chose less prestigious careers (Flores & O'Brien, 2002).

However, there have been research findings indicating mixed directionality in

the relationship between perceived barriers and career-related outcomes. Asian

American college students who perceived race-related occupational barriers were

likely to put effort into their education (Chen & Fouad, 2012). The effect of perceived

barriers also was different depending on the type of occupations. For example,

perceived barriers were associated with female-dominated career consideration but

had no effect on male-dominated career consideration for Latina women (Rivera et

al., 2007). These findings regarding the role of perceived career barriers varied based

on how researchers assessed career barriers and which cultural groups were studied.

The role of perceived career barriers can be better understood in specific cultural

contexts with a reliable measure of perceived career barriers.

Assessment of career barriers

   Measurements assessing career barriers. Since career barriers have been

considered one of the influential factors in career development for women and

racial/ethnic minorities, vocational psychologists have developed several

measurements assessing career barriers. These measures can be categorized in two

groups: a comprehensive scale or a domain/target-specific scale for measuring career

barriers. The general type of career barriers scales assess factors that potentially or

actually interfere with career progress regardless of a particular career or major field, whereas scales for domain/target-specific career barriers examine barriers to pursue engineering or math-related careers (Fouad et al., 2010; Lent et al., 2001) or barriers that are perceived by a specific racial/ethnic group (Occupational Barriers for Asians; Chen & Fouad, 2012). Although these scales have been useful in understanding barriers in relation to a specific domain or population, this study focused on a general assessment of career barriers to evaluate its efficacy when used with college women.

Two of the most widely used measures of comprehensive career barriers are the Career Barriers Inventory (Swanson et al., 1996; Swanson & Tokar, 1991) and the Perception of Barriers Scale (Luzzo & McWhirter, 2001; McWhirter, 1997). Both the Career Barriers Inventory and the Perceptions of Barriers Scale are designed to assess multidimensional barriers related to diverse areas. For example, the Career Barriers Inventory includes subscales investigating barriers related to sex discrimination, lack of confidence, multiple-role conflict, conflict between children and career demands, racial discrimination, inadequate preparation, disapproval by significant others, decision-making difficulties, dissatisfaction with career, discouragement from choosing nontraditional career, disability/health concern, job-market constraints, and difficulties with networking/socialization. The Perceptions of Barriers Scale also addresses a comprehensive list of barriers related to racial/ethnic and gender discrimination, childcare, lack of financial supports, lack of supports from family, lack of preparation in college, and lack of confidence.

This study aims to focus on the efficacy of the Perceptions of Barriers Scale in measuring career barriers for racial/ethnic minority women for the following reasons.

First, because the items of the Career Barriers Inventory evaluate the degree to which

a specific type of barrier would hinder career progress while assuming that all types

of barriers occur for all individuals, the impact of career barriers appears to be the

main focus of the scale. However, the impact of career barriers can be confounded

with other psychological variables such as a sense of efficacy in coping with such

barriers (Lent et al., 2000). Since the Perceptions of Barriers Scale directly measures

the likelihood of particular barriers in their future career and education, it can provide

accurate information regarding salient barriers for racial/ethnic minority college

women. Second, the Perceptions of Barriers Scale offers an advantage in its length

(32 items), whereas Career Barriers Inventory is relatively long (70 items). A brief

measure can be useful to increase completion rates by reducing burden in a survey-

based research design. Third, since most studies focusing on career barriers of

racial/ethnic minority populations have used the Perceptions of Barriers Scale (Flores

& O'Brien, 2002; Lopez & Ann-Yi, 2006; Wright et al., 2014), investigation of the

Perceptions of Barriers Scale can strengthen the line of research programs regarding

the career development of racial/ethnic minority students. Thus, this study seeks to

further evaluate the utility of the Perceptions of Barriers Scale to broaden our

understanding of perceived career barriers for racial/ethnic minority college women.

Development of the Perception of Barriers Scale. The Perceptions of

Barriers Scale was originally developed to assess high school students' perceptions of

potential educational and career barriers with 22 items (McWhirter, 1997). Then, it

was revised to assess career barriers for college students (Luzzo & McWhirter, 2000).

Luzzo and McWhirter (2000) deleted items that were not relevant to college students

(e.g., items related to pursuing postsecondary education) and added several items assessing career barriers related to future childcare concerns. The revised measure includes 11 items measuring perceived career-related barriers (e.g., "In my future career, I will probably experience discrimination because of my gender") and 21 items indicating education-related barriers (e.g., "Money problems are currently a barrier to my educational aspirations"). The Perceptions of Barriers Scale uses a Likert-type response scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The scores from each item on the Career-Related Barriers and Education-Related Barriers subscales are summed. High scores mean higher perceptions of the likelihood of experiencing barriers in future careers or education.

The Perceptions of Barriers Scale has demonstrated adequate internal consistency with diverse samples of college students. Luzzo and McWhirter (2000) reported that Cronbach's alpha was .90 for the total scale, .86 for the Career-Related Barrier, and .88 Educational Barriers subscales with a sample of college students. Test–retest reliability estimates over a 2- month time period indicated that the reliability coefficient was .78 for the total scores, .72 for the Career-Related, and .68 for the Education-Related subscales with a sample of 55 college students. In Lopez and Ann-Yi's study (2006), the Cronbach's alphas ranged from .87 to .92 for the Career-Related subscale and from .86 to .91 for the Education-Related subscale with separate samples of African American, Latina, and White American college women.

Measurement issues with the Perceptions of Barriers Scale. The major limitation of the Perceptions of Barriers Scale is that its original factorial structure has yet to be examined and validated. Although most studies have used the scale with two

different dimensions of career barriers (e.g., Lopez & Ann-Yi, 2006; Wright et al., 2014), the factorial validity of the two dimensions has not been supported. Career barriers can be perceived as a multi-dimensional construct as the authors hypothesized. For example, Raque-Bogdan and her colleagues (2013) documented that college women perceived more barriers than men in achieving their career goals, but there were no differences in perceived educational barriers among college women and men. Additionally, several studies constructed a separate domain-specific subscale based on the items of the Perceptions of Barriers Scale such as barriers related to economic concern (Gonzalez et al., 2013) and barriers related to gender and racial/ethnic discrimination (Constantine et al., 2005; Flores & O'Brien, 2002) rather than utilizing the scale as a whole. Thus, evaluating the latent structure of the Perception of Barriers Scale is critical in identifying potential differences across multiple dimensions of perceived career barriers.

Another measurement-relevant issue is that group-mean comparisons across racial/ethnic groups have been used to explain group differences in the Perceptions of Barriers Scale scores without testing measurement equivalence across different racial/ethnic groups. For example, previous studies reported that racial/ethnic minority college students demonstrated higher perceptions of career barriers than their White counterpart based on the group-mean comparison results (e.g., Luzzo & McWhirter, 2000). Lopez and Ann-Yi (2006) also indicated that African American college women reported higher career and education-related barriers than White and Latina college women based on group-mean comparisons. However, these findings should be evaluated in light of questions regarding the measurement invariance of the

subscales across different racial/ethnic groups - women in different racial/ethnic groups may conceptualize career barriers in very different ways. Moreover, Yap and his colleagues (2014) suggested that racial/ethnic minorities are not a homogenous group, so it is important that measures be tested for measurement invariances when used with different racial/ethnic groups. Therefore, it is necessary to evaluate different types of measurement invariance on the Perceptions of Barriers Scale for women across racial/ethnic groups to advance research examining potential group differences in the measurement of perceived career barriers.

Summary

Racial/ethnic minority women have long experienced disparities in their career achievement across multiple occupations. Vocational psychologists have noted that women of color interact with the social, economic, and political system through their work, thus, the labor market is not a neutral place free from existing sexism and racism. Two theories provide the framework to investigate influential factors in career development process for racial/ethnic minority women. Expectancy Value Model of Achievement-Related Task Choices has suggested that gender socialization can limit women's perceived viable options in the field that is not consistent with their schema regarding desirable gender roles for women. Social Cognitive Career Theory also has provided a comprehensive model in incorporating environmental factors in career development and choice.

This study focuses on investigating a measure of perceptions of career barriers related to a wide range of individual and environmental factors. Career barriers have been regarded as one of the most important factors that differentiate the career

development of racial/ethnic minorities and White individuals. Specifically, previous studies noted that career barriers were related to the establishment of career self-efficacy and other career-relevant outcomes (e.g., career aspirations, prestige of career choices, and career indecision). Yet, theoretical consensus and empirical support for the operationalization and measurement of career barriers have not been achieved among researchers. Thus, the primary focus of this study is to evaluate the factor structure of the Perception of Barriers Scale (Luzzo & McWhirter, 2001; McWhirter, 1997) that assesses perceptions of the likelihood of future career and current education-related barriers. Given that the factor structure of the Perception of Barriers Scale has never been tested, we investigated the latent structure from an exploratory approach, and then confirm the baseline measurement model. The second purpose of this study is to test the measurement invariance of the instrument when used with college women across different racial groups (Asian, Black/African, Latina, and White American). The psychometric properties of the Perceptions of Barriers were further explored regarding its reliability and relationship with career self-efficacy. The findings can advance our knowledge regarding what types of barriers are salient for women across different racial/ethnic groups, and then can lead to specified intervention programs closely related to assisting women of color in pursuing their educational and career goals.

Research Question and Hypotheses

The overall questions that this study addressed were "To what degree is the Perception of Barriers Scale an adequate measure of perceived career barriers for college women across different racial/ethnic groups?" and "To what degree does this

measure show measurement invariance across racial/ethnic groups of college women?" The factor structure, psychometric properties, and measurement invariance of the Perceptions of Barriers Scale were examined. The following specific research hypotheses and research question were tested:

1. The Perceptions of Barriers Scale will demonstrate multi-dimensional factor structure when used with college women.

2. To what degree does the Perceptions of Barriers Scale demonstrate measurement invariance across Asian, Black/African, Latina, and White American college women?

3. The subscales of the Perceptions of Barriers Scale will exhibit adequate psychometric properties.

   a. The subscales of the Perceptions of Barriers Scale will show moderate composite reliability estimates.

   b. The subscales of the Perceptions of Barriers Scale will be correlated negatively with the total score of the Career Decision Self-Efficacy scale.

Appendix B: Perception of Barriers Scale

*Please respond to each statement according to what you think (or guess) will be true for you. Please answer using the following scale:

1 = Strongly disagree
2 = Disagree
3 = Neither agree nor disagree
4 = Agree
5 = Strongly agree

1. In my future career, I will probably be treated differently because of my sex.
2. In my future career, I will probably be treated differently because of my ethnic/racial background.
3. In my future career, I will probably experience negative comments about my sex (such as insults or rude jokes).
4. In my future career, I will probably experience negative comments about my racial/ethnic background (such as insults or rude jokes)
5. In my future career, I will probably have a harder time getting hired than people of the opposite sex.
6. In my future career, I will probably have a harder time getting hired than people of other racial/ethnic backgrounds.
7. In my future career, I will probably experience discrimination because of my sex.
8. In my future career, I will probably experience discrimination because of my racial/ethnic background.
9. In my future career, I will probably have difficulty finding quality daycare for my children.
10. In my future career, I will probably have difficulty getting time off when my children are sick.
11. In my future career, I will probably have difficulty finding work that allows me to spend time with my family.
12. Money problems are currently a barrier to my educational aspirations.
13. Family problems are currently a barrier to my educational aspirations.
14. Not being smart enough is currently a barrier to my educational aspirations.
15. Negative family attitudes about college are currently a barrier to my educational aspirations.
16. Not fitting in at college is currently a barrier to my educational aspirations.
17. Lack of support from teachers is currently a barrier to my educational aspirations.
18. Not being prepared enough is currently a barrier to my educational aspirations.

19. Not knowing how to study well is currently a barrier to my educational aspirations.
20. Not having enough confidence is currently a barrier to my educational aspirations.
21. Lack of support from friends to pursue my educational aspirations is currently a barrier to my educational aspirations.
22. My gender is currently a barrier to my educational aspirations.
23. People's attitudes about my gender are currently a barrier to my educational aspirations.
24. My ethnic background is currently a barrier to my educational aspirations.
25. People's attitudes about my ethnic background are currently a barrier to my educational aspirations.
26. Childcare concerns are currently a barrier to my educational aspirations.
27. Lack of support from my "significant other" to pursue education is currently a barrier to my educational aspirations.
28. My desire to have children is currently a barrier to my educational aspirations.
29. Relationship concerns are currently a barrier to my educational aspirations.
30. Having to work while I go to school is currently a barrier to my educational aspirations.
31. Lack of role models or mentors is currently a barrier to my educational aspirations.
32. Lack of financial support is currently a barrier to my educational aspirations.

Appendix C: Career Decision Self-Efficacy Scale – Short Form

How much confidence do you have that you could:

1 = No Confidence at all
2 = Very little confidence
3 = Moderate confidence
4 = Much confidence
5 = Complete confidence

1. Find information in the library about occupations you are interested in.
2. Select one major from a list of potential majors you are considering.
3. Make a plan of your goals for the next five years.
4. Determine the steps to take if you are having academic trouble with an aspect of your chosen major.
5. Accurately assess your abilities
6. Select one occupation from a list of potential occupations you are considering.
7. Determine the steps you need to take to successfully complete your chosen major.
8. Persistently work at your major or career goal even when you get frustrated.
9. Determine what your ideal job would be.
10. Find out the employment trends for an occupation over the next ten years.
11. Choose a career that will fit your preferred lifestyle.
12. Prepare a good resume.
13. Change majors if you did not like your first choice.
14. Decide what you value most in an occupation.
15. Find out about the average yearly earnings of people in an occupation.
16. Make a career decision and then not worry about whether it was right or wrong.
17. Change occupations if you are not satisfied with the one you enter.
18. Figure out what you are and are not ready to sacrifice to achieve your career goals.
19. Talk with a person already employed in the field you are interested in.
20. Choose a major or career that will fit your interests.
21. Identify employers, forms, and institutions relevant to your career possibilities.
22. Define the type of lifestyle you would like to live.
23. Find information about graduate or professional schools.
24. Successfully manage the job interview process.
25. Identify some reasonable major or career alternatives if you are unable to get your first choice.

Appendix D: Demographic questions

Age _____

What is your gender?
- o Female
- o Male
- o Transgender
- o Other (Please specify _____)

Are you of Hispanic or Latino origin?
- o Yes
- o No

What is your race/ethnicity? Check all that apply:
- o White / European American
- o American Indian or Alaska Native
- o Black / African American
- o Native Hawaiian or Other Pacific Islander
- o Asian / Asian American

In terms of sexual orientation, you consider yourself:
- o Heterosexual or Straight
- o Gay or Lesbian
- o Bisexual
- o Questioning
- o Queer
- o Other (Please specify _____)

What is the highest level of education completed by each of your parents/guardians?
Parent/Guardian 1
- o Less than high school diploma
- o High school diploma/GED
- o Some college
- o Associate degree
- o Bachelor's degree
- o Master's degree
- o PhD or professional degree (MD, JD, DVM, LLB, DDS, etc.)

Parent/Guardian 2
- o Less than high school diploma
- o High school diploma/GED
- o Some college

- o Associate degree
- o Bachelor's degree
- o Master's degree
- o PhD or professional degree (MD, JD, DVM, LLB, DDS, etc.)

Table 1

Model Fit Indices for Four Alternative Models with 400 Women

	SBx^2 (*df*)	CFI	RMSEA (90% CI)	SRMR
Model 1	3695.958 (464)	.464	.132 (.128 - .136)	.134
Model 2	2584.224 (463)	.679	.107 (.103 - .111)	.095
Model 3	830.520 (428)	.938	.048 (.044-.053)	.053
Model 4	1132.936 (454)	.911	.057 (.052 - .061)	.081

Note. Model 1 is single factor model; Model 2 is two first-order factor model; Model 3 is nine first-order factors model; Model 4 is second-order model with two higher factors and nine first-order factors; SBx^2 = Satorra and Bentler's (2001) scaled chi-square; CFI = Comparative Fit index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual.

Table 2

Pearson Correlations among the Nine Factors on the Perception of Barriers Scale (N = 400)

Subscales	1	2	3	4	5	6	7	8
1. Career Barriers Due to Gender Discrimination	1							
2. Career Barriers Due to Racial Discrimination	.62***							
3. Career Barriers Due to Children/Future Family	.35***	.33***						
4. Educational Barriers Due to Financial Concerns	.22***	.24***	.31***					
5. Educational Barriers Due to Lack of Support/Interpersonal Problems	.21***	.27***	.31***	.58***				
6. Educational Barriers Due to Lack of Confidence/Skills	.14**	.18***	.30***	.48***	.60***			
7. Educational Barriers Due to Relationship/Childcare Concerns	.04	.05	.24***	.38***	.53***	.34***		
8. Educational Barriers Due to Gender Discrimination	.33***	.21***	.34***	.40***	.61***	.36***	.51***	
9. Educational Barriers Due to Racial Discrimination	.23***	.41***	.39***	.47***	.59***	.40***	.45***	.69**

Note. *** indicates *p* < .001

Table 3

The Intercepts and Factor Loadings across Racial/Ethnic Groups (N = 1,200)

Items	Asian American (N= 300)		African American (N=300)		Latina American (N=300)		White American (N=300)	
	IC	FL	IC	FL	IC	FL	IC	FL
Factor 1: Career Barriers Due to Gender Discrimination								
1. In my future career, I will probably be treated differently because of my sex.	2.78	.75	2.92	.85	2.76	.81	2.75	.82
3. In my future career, I will probably experience negative comments about my sex (such as insults or rude jokes).	2.52	.86	2.87	.84	2.57	.82	2.55	.80
5. In my future career, I will probably have a harder time getting hired than people of the opposite sex.	2.55	.87	2.86	.81	2.68	.79	2.48	.84
7. In my future career, I will probably experience discrimination because of my sex.	2.50	.94	2.93	.92	2.59	.89	2.60	.92
Factor 2: Career Barriers Due to Racial Discrimination								
2. In my future career, I will probably be treated differently because of my ethnic/racial background.	2.63	.80	2.90	.89	2.42	.87	2.05	.80
4. In my future career, I will probably experience negative comments about my racial/ethnic background (such as insults or rude jokes)	2.52	.84	2.74	.92	2.42	.91	2.17	.87

6. In my future career, I will probably have a harder time getting hired than people of other racial/ethnic backgrounds.	2.51	.83	2.72	.85	2.41	.80	2.24	.86
8. In my future career, I will probably experience discrimination because of my racial/ethnic background.	2.54	.93	2.68	.92	2.38	.92	2.18	.95
Factor 3: Career Barriers Due to Children/Future Family								
9. In my future career, I will probably have difficulty finding quality daycare for my children.	2.65	.62	2.32	.64	2.38	.60	2.50	.69
10. In my future career, I will probably have difficulty getting time off when my children are sick.	2.76	.86	2.62	.83	2.73	.90	2.59	.87
11. In my future career, I will probably have difficulty finding work that allows me to spend time with my family.	2.59	.86	2.74	.76	2.88	.76	2.69	.79
Factor 4: Educational Barriers Due to Financial Concerns								
12. Money problems are currently a barrier to my educational aspirations.	2.11	.78	2.14	.78	2.44	.77	2.01	.76
30. Having to work while I go to school is currently a barrier to my educational aspirations.	1.97	.48	1.79	.69	1.71	.63	1.78	.66
32. Lack of financial support is currently a barrier to my educational aspirations.	1.88	.91	1.80	.90	1.87	.91	1.80	.93
Factor 5: Educational Barriers Due to Lack of Support/Interpersonal Problems								
13. Family problems are currently a barrier to my educational aspirations.	1.86	.60	1.91	.57	1.86	.59	2.01	.64
15. Negative family attitudes about college are currently a barrier to my educational aspirations.	1.78	.73	1.73	.71	1.78	.67	1.91	.68
16. Not fitting in at college is currently a barrier to my educational aspirations.	2.01	.74	1.94	.65	2.02	.75	1.95	.77

17. Lack of support from teachers is currently a barrier to my educational aspirations.	2.07	.82	2.07	.79	2.02	.77	2.06	.79
21. Lack of support from friends to pursue my educational aspirations is currently a barrier to my educational aspirations.	2.15	.79	1.98	.79	1.97	.69	2.14	.80
31. Lack of role models or mentors is currently a barrier to my educational aspirations.	1.84	.71	1.87	.72	1.77	.69	1.86	.78
Factor 6: Educational Barriers Due to Lack Confidence/Skills								
14. Not being smart enough is currently a barrier to my educational aspirations.	2.09	.69	1.96	.61	2.05	.66	2.04	.70
18. Not being prepared enough is currently a barrier to my educational aspirations.	2.02	.85	1.95	.79	1.94	.89	1.95	.79
19. Not knowing how to study well is currently a barrier to my educational aspirations.	2.10	.75	2.08	.69	1.95	.76	1.95	.73
20. Not having enough confidence is currently a barrier to my educational aspirations.	2.17	.77	1.98	.67	1.97	.82	2.02	.78
Factor 7: Educational Barriers Due to Relationship/Childcare Concerns								
26. Childcare concerns are currently a barrier to my educational aspirations.	2.18	.92	2.02	.87	2.00	.88	2.07	.88
27. Lack of support from my "significant other" to pursue education is currently a barrier to my educational aspirations.	2.09	.89	2.09	.85	1.96	.88	2.15	.88
28. My desire to have children is currently a barrier to my educational aspirations.	1.97	.77	1.81	.74	1.80	.65	1.95	.71
29. Relationship concerns are currently a barrier to my educational aspirations.	1.90	.81	1.88	.73	1.84	.60	1.85	.61

Factor 8: Educational Barriers Due to Gender Discrimination								
22. My gender is currently a barrier to my educational aspirations.	1.98	.88	1.93	.90	2.07	.92	1.99	.94
23. People's attitudes about my gender are currently a barrier to my educational aspirations.	1.90	.91	1.87	.93	2.01	.93	1.87	.93
Factor 9: Educational Barriers Due to Racial Discrimination								
24. My ethnic background is currently a barrier to my educational aspirations.	2.04	.92	1.91	.94	1.86	.91	2.10	.97
25. People's attitudes about my ethnic background are currently a barrier to my educational aspirations.	1.99	.92	1.86	.88	1.91	.94	2.09	.97

Note. IC = Intercepts; FL = Factor Loading

Table 4

Fit Indices for Measurement Invariance Models across Four Racial/Ethnic Groups (N = 1,200)

Model	SBx^2 (df)	ΔSBx^2 (Δdf)	p	CFI	ΔCFI	RMSEA [90% CI]	ΔRMSEA	SRMR	ΔSRMR	Support for invariance
Configural	3122.24 (1,712)			.930		.052 [.049 - .055]		.060		Yes
Metric	3209.43 (1,781)	80.48 (69)	.16	.929	-.001	.052 [.049 - .055]	.000	.063	.003	Yes
Scalar	3327.79 (1,850)	116.50 (69)	.00	.927	-.002	.052 [.049 - .054]	.000	.063	.000	Yes

Note. SBx^2= Satorra and Bentler's (2001) scaled chi-square; CFI = Comparative Fit index; RMSEA = Root Mean Square Error of

Approximation; SRMR = Standardized Root Mean Square Residual

Table 5

Observed Mean Scores and Standard Deviations of the Perception of Barriers Subscales across White, Asian, African American, and

Latina Samples (N = 1,200)

Subscales	Asian American	African American	Latina American	White American
1. Career Barriers Due to Gender Discrimination	2.95 (.93)	3.08 (.95)	2.81 (.92)	2.82 (.91)
2. Career Barriers Due to Racial Discrimination	2.84 (.92)	3.23 (.97)	2.66 (.96)	2.06 (.78)
3. Career Barriers Due to Children/Future Family	2.61 (.87)	2.51 (.83)	2.51 (.77)	2.56 (.80)
4. Educational Barriers Due to Financial Concerns	2.44 (.97)	2.44 (1.07)	2.70 (1.08)	2.16 (.98)
5. Educational Barriers Due to Lack of Support/Interpersonal Problems	1.95 (.74)	1.71 (.67)	1.81 (.67)	1.63 (.62)
6. Educational Barriers Due to Lack Confidence/Skills	2.57 (.97)	2.18 (.89)	2.26 (.97)	2.01 (.84)
7. Educational Barriers Due to Relationship/Childcare Concerns	1.62 (.74)	1.49 (.69)	1.54 (.67)	1.53 (.64)
8. Educational Barriers Due to Gender Discrimination	1.76 (.82)	1.64 (.81)	1.61 (.75)	1.63 (.75)
9. Educational Barriers Due to Racial Discrimination	1.90 (.90)	1.83 (.93)	1.69 (.83)	1.62 (.66)

Table 6

Latent Mean Differences of the Perception of Barriers Subscales across White, Asian, African American, and Latina Samples (N = 1,200)

Subscales	Asian American	African American	Latina American	White American
1. Career Barriers Due to Gender Discrimination	0	.28***	.05	.00
2. Career Barriers Due to Racial Discrimination	0	.34***	-.19*	-.73***
3. Career Barriers Due to Children/Future Family	0	-.02	-.01	-.03
4. Educational Barriers Due to Financial Concerns	0	.07	.26**	-.20**
5. Educational Barriers Due to Lack of Support/Interpersonal Problems	0	-.09	-.04	-.11*
6. Educational Barriers Due to Lack Confidence/Skills	0	-.09	-.07	-.27***
7. Educational Barriers Due to Relationship/Childcare Concerns	0	-.09*	-.05	-.08
8. Educational Barriers Due to Gender Discrimination	0	-.08	-.15*	-.09
9. Educational Barriers Due to Racial Discrimination	0	-.02	-.10	-.35***

Note. Latent means are relative to Asian American women, which was set to zero.

* $p < .05$ (significant values indicate difference from Asian American women) ** $p < .01$. *** $p < .001$

Table 7

Latent Mean Differences of the Perception of Barriers Subscales across Asian, African American, Latina, and White Samples (N = 1,200)

Subscales	When the reference group is African American			When the reference group is Latina American			When the reference group is White American		
	Asian American	Latina American	White American	Asian American	African American	White American	Asian American	African American	Latina American
1	-.28***	-.23**	-.28***	-.05	.23**	-.05	.00	.28***	.05
2	-.34***	-.52***	-1.06***	.19*	.52***	-.54***	.73***	1.06***	.54***
3	.02	.01	-.01	.01	-.01	-.02	.03	.01	.02
4	-.07	.19*	-.27**	-.26**	-.19*	-.47***	.20**	.27**	.47***
5	.09	.05	-.02	.04	-.05	-.07	.11*	.02	.07
6	.09	.01	-.19**	.07	-.01	-.20***	.27***	.19**	.20***
7	.09*	.05	.01	.05	-.05	-.04	.08	-.01	.04
8	.08	-.07	-.01	.15*	.06	.06	.09	.01	-.06
9	.02	-.08	-.33***	.10	.07	-.25***	.35***	.33***	.25***

Note. . 1= Career Barriers Due to Gender Discrimination; 2 = Career Barriers Due to Racial Discrimination; 3 = Career Barriers Due to Children/Future Family; 4 = Educational Barriers Due to Financial Concerns; 5 = Educational Barriers Due to Lack of Support/Interpersonal Problems; 6 = Educational Barriers Due to Lack Confidence/Skills; 7 = Educational Barriers Due to Relationship/Childcare Concerns; 8 = Educational Barriers Due to Gender Discrimination; 9 = Educational Barriers Due to Racial Discrimination; Latent means of the reference group is set to zero.
* $p < .05$ (significant values indicate difference from women in the reference group) ** $p < .01$. *** $p < .001$

Table 8

Summary of the Latent Mean Comparisons across Four Racial/Ethnic Groups

Perceptions of Barriers Scales	Latent Mean Comparison Findings
1. Career Barriers Due to Gender Discrimination	African American > Latina, Asian, White
2. Career Barriers Due to Racial Discrimination	African American > Asian > Latina > White
3. Career Barriers Due to Children/Future Family	None
4. Educational Barriers Due to Financial Concerns	Latina > African American, Asian > White
5. Educational Barriers Due to Lack of Support/Interpersonal Problems	Asian > White
6. Educational Barriers Due to Lack Confidence/Skills	Asian, African American, Latina > White
7. Educational Barriers Due to Relationship/Childcare Concerns	Asian > African American
8. Educational Barriers Due to Gender Discrimination	Asian > Latina
9. Educational Barriers Due to Racial Discrimination	Asian, African American, Latina > White

Table 9

Reliability Estimates for the Perception of Barriers Subscales (N = 3,898)

Subscales	Cronbach Alpha	Composite Reliability
1. Career Barriers Due to Gender Discrimination	.90	.90
2. Career Barriers Due to Racial Discrimination	.93	.93
3. Career Barriers Due to Children/Future Family	.81	.82
4. Educational Barriers Due to Financial Concerns	.81	.82
5. Educational Barriers Due to Lack of Support/Interpersonal Problems	.86	.87
6. Educational Barriers Due to Lack Confidence/Skills	.84	.85
7. Educational Barriers Due to Relationship/Childcare Concerns	.87	.88
8. Educational Barriers Due to Gender Discrimination	.90	.90
9. Educational Barriers Due to Racial Discrimination	.93	.93

Table 10

The Means and Standard Deviations of the CDSES-SF Total Scores across Asian, African American, Latina, and White Women

Groups	N	Mean	SD
Asian American	383	91.00	16.36
African American	327	98.92	17.16
Latina American	214	94.72	16.25
White American	1,226	95.72	16.22

Table 11

Correlations of the Perception of Barriers Subscales and the Total Score of the Career Decision-Making Self-Efficacy Short Form across Asian, African American, Latina, and White Women

	Asian American (N = 383)	African American (N =327)	Latina American (N =214)	White American (N = 1,226)
1. Career Barriers Due to Gender Discrimination	-.03	-.00	-.09	-.16***
2. Career Barriers Due to Racial Discrimination	-.03	-.02	-.09	-.15***
3. Career Barriers Due to Children/Future Family	-.12*	-.16**	-.20**	-.21***
4. Educational Barriers Due to Financial Concerns	-.20***	-.18**	-.18**	-.18***
5. Educational Barriers Due to Lack of Support/Interpersonal Problems	-.27***	-.34***	-.31***	-.32***
6. Educational Barriers Due to Lack Confidence/Skills	-.42***	-.31***	-.42***	-.42***
7. Educational Barriers Due to Relationship/Childcare Concerns	-.10	-.26***	-.26**	-.24***
8. Educational Barriers Due to Gender Discrimination	-.13*	-.29***	-.18**	-.27***
9. Educational Barriers Due to Racial Discrimination	-.18***	-.22***	-.20**	-.26***

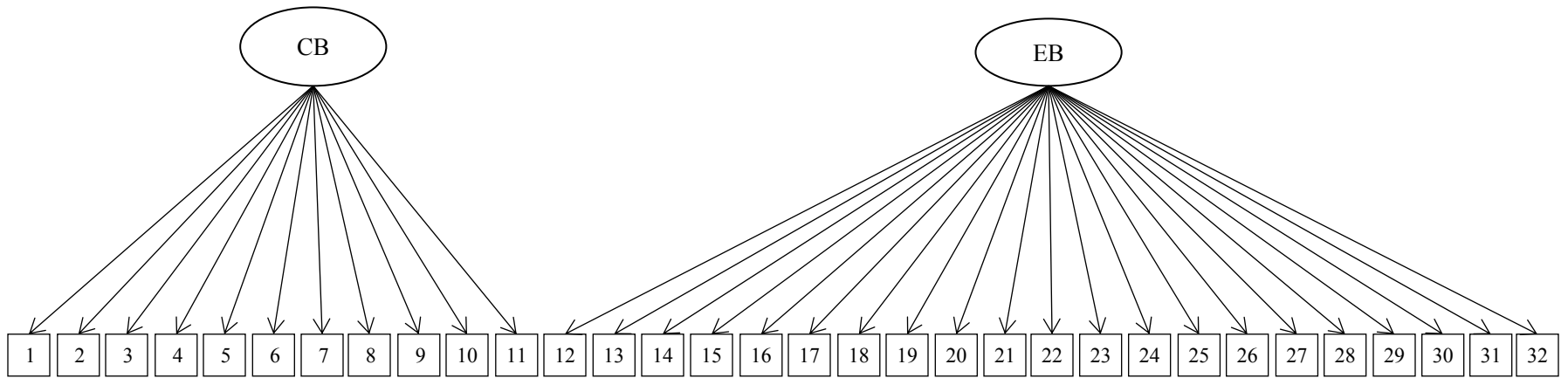$* p < .05 ** p < .01. *** p < .001$

Figure 1

Model 1: A Single Factor Model
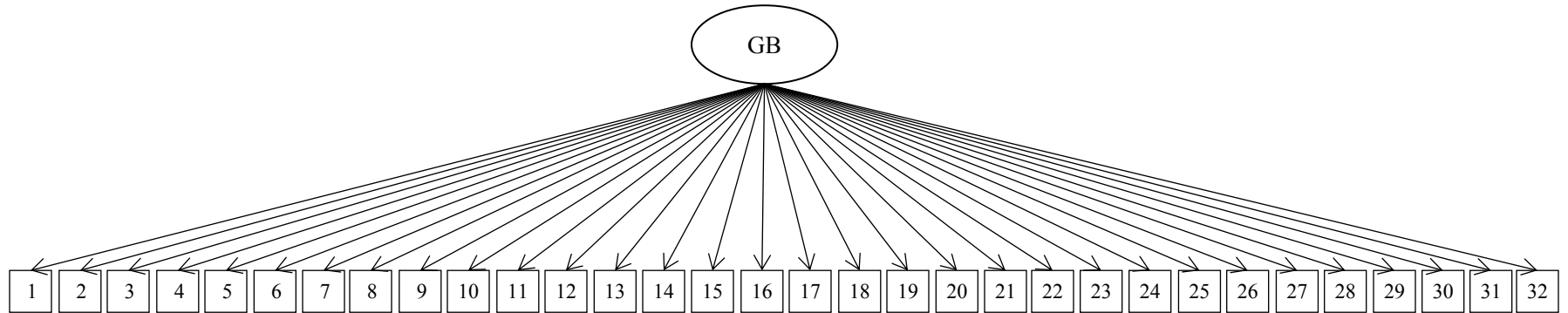
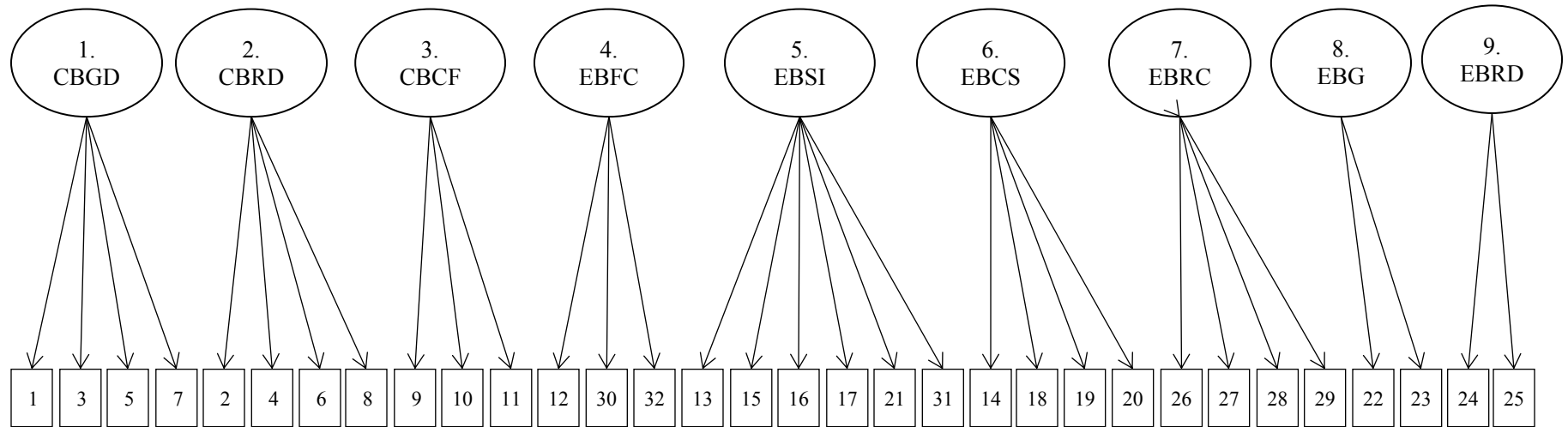*Note*. GB = General Barriers

Figure 2

Model 2: Two First-Order Factor Model

Note. Although the paths are not shown to simplify the figure, all latent variables were allowed to correlate with each other; CB = Career Barriers; EB = Educational Barriers

Figure 3

Model 3: Nine First-Order Factor Model

Note. Although the paths are not shown to simplify the figure, all latent variables were allowed to correlate with each other;1. CBGD = Career Barriers Due to Gender Discrimination; 2. CBRD = Career Barriers Due to Racial Discrimination; 3. CBCF = Career Barriers Due to Children/Future Family; 4. EBFC = Educational Barriers Due to Financial Concerns; 5. EFSI = Educational Barriers Due to Lack of Support/Interpersonal Problems; 6. EBCS = Educational Barriers Due to Lack Confidence/Skills; 7. EBRC = Educational Barriers Due to Relationship/Childcare Concerns; 8. EBGR = Educational Barriers Due to Gender Discrimination; 9. EBRD = Educational Barriers Due to Racial Discrimination

Figure 4

Model 4: Second-Order Model (Two Higher-Order Factors and Nine First-Order Factors)
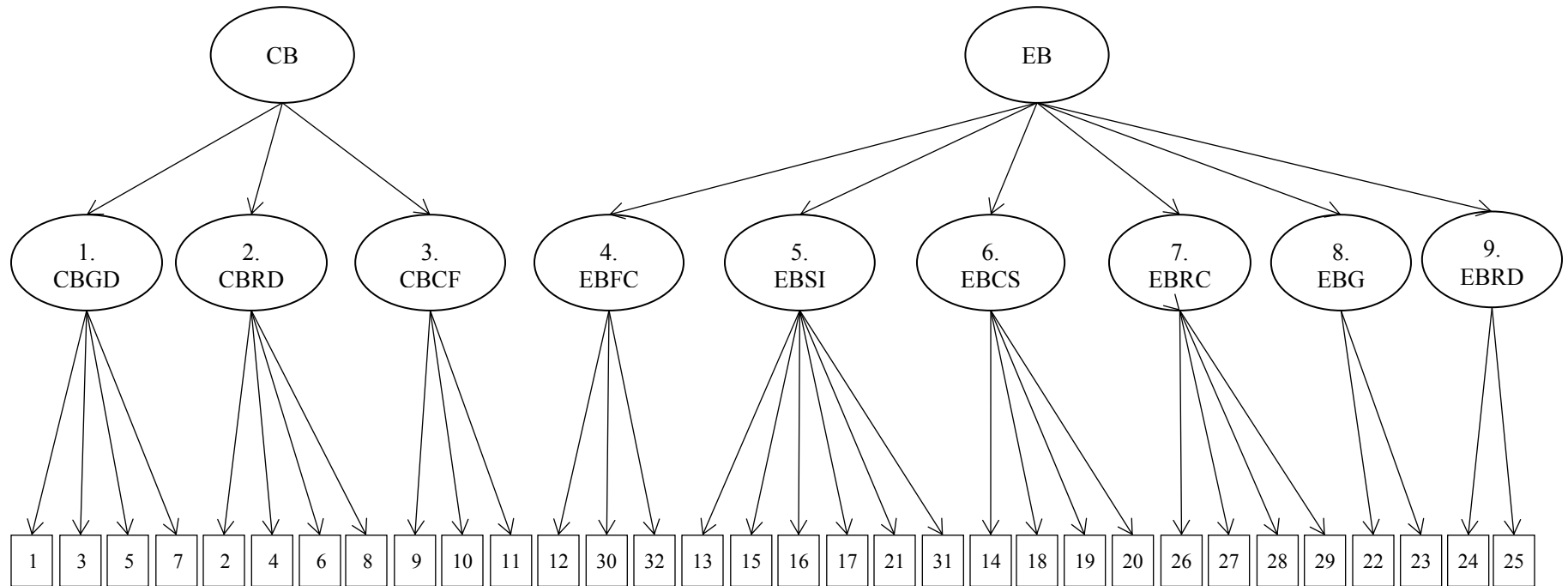
Note. CB = Career Barriers; EB = Educational Barriers; 1. CBGD = Career Barriers Due to Gender Discrimination; 2. CBRD = Career Barriers Due to Racial Discrimination; 3. CBCF = Career Barriers Due to Children/Future Family; 4. EBFC = Educational Barriers Due to Financial Concerns; 5. EFSI = Educational Barriers Due to Lack of Support/Interpersonal Problems; 6. EBCS = Educational Barriers Due to Lack Confidence/Skills; 7. EBRC = Educational Barriers Due to Relationship/Childcare Concerns; 8. EBGR = Educational Barriers Due to Gender Discrimination; 9. EBRD = Educational Barriers Due to Racial Discrimination

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