

SOCIAL-CONTEXTUAL INFLUENCE ON WOMEN'S CAREER DEVELOPMENT

by

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(Under the Direction of Jay W. Rojewski)

ABSTRACT

The present dissertation consists of three studies that explored diverse aspects of the relationship between social-contextual factors and women's career development. The first study focused on Korean female work-bound adolescents, examining the influence of career-related supports provided by schools and families on adolescents' career adaptability and job satisfaction. Results showed that female work-bound adolescents' job satisfaction was significantly affected by career adaptability and school and family supports. Findings also showed that female adolescents' job satisfaction was less influenced by career adaptability than that of men. The second study investigated gender differences in occupational aspirations using a newly developed psychometric instrument, the Subjective Occupational Aspiration Scale. Results showed that men and women did not differ in their overall level of subjective occupational aspiration, suggesting that gender socialization did not significantly differentiate between men's and women's internal longings or preferences regarding occupations. However, women who aspired to traditionally female jobs had lower subjective occupational aspirations than women who wanted traditionally male jobs. The third study identified career patterns of U.S. college-educated women during mid-career using economic attainment as an indicator of their career attainment. Also, the third study examined the influence of family on women's career patterns. Five distinct career patterns were identified. The majority of women in this study belonged to the sustained growth group in which women's economic attainment increased continuously and consistently. The other four groups showed either sporadic or limited economic attainment patterns. Sustained growth women appeared to be less involved in family responsibilities than women in the other four groups. This study also revealed a

noticeable influence of fathers on women's career patterns. Across all the groups, job satisfaction appeared to be the same. Overall, the findings of the three studies help enhance the understanding of the influence of environmental factors on women's career development.

INDEX WORDS: Women, Gender, Career development, Social-contextual influence, Job satisfaction, Career adaptability, Occupational aspiration, Career pattern

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TABLE OF CONTENTS

	Page
LIST OF TABLES	vi
LIST OF FIGURES	vii
CHAPTER	
1 INTRODUCTION AND LITERATURE REVIEW	1
Gender Differences in Career Development.....	1
Social-Contextual Influence on Women’s Career Development.....	3
Overview of Three Studies	4
References.....	7
2 GENDER-SPECIFIC MODELS OF WORK-BOUND KOREAN ADOLESCENTS’ SOCIAL SUPPORTS AND CAREER ADAPTABILITY ON SUBSEQUENT JOB SATISFACTION.....	10
Abstract.....	11
Introduction.....	12
Method.....	17
Results	23
Discussion.....	28
References.....	32
3 GENDER DIFFERENCES IN THE SUBJECTIVE OCCUPATIONAL ASPIRATIONS OF COLLEGE STUDENTS.....	37
Abstract.....	38
Introduction.....	39
Method.....	51

Results	57
Discussion.....	67
References.....	74
4 LONGITUDINAL LATENT CLASS ANALYSIS OF COLLEGE-EDUCATED WOMEN'S ECONOMIC ATTAINMENT PATTERNS DURING MID-CAREER	79
Abstract.....	80
Introduction.....	81
Method.....	88
Results	93
Discussion.....	103
References.....	110
5 CONCLUSIONS.....	116
Summary of Findings	116
Future Directions	119
References.....	122

LIST OF TABLES

	Page
Table 2.1: Means, standard deviations, and intercorrelations among study variables	24
Table 2.2: Factor loadings of overall model and direct and indirect effects among variables.....	25
Table 3.1: Initial items of the Subjective Occupation Aspirations Scale according to the distributional components	47
Table 3.2: Means and standard deviations of the SOAS.....	57
Table 3.3: Correlation matrix of content components of the SOAS	58
Table 3.4: FACET summary statistics	58
Table 3.5: Infit and outfit statics, point-biserial correlations, and item difficulties	59
Table 3.6: Correlation matrix of selected variables	63
Table 3.7: Gender difference in occupational aspirations and correlation between occupational traditionality and aspirations	65
Table 3.8: Gender difference in occupational traditionality and aspirations	66
Table 4.1: Fit indices and entropy values of individual models with 1 through 7 classes	94
Table 4.2: Estimated group average of women's economic attainment patterns.....	97
Table 4.3: Women's occupation at time point 1 by classes	100
Table 4.4: Family characteristics of participants by classes	102

LIST OF FIGURES

	Page
Figure 1.1: Conceptual framework of the three studies	4
Figure 2.1: Hypothesized model of perceived school support, perceived family support, and career adaptability on the job satisfaction of work-bound youths in Korea	15
Figure 2.2: Overall and gender-specific models of perceived school support, perceived family support, career adaptability, and job satisfaction	26
Figure 3.1: Prototypical variable map of the SOAS	44
Figure 3.2: Wright map of the SOAS	61
Figure 4.1: Economic attainment patterns of all participants	93
Figure 4.2: Average (estimated means) economic attainment patterns of each latent class in log constant and actual dollars	95
Figure 4.3: Average (estimated means) and observed economic attainment patterns of each latent class .	96
Figure 4.4: Average job satisfaction trajectories of each latent class	101

CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

Gender Differences in Career Development

Historically, theories and research have shown that gender differences exist in career development. Indeed, diverse variables that reflect different phases of career development have been associated with gender as an influencing factor. First, men and women are likely to differ in *career adaptability*. Career adaptability refers to “the readiness to cope with the predictable tasks of preparing for and participating in the work role and with the unpredictable adjustment prompted by changes in work and working conditions” (Savickas, 1997, p. 254). The claim has been made that gender affects individuals’ career adaptability because traditional gender-role expectations and constraints imposed on women can lead women to undergo different educational and occupational experiences, which form subsequent career adaptability, from men (Rojewski, Wicklein, & Schell, 1995).

Gender difference is also found in *job satisfaction*, a construct that describes “how people feel about their jobs and different aspects of their jobs” (Spector, 1997, p. 2). Men and women perceive job satisfaction differently owing to such factors as sex-discriminant occupational conditions (Clark & Oswald, 1994) and gender difference in expectations toward work and workplace (Clark, 1997).

Men and women tend to differ in *occupational aspiration*, which is defined as individuals’ “expressed career-related goals or choices” (Rojewski, 2005, p. 132). As early as ages from 6-8, children start to restrict their occupational alternatives by eliminating options that they consider inappropriate for their gender. Eventually, they develop tolerable sex-type boundaries, residing within which are jobs they consider acceptable—thinking that certain gender images associated with the jobs are suitable for, or at least tolerable to, them (Gottfredson, 2005). As a result, men and women are likely to possess different levels or areas or occupational aspirations.

From a broader perspective, men and women experience different *career patterns*, or career paths, throughout life. Women tend to experience greater occupational interruptions in their career paths than men, since women traditionally assume more family-related responsibilities that can encroach upon their work life (Fitzgerald, Fassinger, & Betz, 1995). As a result, women exhibit more varied career histories (Huang, El-Khoury, Johansson, Lindroth, & Sverke, 2007). This is the reason the career patterns of women are rather heterogeneous, being segregated into different groups exhibiting different career patterns (Hakim, 2000).

As noted above, career development variables (i.e., career adaptability, job satisfaction, occupational aspiration, career pattern) suggest that women tend to experience career paths that are distinct from those of men throughout the course of life. Several theories (e.g., Lent, Brown, and Hackett's [1994] social cognitive career theory and Hakim's [2000] preference theory) have focused on explaining the disparities of career development for women. A pertinent premise across these theories is that gender usually serves as a factor that complicates, or even hinders, female adolescents' career choices or adult women's career progress.

On the other hand, some current studies have shown that, during the last couple of decades, there has been a narrowing of the gender gap in terms of educational attainment, labor market participation rate, occupational segregation, and earnings (e.g., Baunach, 2002; U.S Bureau of Labor Statistics, 2014). This can be attributable to several social changes that have occurred during the last several decades including the (a) increasing educational attainment of women (Welch, 2000), (b) increasing availability of service sector jobs that favor female labor (Galor & Weil, 1996), (c) changes of ideology that accept diverse lifestyles for women such as being divorced or remaining single (Barnett & Hyde, 2001) and (d) an elevated sense of domestic gender equality in terms of sharing family responsibilities such as childrearing and household chores with men (Bond, Galinsky, & Swanberg, 1998).

The fact that there exist two different outlooks on women's career development—viewing gender as a complicating factor or focusing on the narrowing gender gap—suggests that the topic is not a static

discourse. Rather, it is a changing, multidimensional issue that needs to be understood in the context of an ever-changing society. Thus, it is necessary to diagnose present-day women's vocational experiences that may have changed according to the contemporary societal transitions, and to add evidence to enrich the relevant literature on the chosen topic.

Social-Contextual Influence on Women's Career Development

A critical factor in understanding women's career development is social-contextual influence. Social-contextual influence in the career development literature is a broad concept and generally related to environmental factors that affect individuals' career development. The scope of these factors is wide ranging from culture and community to family, peers, and specific career interventions. Also, the direction of the effect can be either supportive or contradictory. Almost all prominent career-related theories address, at least to some extent, the role of social-contextual influence in individuals' career development (Osipow & Fitzgerald, 1996).

Social cognitive career theory describes the development of individuals' careers being affected extensively and fundamentally by environmental factors (e.g., dominant culture, career-related support or discouragement from family, teacher, and peers, and supporting or discouraging environment for engaging in particular academic and extracurricular activities). Such factors form individuals' occupational identities as well as lead them to make specific career choices (Lent et al., 1994). The life-span, life-space theory (Super, 1990) emphasizes the role of culture in the development of one's self-concept, explaining that an individual's cultural background is a major source of gender bias in his or her sex-role stereotypes and life-role salience. Also, work-family literature suggests that resources such as environmental (workplace and family) support or condition can help individual deal with multiple-role conflict and stress, which are critical issues in adult women's career development (Grandey & Cropanzano, 1999).

A range of theories and a body of literature have consistently suggested that social-contextual influence plays a significant role in shaping both female youths' and adult women's career behavior and

choices. Given the importance of environmental factors in women's career development, examining diverse aspects of women's career development in the light of social-contextual influence will help relevant entities understand more thoroughly women's career development and shed light on possible forms of environmental assistance that should be provided to prompt women's career development.

Overview of Three Studies

The overarching goal of this dissertation research was to explore the relationship between social-contextual factors and women's career development. To achieve this goal, three individual studies were conducted. Although the specific topics of each study differ, the three studies are tied together under the overarching goal of the dissertation. They all explored the influence of environmental factors (i.e., family, school, occupational sex-stereotype) on variables that represent women's career developmental status and behavior at certain points in time or across their overall careers (i.e., career adaptability, job satisfaction, occupational aspiration, and career patterns). Figure 1.1 displays the conceptual framework of the three studies. The horizontal line represents different phases of women's life and career. Each study investigated certain important phases in women's career using diverse samples of different ages and nationalities.

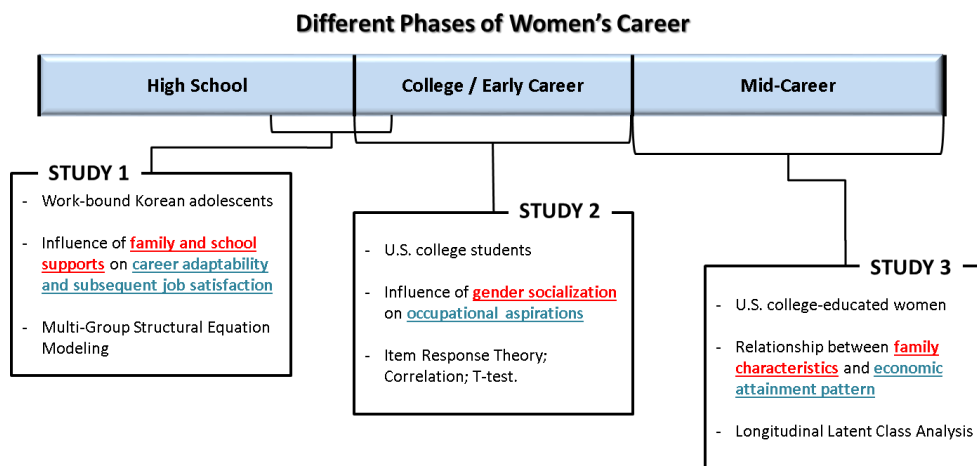


Figure 1.1. Conceptual framework of three studies

The first study, which used a Korean national database—the High School Graduates Occupational Mobility Survey—investigated the impact of perceived school and family supports on career adaptability and job satisfaction of work-bound Korean adolescents. We hypothesized a model in which adolescents' perceived school and family supports predicted subsequent job satisfaction through a mediation of career adaptability. We expected the hypothesized relationships between the chosen variables to be different for men and women. Specifically, men and women would differ in the process by which social support influences, possibly through career adaptability, subsequent job satisfaction (Bellman, Forster, Still, & Cooper, 2003). Thus, techniques of multi-group structural equation modeling were employed to test the model separately for men and women.

The second study examined gender differences in occupational aspirations using a U.S. college student sample. It has been reported that women tend to aspire to jobs that are either low-status, traditional female or high-status, traditional male while men tend to stick to traditional male jobs regardless of prestige status (Looker & McNutt, 1989; Rojewski, & Kim, 2003). We first examined the levels of occupational aspirations of men and women using a socioeconomic status (SES)-based occupational aspiration scale. Then, to see the psychological difference according to gender in occupational aspirations without the influence of societally defined job titles, we used item response theory techniques to develop a new instrument, the Subjective Occupational Aspiration Scale (SOAS). Then, we used the SOAS to again measure college men and women's occupational aspirations and to thereby examine gender difference in subjective occupational aspirations.

The third study explored U.S. college-educated women's mid-career patterns in association with their family characteristics. Using a U.S. national database, National Longitudinal Survey of Youth 1979, we first identified five distinct career (economic attainment) patterns of college-educated women during their mid-30s to mid-40s. Longitudinal latent class analysis was used to identify the underlying classes of career patterns. Then, family characteristics of each career pattern were examined. We assumed that a

different tendency in newly formed family (e.g., marriage, children) as well as family of origin (e.g., parents) would exist across different career patterns.

Chapters 2, 3, and 4 present Studies 1, 2, and 3. Chapter 5 summarizes the findings of the three studies and discusses implications and directions for future practice and research.

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CHAPTER 2

GENDER-SPECIFIC MODELS OF WORK-BOUND KOREAN ADOLESCENTS' SOCIAL
SUPPORTS AND CAREER ADAPTABILITY ON SUBSEQUENT JOB SATISFACTION ¹

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Abstract

A Korean national database, the High School Graduates Occupational Mobility Survey, was used to examine the influence of perceived social supports (family and school) and career adaptability on the subsequent job satisfaction of work-bound adolescents 4 months after their transition from high school to work. Structural equation modeling analysis revealed that social supports indirectly influenced job satisfaction by enhancing career adaptability. Perceived school support and family support were found to be highly correlated with each other, indicating individuals are cognitively consistent in their perceptions of environmental supports. Gender differences existed on all chosen variables (except for career planning), with women reporting greater levels than men. A significant gender difference was also found in the relationship between career adaptability and job satisfaction. Men were more influenced by career adaptability in experiencing job satisfaction than women. Interpretations of these findings were shared in light of career development theory and Korean culture.

Introduction

Approximately two thirds of U.S. high school graduates enroll in 2- or 4-year postsecondary educational programs in the fall semester immediately after completing high school (National Center for Education Statistics, 2010). The remaining one third of graduates usually turn their attention to the labor market. These work-bound (or noncollege bound) adolescents often struggle; experiencing extended periods of unemployment or floundering in multiple low-skill, low-wage jobs without opportunities for advancement (Worthington & Juntunen, 1997). As a result, work-bound youth are often frustrated and dissatisfied with their personal and career lives (Pinquart, Juang, & Silbereisen, 2003). This scenario often results from insufficient preparation for employment and a lack of support during the transition from school to work (Worthington & Juntunen, 1997).

In a successful school-to-work (STW) transition, one influencing factor is career adaptability. Career adaptability refers to “the readiness to cope with the predictable tasks of preparing for and participating in the work role and with the unpredictable adjustment prompted by changes in work and working conditions” (Savickas, 1997, p. 254). The construct reflects one’s ability to deal with both predictable and unpredictable career-related tasks. This ability can be developed through preparation activities such as career exploration (CE) and CP. Savickas (1997) explained that the construct of career adaptability consists of four components such as exploration, planning, decision making, and problem solving/confidence. The CE component entails some degree of uncertainty and risk taking, while the remaining three components reflect higher degrees of commitment to and focus on specific occupations (Skorikov, 2007).

Career construction theory, developed by Savickas (2002), embraces Super’s life span, life space career development theory and claims that career adaptability is an essential concept that accounts for individuals’ vocational behaviors across life cycles in the 21st century, where phenomena such as restructuring of occupations, transformation of the labor force, and multicultural imperatives are more common than ever. That is, since modern society requires more mobility between jobs and flexibility

within a job than was required in the past, one's ability to adjust his or her vocational traits (e.g., interests and aptitudes) to a new environment is more critical than the vocational traits per se. The theory further explains that career adaptability fosters a series of transitions that individuals experience, including STW transitions, by facilitating the process of adjustment to the roles given by the new occupational environments (Savickas, 2002).

Along with career adaptability, an important element that prompts adolescents' successful entry into the labor market is social support, which enhances career adaptability (Blustein, Juntunen, & Worthington, 2000). Social, or contextual, support refers to instrumental and emotional environmental resources that facilitate individuals' formation and pursuit of career choices. Social supports influence career adaptability because they provide opportunities for more concrete and stable career decisions, as well as more differentiated occupational identities (Lent, Hackett, & Brown, 1999). For example, perceived social support appears to facilitate greater career adaptability during the school years by providing adolescents with emotional and tangible support that can be utilized through their CE and CP process (Hirschi, 2009). Also, career-related support from parents and peers increases adolescents' CE behavior by prompting their awareness of the need for and significance of concrete career decisions (Kracke, 2002).

Through career adaptability, social supports play a critical role in facilitating the STW transition of work-bound adolescents. Lent, Hackett, and Brown (1999) argued that work-bound adolescents need help in recognizing and accessing contextual resources—for example, supportive relationships with family, peers, and teachers or psychoeducational interventions—that can facilitate career preparation and transition from school to work. Blustein, Phillips, Jobin-Davis, Finkelberg, and Roarke (1997) asserted that contextual factors, along with individual factors, were crucial for work-bound adolescents' transition success. Furthermore, Phillips, Blustein, Jobin-Davis, and White (2002) showed that the support of parents, family members, and peers was influential in making career decisions and in formulating career plans, as well as being associated with psychological readiness for transition.

Successful STW Transition and Subsequent Job Satisfaction

Career adaptability promotes work-bound adolescents' preparation for future employment by emphasizing opportunities to be well informed of occupational options, as well as in gaining confidence in performing career-related tasks. Thus, it facilitates the STW transition and enhances subsequent career development in adulthood (Felsman & Blustein, 1999; Phillips, Blustein, Jobin-Davis, & White, 2002; Skorikov, 2007). The associations highlight the connection between career adaptability and subsequent job satisfaction, which is often regarded as one of the important transition outcomes of work-bound adolescents (Blustein, Phillips, Jobin-Davis, Finkelberg, & Roarke, 1997).

Job satisfaction describes "how people feel about their jobs and different aspects of their jobs" (Spector, 1997, p. 2). It is an attitudinal variable that describes individuals' emotions toward their occupations. Research on this construct can be organized into two categories that reflect the sources of job satisfaction, including environmental or dispositional (Saif, Nawaz, Jan, & Khan, 2012). Environmental job satisfaction, based on Herzberg's two-factor theory and Vroom's expectancy theory, is concerned with individual needs (contents) or the process by which individual needs and goals are fulfilled through interaction with the work environment (Saif et al., 2012). In contrast, dispositional job satisfaction assumes that traits such as the five-factor personality (extraversion, agreeableness, conscientiousness, emotional stability, and autonomy), adjustment, affectivity, and openness are the basis of job satisfaction (Watson, 2000).

Most explanations of job satisfaction have focused on either environmental or dispositional factors, resulting in limited number of studies examining the developmental aspects of job satisfaction. From a developmental perspective, job satisfaction is influenced not only by characteristics of one's current occupation but also by factors built up from the past. For example, career adaptability of work-bound adolescents during the early stages of the transition to work has not been studied to a significant extent in conjunction with subsequent job satisfaction, even though possible associations have been suggested (e.g., Blustein et al., 1997).

Hypothesized Model

Existing literature suggests a causal relationship between social supports, career adaptability, and job satisfaction (Blustein et al., 1997; Felsman & Blustein, 1999; Hirschi, 2009; Lent et al., 1999; Phillips et al., 2002). Of the many social supports that work-bound adolescents may experience, supports from school and family sources are of primary importance because of physical and psychological proximity. School and family supports can influence, positively or negatively, career adaptability by promoting or discouraging CE and CP activities. Career adaptability, in turn, may affect subsequent job satisfaction by enhancing occupational preparedness and chances to secure desired jobs.

To test these relationships, a model of work-bound adolescents' perceived school support, perceived family support, career adaptability, and subsequent job satisfaction was developed (see Figure 2.1). School and family supports were operationalized as adolescents' perceived school and family supports, which are the subjective reflections of these constructs. These variables reflect the approximate amounts and qualities of the environmental supports that adolescents experienced, as well as individuals' characteristics of perceiving these supports. These two variables were correlated in the model because we assumed that an individual's cognitive characteristic of perceiving environmental resources would be similar for both school and family supports.

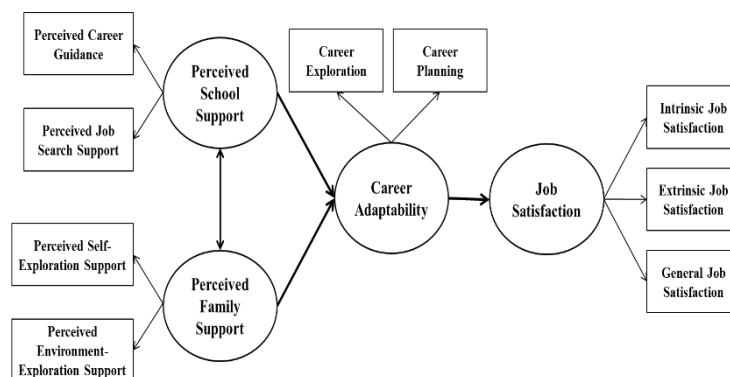


Figure 2.1. Hypothesized model of perceived school support, perceived family support, and career adaptability on the job satisfaction of work-bound youths in Korea.

Gender differences in the hypothesized model. Possible gender differences were also considered in our job satisfaction model because of previous studies indicating the likelihood of differences between men and women. For example, women generally perceive more social support than men because of a greater sensitivity to the needs of others as well as to themselves, which lead “to a greater capacity to provide support and a greater dependence upon social support for psychological well-being” (Flaherty & Richman, 1989, p. 1221). In addition, studies have found higher levels of perceived teacher and peer support (e.g., Wall, Covell, & MacIntyre, 1999) for adolescent women. Gender differences have also been identified in career adaptability, although findings have been mixed (Patton & Lokan, 2001). A majority of studies have shown that women possess higher levels of career maturity than men (e.g., Rojewski, Wicklein, & Schell, 1995), although a small number of studies have reported higher career adaptability scores for men (e.g., Watson, 1984) or found no significant gender differences (Hirschi, 2009).

While many studies have found that women report significantly higher levels of job satisfaction than men, some researchers argue that this finding seems paradoxical, as women workers are more likely to experience disadvantaged occupational conditions than men (Roxburgh, 1996). In contrast, some studies (e.g., Donohue & Heywood, 2004) have provided evidence that men and women do not differ in overall job satisfaction.

Gender differences have also been found in the relationships between variables. Several studies showed that a moderating effect of gender existed in one’s use of social support in dealing with job stressors, which subsequently influence job satisfaction (e.g., Bellman, Forster, Still, & Cooper, 2003). This suggests that men and women would differ in the process by which social support influences, possibly through career adaptability, subsequent job satisfaction. Therefore, gender-specific models of chosen variables were analyzed.

Purpose of the Study

The High School Graduates Occupational Mobility Survey (HSGOMS), a national Korean database, was used for this analysis. Data were used to test the hypothesized relationships of perceived

school support, perceived family support, and career adaptability on the job satisfaction of work-bound Korean adolescents reported 4 months after high school completion. Gender differences were anticipated on each variable as well as on relationships between variables. Therefore, separate structural equation models for men and women were tested.

Method

Sample

Participants were selected from the HSGOMS, a large-scale, nationally representative survey of work-bound Korean youth. The HSGOMS was first administered in May 2011 and will continue to be added to every other year by gathering data on the same participants. In our analysis, we used first-wave (2011) data, which were the only available set at the point of data analysis. The HSGOMS database includes data from 5,281 work-bound Korean young adults who graduated from high school in February 2011 and who, as of May 2011, had yet to enroll in any higher educational programs. The HSGOMS sampling strategy ensured that gender, residential district, and type of high school (among other characteristics) of the sample matched census data in order to be nationally representative.

Employment status was used to select work-bound adolescents reporting stable employment on May 1, 2012. Adolescents with more than 1 year of stable employment with their current employers were selected, exclusive of unemployed and self-employed adolescents, unpaid family workers, and day workers. Using this selection criterion, 3,869 participants (men, $n = 1,937$ [50.1%]; women, $n = 1,932$ [49.9%]) were included in the final data pool. All participants were vocational high school graduates; 1,874 (48.4%) students from business high schools, 1,680 (43.4%) from technical high schools, 37 (1.0%) from comprehensive high schools, and 278 (7.2%) from other institutions.

Measures

The following paragraphs offer a description of the measures used as indicators of each latent variable in the hypothesized model. We used summed scores of chosen items for each indicator to estimate the latent variables. Several advantages accrue from using composite or mean scores as

indicators, or item parceling, in structural equation modeling (SEM) over individual items as indicators; such advantages include more reliable and normally distributed data (Bagozzi & Edwards, 1998; Cattell, 1956). Moreover, item parceling is the most appropriate approach in SEM analysis when the factor structure of the construct of interest or subscale of its measurement is broadly defined (Hall, Snell, & Foust, 1999). Since the factor structures of selected variables had been fairly established in the literature, we adopted composite scores as values of indicators.

Three latent variables in the model—perceived school support, perceived family support, and career adaptability—were estimated using two indicators. Although it is often recommended to use three or more indicators per construct in SEM, we adopted a two-factor estimation solution for the constructs. This decision was based on the fact that having a large sample size and high factor loading value, as in this study, significantly decreases the possibility of occurrence of problematic calculations such as improper solutions in estimation or nonconvergence (Gerbing & Anderson, 1987).

Finally, a panel of two Korean PhD researchers from the career and technical education field assessed the content validity of the constructs. They examined several aspects of measures including contents and representativeness of items, as well as factor structures of latent variables, and confirmed that solid validity existed in the measures.

Perceived school support. The latent variable perceived school support (Cronbach's $\alpha = .88$) referred to the instrumental and educational interventions that high schools provided to assist adolescents in developing self- and work awareness and vocational skills (Hughes & Karp, 2004). This latent variable was estimated using two observed indicators, perceived career guidance (PCG) and perceived job search support (PJSS), which measured the degrees of work-bound adolescents' satisfaction with each type of support. This measurement approach—measuring school support with satisfaction scores—was based on the assumption that work-bound adolescents' satisfaction in school support could reflect its overall amount and quality.

PCG (Cronbach's $\alpha = .81$) measured the degree of work-bound adolescents' satisfaction in the six types of career guidance they received in high schools (e.g., "How satisfied were you with the career counseling provided by your high school?"). Such career guidance included activities provided to enhance adolescents' awareness of themselves and of the world of work, such as career guidance courses, career development seminars, career information provision, career interest/aptitude tests, job shadowing, and career counseling. Pairs of questions corresponded to the career guidance activities. The first question of each pair asked for a dichotomous response about whether the career guidance activity was received in high school. For students who answered "yes" to the first question, a second question used a 5-point Likert-type response to determine the level of satisfaction with the career guidance activity. The two questions were combined into a single item with a 6-point scale, so that those respondents who had not participated in the chosen activity received the lowest value, 1, and could be included in the analyses (1 = never participated; 2 = participated, but strongly dissatisfied; 3 = participated, but slightly dissatisfied; 4 = participated and moderately satisfied; 5 = participated and fairly satisfied; and 6 = participated and strongly satisfied). An individual's PCG score was the sum of the 6 combined career guidance items. Scores ranged from 6 to 36 with high scores indicating greater participation and satisfaction with career guidance.

PJSS (Cronbach's $\alpha = .80$) reflected adolescents' satisfaction with five types of support that high school personnel provided with the vocational skill development and job search process, including assistance for acquisition of professional certificates in chosen fields, vocational skill information, job search counseling, resume/interview preparation, and job placement (e.g., "How satisfied were you with the job placement service provided by your high school?"). Like the PCG, the PJSS was measured using a pair of questions determining participation and level of satisfaction with support received for each of the job search activities. A 6-point Likert-type scale response format was used. An individual's PJSS score was the sum of the 5 combined items for each job search support activity. Scores ranged from 5 to 30 with high scores indicating greater participation and satisfaction with job search support.

Perceived family support. The latent variable perceived family support (Cronbach's $\alpha = .72$) referred to the support from family that provided the developmental context for work-bound adolescents to establish their career-related properties during high school, such as opportunities for self- and environmental exploration (Nota, Ferrari, Solberg, & Soresi, 2007). This latent variable was estimated by two observed indicators, perceived self-exploration support (PSES) and perceived environment-exploration support (PEES). These measured the degree of perceived availability (frequency) of each type of family support.

The PSES measured the degree of perceived availability of family support that work-bound adolescents received to engage in career-related self-exploration, such as having conversations about career interest with family (e.g., "How often did you have conversations about your career interest with family?"). There was one pair of questions for this indicator: a dichotomous question that asked adolescents whether they had conversations with family members about their occupational aptitudes and interests; the other one was a question using a 5-point Likert-type response that asked students answering "yes" to the first question about the frequency of these conversations. The two questions were combined into a single item with a 6-point Likert-type scale (1 = have never received the self-exploration support from family; 2 = seldom; 3 = sometimes; 4 = often; 5 = regularly; and 6 = very often). No internal consistency value was calculated for PSES because it was a 1-item measure.

PEES (Cronbach's $\alpha = .88$) was the degree of perceived availability of family support that encouraged adolescents to explore environments (e.g., "How often were you provided with information about jobs, schools, or majors by your family?"). Examples of support included conversations about the world of work with family, field trips to a family member's workplace, and provision of information regarding career planning (CP). The PEES was measured by a pair of questions determining participation and frequency of support received for each of the exploration activities. Each pair of questions was combined into a single score on a 6-point Likert-type scale. An individual's PEES score was the sum of

the three combined environment-exploration support items. Scores ranged from 3 to 18 with high scores indicating greater participation and frequency of environment-exploration support.

Career adaptability. The latent variable career adaptability (Cronbach's $\alpha = .81$) referred to adolescents' readiness to cope with tasks of preparing for and participating in the work role, as well as with the adjustment tasks prompted by environmental change (Savickas, 1997). This latent variable was estimated by two observed indicators, CE and CP, which measured the degree of work-bound adolescents' participation in each type of career-adaptability activity. For this study, career adaptability activities included CE and CP that represented both risk taking and commitment aspects of the construct of career adaptability (Skorikov, 2007). The CE (Cronbach's $\alpha = .72$) included activities in which adolescents searched broadly about self and environment, such as web searches about the world of work, watching videos/TV programs about the world of work, career counseling, and career interest/aptitude tests (e.g., "How often did you search the Internet about the world of work?"). The CP (Cronbach's $\alpha = .65$) included activities that were likely to be taken after adolescents settled on one or two particular occupations of their interests. Such activities included contacting someone in a chosen occupational field, meeting professionals in a chosen occupational field, and preparing for certificates required by a chosen occupational field (e.g., "How often did you try to earn certificates or to receive training required by the jobs you want to have in the future?"). All items used a 5-point Likert-type scale (1 = never to 5 = very often). An individual's CE and CP scores were the sum of 4 and 3 individual items and ranged from 4 to 20 and 3 to 15, respectively, with high scores indicating greater levels of exploration and planning activities.

Job satisfaction. The latent variable job satisfaction (Cronbach's $\alpha = .90$) was defined as work-bound adolescents' satisfaction with their jobs per se and different aspects of their jobs (Spector, 1997). This latent variable was estimated using three observed indicators—intrinsic job satisfaction (IJS), extrinsic job satisfaction (EJS), and general job satisfaction (GJS)—that measured the degrees of satisfaction with each domain of job satisfaction. IJS (Cronbach's $\alpha = .66$) was the degree of work-bound

adolescents' satisfaction with the characteristics of the job itself, such as tasks and autonomy, (e.g., "How satisfied are you with the tasks involved with your current job?"). On the other hand, EJS (Cronbach's $\alpha = .80$) was the degree of satisfaction with the context in which the job was performed, such as wage, stability, environmental condition, promotion system, relationship with colleagues, and welfare system (e.g., "How satisfied are you with your current salary?"). GJS (Cronbach's $\alpha = .79$) indicated the degree of satisfaction with factors that were neither intrinsic nor extrinsic, such as the potential for overall career development, working load/hours, social perspective on one's overall job status, and overall satisfaction with one's job (e.g., "How satisfied are you with your job in general?"). All items for each type of job satisfaction used a 5-point Likert-type scale (1 = strongly dissatisfied to 5 = strongly satisfied). An individual's IJS, EJS, and GJS scores were the sum of 2, 6, and 4 items and ranged from 2 to 10, 6 to 30, and 4 to 20, respectively, with high scores indicating greater satisfaction in each domain.

Data Analysis

Characteristics of the data were examined first. Little's MCAT test confirmed that all missing values were missing completely at random ($p = .803$); therefore, missing values were imputed using the expectation-maximization method. The univariate nonnormality of the data was screened, using Curran, West, and Finch's (1996) criteria: skewness > 2.0 or < -2.0 ; and kurtosis > 7.0 or < -7.0 . Results showed that all variables met the criteria confirming that the normality assumption was met.

AMOS 18.0 was used to test the hypothesized models and estimate parameter values. Parameter values were estimated using the maximum likelihood (ML) method, which is usually employed for analysis of normally distributed continuous data. Although measures of this study used ordinal scales (i.e., Likert type), we employed the ML method because it has little effect on the result to treat ordinal variables as continuous when they are with five or more categories or when composite scores are used as indicators (Hutchinson & Olmos, 1998), as in this study. A two-step process was then followed (Anderson & Gerbing, 1988). First, confirmatory factor analysis (CFA) tested the measurement model before estimating the hypothesized structural model. CFA tests whether the observed variables

(indicators) properly load on specific latent variables, as hypothesized. Second, the structural model was assessed by testing the path coefficients between latent variables.

In an additional series of analyses, multiple group analysis was used to investigate gender differences in the hypothesized model. We examined differences between χ^2 statistics for a constrained model and an unconstrained model (baseline model). This procedure directly tested whether the structural process differed across groups (Byrne, 2004). Once differences were confirmed, we tested the significance of differences between all relevant parameters to see which paths differed across genders.

An alpha level of .05 was used for all statistical tests. Several goodness-of-fit indices were used to determine how well the hypothesized model fit the data. The indices adopted and the acceptable cutoff values of those indices are as follows: standardized root mean square residual (SRMR) > .08 (Hu & Bentler, 1999), goodness-of-fit index (GFI) > .95 (Shevlin & Miles, 1998), adjusted goodness-of-fit index (AGFI) > .90 (Hooper, Coughlan, & Mullen, 2008), incremental fit index (IFI) > .90 (Bollen, 1989), Tucker–Lewis index (TLI) < .95 (Marsh, Ballad, & McDonald, 1988), comparative fit index (CFI) < .95 (Hu & Bentler, 1999), and root mean square error of approximation (RMSEA) > .06 (Hu & Bentler, 1999).

Results

Descriptive Statistics and Correlation Matrix

Participants' responses were examined using descriptive statistics, including means and standard deviations of the overall sample, as well as men and women (see Table 2.1). Correlation values among observed variables ranged from .122 (career exploration-intrinsic job satisfaction) to .777 (extrinsic job satisfaction-general job satisfaction) and all correlations were significant at the .01 alpha level.

Table 2.1

Means, Standard Deviations, and Intercorrelations among Study Variables

Variables	Overall		Men		Women		P^a	1	2	3	4	5	6	7	8	9
	$\underline{M}$	SD	$\underline{M}$	SD	$\underline{M}$	SD										
<u>Perceived school support</u>	42.94	10.93	42.08	11.19	43.80	10.60	.000									
1. PCG	22.97	6.47	22.46	6.66	23.47	6.24	.000	1.00								
2. PJSS	19.97	5.47	19.61	5.52	20.33	5.40	.000	.675**	1.00							
<u>Perceived family support</u>	9.94	4.11	9.44	4.04	10.44	4.12	.000									
3. PSES	3.15	1.48	2.97	1.46	3.33	1.47	.000	.306**	.274**	1.00						
4. PEES	6.79	3.03	6.47	2.95	7.11	3.07	.000	.336**	.293**	.623**	1.00					
<u>Career adaptability</u>	19.14	5.71	18.77	5.87	19.51	5.53	.000									
5. Career exploration	11.41	3.48	11.10	3.56	11.71	3.38	.000	.252**	.202**	.254**	.348**	1.00				
6. Career planning	7.73	2.76	7.67	2.80	7.80	2.73	.142	.199**	.175**	.236**	.305**	.670**	1.00			
<u>Job satisfaction</u>	40.59	7.88	39.48	8.21	41.69	7.38	.000									
7. Intrinsic job satisfaction	6.73	1.55	6.67	1.62	6.79	1.47	.014	.218**	.196**	.145**	.162**	.122**	.132**	1.00		
8. Extrinsic job satisfaction	20.67	4.08	19.94	4.21	21.41	3.81	.000	.276**	.281**	.165**	.185**	.161**	.131**	.667**	1.00	
9. General job satisfaction	13.19	2.97	12.88	3.06	13.49	2.85	.000	.258**	.244**	.173**	.176**	.143**	.159**	.760**	.777**	1.00

* $p < .05$ ** $p < .01$ ^a p-values (two-tail) for independent t -tests between men and women

Work-bound adolescents reported moderate levels of school support ($M = 42.94$, $SD = 10.93$), but low levels of family support ($M = 9.94$, $SD = 4.11$). Participants reported a low-moderate level of career adaptability ($M = 19.14$, $SD = 5.71$), indicating minimal participation in career exploration or on career planning tasks. Lastly, individuals were moderately satisfied with their job ($M = 40.59$, $SD = 7.88$). Although differences were not big, women reported statistically significant higher levels of all the chosen variables (except for career planning) than did men (alpha level = .05).

Overall Hypothesized Model

SEM was used to test the hypothesized model. Table 2.2 displays factor loadings of the indicators used in the measurement model. Loadings on indicators of latent constructs ranged from .77 to .94, all falling within Bagozzi and Yi's (1991) suggested criteria range of .50 - .95.

Table 2.2

Factor Loadings of Overall Model and Direct and Indirect Effects among Variables

Latent variable	Indicator		Factor loading	
Perceived School Support	Perceived Career Guidance		.874 ^{***}	
	Perceived Job Search Support		.756 ^{***}	
Perceived Family Support	Perceived Self-Exploration Support		.707 ^{***}	
	Perceived Environment-Exploration Support		.849 ^{***}	
Career Adaptability	Career Exploration		.845 ^{***}	
	Career Planning		.753 ^{***}	
Job Satisfaction	Internal Job Satisfaction		.812 ^{***}	
	External Job Satisfaction		.785 ^{***}	
	General Job Satisfaction		.949 ^{***}	

Parameter	Overall		Men		Women	
	Direct	Indirect	Direct	Indirect	Direct	Indirect
CA←PSS	.150 ^{***}	—	.161 ^{***}	—	.130 ^{***}	—
CA←PFS	.390 ^{***}	—	.409 ^{***}	—	.365 ^{***}	—
JS←PSS	—	.033 ^{***}	—	.041 ^{***}	—	.005 ^{***}
JS←PFS	—	.086 ^{***}	—	.104 ^{***}	—	.066 ^{***}
JS←CA	.221 ^{***}	—	.254 ^{***}	—	.159 ^{***}	—
PSS↔ PFS	.441 ^{***}	—	.449 ^{***}	—	.441 ^{***}	—

Note. All effects are standardized. Significances of indirect effects were tested using a bootstrapping method.

*** $p < .001$

Although a significant decrease in fit existed when compared to the measurement model ($\Delta x^2 = 266.493$, $\Delta df = 1$), $p < .001$, the hypothesized structural model still fit the data well: $x^2(23, N = 3,869) = 387.715$, $p < .01$; SRMR = .089; GFI = .975; AGFI = .952; IFI = .976; TLI = .955; CFI = .976; RMSEA = .064. Therefore, no modifications were made to the original model.

Path coefficients between latent variables for the overall model are presented in Figure 2.2. Both perceived social support ($r = .15$, $p < .001$) and perceived family support ($r = .39$, $p < .001$) had positive influence on career adaptability. Career adaptability, in turn, had a positive influence on job satisfaction ($r = .22$, $p < .001$). The two social support variables were correlated ($r = .45$, $p < .001$). Direct and indirect effects of perceived school support, perceived family support, and career adaptability on job satisfaction are shown in Table 2.2. All indirect effects were statistically significant as direct effects though the values of indirect effects were not large.

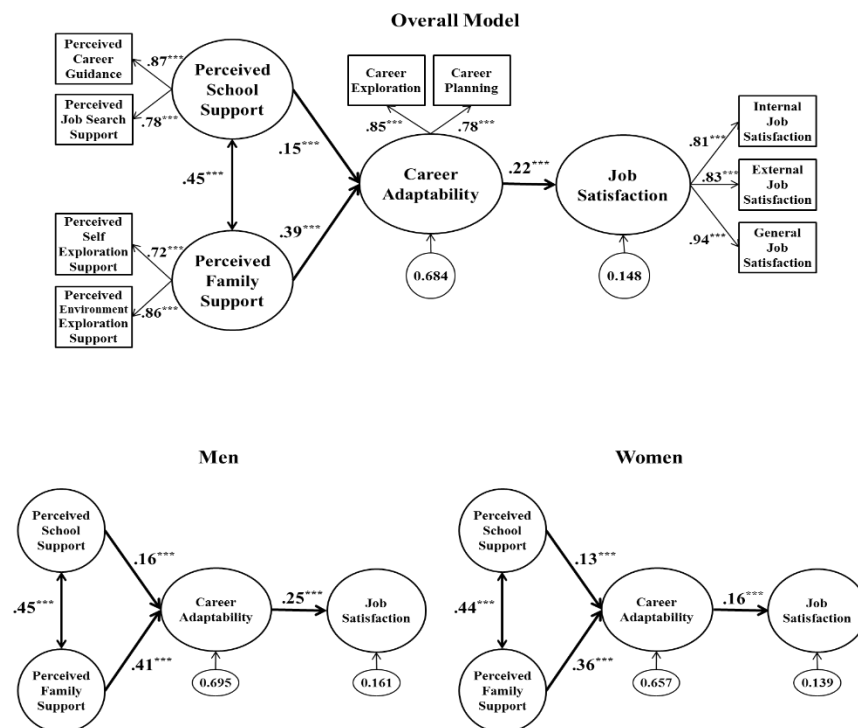


Figure 2.2. Overall and gender-specific models of perceived school support, perceived family support, career adaptability, and job satisfaction.

Gender-Specific Models

To identify gender-specific models for job satisfaction, both unconstrained and constrained models were tested first. Both models fit the data well: Fit indexes for the unconstrained model were $\chi^2 = 401.511$, $df = 46$, $GFI = .978$, $AGFI = .957$, $IFI = .977$, $TLI = .963$, $CFI = .977$, $RMSEA = .045$; indexes for the constrained model were $\chi^2 = 415.317$, $df = 50$, $GFI = .977$, $AGFI = .959$, $IFI = .976$, $TLI = .965$, $CFI = .976$, $RMSEA = .043$. However, the difference in chi-square values was significant, $\chi^2_{diff} = 13.806$, $df = 4$, $p < .01$, suggesting that the process by which social supports and career adaptability relate to job satisfaction was not the same for men and women. As a result, separate SEM analyses were conducted.

Gender-specific structural models are presented in Figure 2.2. For men, both perceived social support ($r = .16$, $p < .001$) and perceived family support ($r = .41$, $p < .001$) were positively associated with career adaptability. Career adaptability was also positively related to job satisfaction ($r = .25$, $p < .001$). The two social support variables were correlated ($r = .45$, $p < .001$). For women, perceived school support ($r = .13$, $p < .001$) and perceived family support ($r = .36$, $p < .001$) were also positively related to career adaptability and the values of the coefficients were similar to those of men. Covariance between the two social supports measures was almost identical to men ($r = .44$, $p < .001$). Career adaptability ($r = .16$, $p < .001$), however, appeared to have less influence on job satisfaction for women.

To detect which coefficients caused the significant difference between the two models, z-tests for each pair of coefficients were performed. Only the difference in coefficients between career adaptability and job satisfaction was statistically significant (Δ coefficient value = .09, $C.R = -.674$, $p < .01$), whereas other pairs, of which critical ratios were all less than the absolute value of ± 1.96 (.05 alpha level), showed no significant differences. This means that career adaptability had a significantly higher influence on job satisfaction for men than for women, while other relationships in the model were not significantly different across genders.

Direct and indirect effects among variables and R^2 values of endogenous variables for each model were examined (see Table 2.2). For men, as the direct effect of career adaptability on job satisfaction increased, indirect effects of perceived school (.041) and family support (.104) on job satisfaction were greater than for women (.005, .006), as well as for the overall group (.033, .086). In contrast, the influences of women's perceived social supports on job satisfaction through career adaptability were not only less than men but fairly weak. R^2 values for the overall group revealed that 22.7% of the variance in career adaptability was explained by perceived school support and family support. Men had a greater percent of variance explained (25.2%) than the overall group or women (19.2%). Only 4.9% of the variance in job satisfaction was explained by the combination of perceived school support, family support, and career adaptability. The R^2 value of job satisfaction in men's model (6.5%), while small, was larger than for the overall group or women (2.5%).

Discussion

Findings illustrate the influence of formative factors—social supports and career adaptability during high school—on subsequent job satisfaction for Korean work-bound adolescents and extend our understanding of these constructs in several ways. First, the model in our analyses offers a refined picture of the relationship among selected factors and job satisfaction from a developmental perspective. Social supports that work-bound youth experienced in high school indirectly influenced subsequent job satisfaction by enhancing career adaptability. That is, social supports increased adolescents' readiness to prepare for and adjust to current or future work by facilitating their preparatory activities, which led to higher future job satisfaction. This result provides supportive evidence to existing literature regarding the formative antecedents of job satisfaction, including occupational and general self-efficacy (Pinquart et al., 2003; Vinokur & Schul, 2001) and vocational congruence (Pinquart et al., 2003).

While approximately one quarter of the variance of career adaptability was explained by two social supports, only 4.9% of job satisfaction was described by the combination of two social supports and career adaptability. This result does not solidly support the findings of previous studies (e.g., Pinquart

et al., 2003; Vinokur & Schul, 2001) that have suggested substantial relationships between chosen formative factors—social supports and career adaptability—and job satisfaction.

A possible explanation for the discrepancy might be the influence of external factors that emerge between career preparation (high school) and labor market entry. It is likely that factors associated with the transition from adolescence to young adulthood—for example, difficulty in procuring employment, establishing independence from home, or other transition-related issues—may interfere with or diminish the direct influence of career adaptability on job satisfaction. In other words, a high school student's high career adaptability does not guarantee a favorable job outcome that provides a satisfactory environment. This is especially true for the case of work-bound adolescents because they often face more diverse barriers than college-bound counterparts, including limited chances of findings or obtaining the right job due to a lack of skills or education, employers' attitudes that favor college attendance, or poor occupational environments offered by low-skill, low-wage jobs (Mak, 2000; Rojewski & Kim, 2003).

Second, perceived school and family support were highly correlated with each other. This result is more likely to imply that individuals were cognitively consistent in the degree of sensitivity to and interpretation of perceiving selected environmental supports than that there was an actual strong association between school and family support. This is because the selected school (e.g., career courses) and family (e.g., conversation with family about the world of work) supports originated from resources—school personnel and families of individual work-bound adolescents—that are not likely to be associated with each other in providing career development support in general. The implications for practice are considerable because career development interventions for heightening adolescents' awareness of available social supports are more efficient than interventions providing actual environmental support. Career guidance professionals and other practitioners may increase students' awareness and ability to access social supports by identifying ways to search for and access supports or by guiding students to view the environmental resources, such as family and peers, that already exist.

In regard to gender differences, women showed higher levels of all chosen variables than men, except for CP. Although the differences were rather small, this finding is consistent with a majority of studies on social supports (e.g., Flaherty & Richman, 1989; Ryan, Solberg, & Brown, 1994; Wall et al., 1999) and career adaptability (e.g., Rojewski et al., 1995). As to job satisfaction, on which existing studies have shown mixed results, our results support findings from studies by Roxburgh (1996) who reported higher job satisfaction among women than among men.

Both gender-specific models fit the data well, indicating that the sequence of relationships that social supports and career adaptability predict job satisfaction is alike across gender. Therefore, it can be inferred that future job satisfaction of both male and female work-bound adolescents can be enhanced by the environmental supports received, as well as career adaptability activities performed, during the career preparation period.

While the model per se was identical for both genders, a significant difference in the path coefficient between career adaptability and job satisfaction was found. The coefficient between career adaptability and job satisfaction was significantly larger for men (.25) than for women (.16). As a result, the variance of job satisfaction explained by the combination of social supports and career adaptability was greater for men (6.5%) than for women (2.5%). However, the size of the differences was slight, given the percentage of the difference (4.0%) out of the total.

These findings appear to support the prior literature that proposed a moderating effect of social support on job satisfaction (e.g., Bellman et al., 2003), but not to a significant degree. The fact that the explained variance of job satisfaction for women was less than for men may indicate the possibility of more diverse factors than the chosen variables in this study—such as greater family responsibilities of women, quality of family supports, or the androcentric occupational environments—contributing to the formation of women's job satisfaction. Yet, unlike our prediction, the size of the difference was not substantial enough to make strong inferences based on the result. Therefore, it seems more practical for parents, career guidance counselors, vocational instructors, and human resource practitioners to consider

diverse aspects more than gender in providing environmental supports; such aspects would include enough availability of environmental support, field-specific approach (e.g., schools building and keeping cooperative relationships with the business in a particular field), and so forth.

Three issues served to limit our analyses and interpretation of findings. First, data reflecting social support constructs in this study were somewhat limited. The indicators we used to represent school and family support referred to very specific supportive interventions (e.g., career guidance courses in schools and conversations with family members about jobs) in high school. Given that this kind of support is not continuous in general, no direct relationship between social supports and subsequent job satisfaction was proposed in our model. Many existing studies (e.g., Roxburgh, 1996), however, view social support as a broader construct that extensively includes emotional support (e.g., providing empathy) or qualities of relationships work-bound adolescents' have established with important entities (e.g., attachment) as well. Future research employing this broader concept would be able to examine more comprehensive relationship between formative social supports and job satisfaction.

Second, the career adaptability construct has not been fully investigated, despite its considerable importance in career development theories (Savickas, 1997; Skorikov, 2007). While career decision making and exploration, topics traditionally prominent in the field, have been actively researched both conceptually and empirically, studies on the remaining components of career adaptability (including career problem solving/confidence and CP) are limited. Also, the construct of career adaptability itself has not been sufficiently understood and employed. We could not include all four components of the construct in our model due to limitations in measurement. An incorporation of the four components and a thorough discourse on the issue is recommended for future investigations.

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CHAPTER 3
GENDER DIFFERENCES IN THE SUBJECTIVE OCCUPATIONAL ASPIRATIONS OF COLLEGE
STUDENTS ²

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Abstract

The scope of this study was two-fold. First, we developed and validated a new psychometric instrument, the Subjective Occupational Aspiration Scale (SOAS) using a Rasch-model based approach. The SOAS consists of 24 four-point Likert-type items that measure individuals' preferences for selected aspects that, collectively, support the expression of a particular occupation. Our analyses of U.S. college students' data revealed that the overall psychometric properties of the instrument were sound. Both Infit and outfit statistics indicated that the Rasch model predicted the items and persons within the reasonable error bound. Second, we examined gender differences in occupational aspirations of college students using both socioeconomic index-based measure of occupational aspirations and the SOAS. Results showed that men and women differed neither in socioeconomic or subjective occupational aspirations. We found, however, that women who aspired to traditionally female jobs had lower subjective occupational aspirations than women who wanted traditionally male jobs.

Introduction

Expressed career-related goals or choices under ideal circumstances reflect *occupational aspirations* (Rojewski, 2005). Occupational aspirations are often contrasted with realistic aspirations, or *occupational expectations*, which refer to occupations people realistically expect to enter accounting for perceived barriers or other influences. Occupational aspirations, on the other hand, reflect one's vocational desire or preference without accounting for limiting factors such as education, money, ability, or talent.

Knowledge of adolescents' occupational aspirations is important for a variety of reasons. For example, aspirations possess psychological meaning, hold predictive value of future occupational achievement, and reflect aspects of an individual's self-concept, perceived barriers and opportunities, and career self-efficacy. Our knowledge of aspirations also informs our understanding of vocational identity, the process of career decision-making and career compromise, and ways that early academic experiences can shape adult work lives (Rojewski, 2005; Staff, Harris, Sabates, & Briddell, 2010). Whether occupational aspirations shape educational and career choices or simply reflect past experiences, aspirations play an important role in understanding career-related choices and behavior (Mau & Bikos, 2000).

From a conceptual perspective, occupational aspirations are typically viewed as a unidimensional construct that is qualitative in nature. Aspirations are determined by the identification of a particular occupation (e.g., lawyer or nurse) that is desired if free of barriers or limiting factors (Rojewski, 2005). While almost always viewed as a unidimensional construct, i.e., an occupational title, Johnson (1995) described several underlying factors that support the development and expression of occupational aspirations and expectations, such as personal ambition, orientation toward work tasks and people, prerequisite skills and training, and gender associated with a given occupation.

Despite the qualitative nature of the concept and the possibility of multidimensionality, almost all researchers measure and analyze occupational aspirations from a unidimensional, quantitative

perspective. In doing so, they employ existing occupational categorization schemes or other scales such as occupational prestige hierarchies or socioeconomic indexes to organize and analyze them (Rojewski, 2005). Occupations are categorized in increasing levels of desirability based on education requirements, prestige, and status attributed by society (Haller & Virkler, 1993). Socioeconomic indexes (e.g., Blau & Duncan, 1967; Ganzeboom, Graaf, & Treiman, 1992; Hauser & Warren, 1996; Nakao & Treas, 1992; Stevens & Cho, 1985) calculate scores for occupations to reflect income, educational attributes, and societal prestige.

Despite the popularity of occupational prestige hierarchy and socioeconomic indexes (SEI) in many social science fields, this measurement approach is limited in several ways. First, expressed career goals are inevitably restricted by individuals' surrounding environment and their accessible information of the world of work. Indeed, researchers (e.g., Furlong & Cartmel, 1995; Schoon & Parsons, 2002) have argued that the formation of occupational aspirations are significantly affected and constrained by an external opportunity structure including local work opportunities. Thus, measuring occupational aspirations using existing schemes runs the risk of having aspirations reflect environmental backgrounds and previous experiences, rather than true occupational preference. Second, using existing schemes casts a sociological perspective on research even when it is unnecessary or inappropriate since these schemes were originally developed using socioeconomic indicators. When a person's occupational aspiration is quantified using an SEI, her aspiration is not so much a reflection of how she views the job but of how society views the job's desirability and status. Given this fact, it can be limiting and problematic for researchers who are unaware of this discrepancy to associate occupational aspirations with educational and psychological variables. Third, existing schemes can be inexact because they do not always properly specify differences within occupations. For instance, an occupational aspiration of *movie star* would be assigned to a category like "actors and directors," which has a moderate prestige score on the SEI (Hauser & Warren, 1996). This score is based on income and social prestige levels of *average* actors and directors. However, income or societal recognition attributed to a highly successful actor (i.e., a movie star) is

starkly different than for average actors. Fourth, existing schemes cannot always be updated in a timely way to reflect the current or emerging picture of a fast-changing society. Indeed, revising and updating SEIs generally involve extensive amounts of work that can take years to complete (Ganzeboom, 2010). For example, the most recent U.S.-based SEI available at the time of this study is that of Hauser and Warren (1996). Jobs that appeared in the 2000s (e.g., social media manager) are absent from that SEI. Fifth, using existing schemes is, in practical terms, inefficient because it can be time-consuming or less precise when coding aspirations to match established occupational categorizations.

Gray and O'Brien (2007) criticized common approaches to understanding (and measuring) occupational aspirations for not distinguishing among varying levels of aspirations toward leadership within a specified occupation. For example, two people may both express aspirations for careers in nursing. However, one person may aspire to the position of chief nursing officer, while the other might prefer working with patients as a registered nurse. So, while both aspirations represent the same occupational field, they do not represent the same level of career goals. In existing approaches to measuring aspirations, differing levels that exist within occupations are obscured and not usually identified.

To address this issue, Gray and O'Brien (2007) developed the Career Aspiration Scale (CAS) to measure aspiration toward leadership and further education within occupations, rather than aspiration toward the occupations themselves. The CAS provides a useful conceptualization and measurement of aspirations related to work with occupational fields controlled. However, measurement approaches using occupational categorization (prestige) schemes still dominate research. While the CAS provides an alternative way to focus on aspirations, our understanding of aspirations related to occupations is still relatively crude. Therefore, a need exists to better understand aspirations related to occupations and to the elements that support the selection of specific occupations. Assessment of this aspect could be viewed as complementing the work of Gray and O'Brien (2007).

This study reports on a scale designed to assess individuals' *subjective occupational aspirations*. Subjective occupational aspirations refer to individuals' preferences for selected aspects that, collectively, support the expression of a particular occupation. People's generic perceptions of specific occupations are typically affected by five aspects—(1) economic rewards, (2) degree of authority, (3) freedom of action, (4) education required, and (5) academic ability required (Gottfredson, 1996; Rojewski, 2005). Occupational aspirations reflect actual jobs; subjective occupational aspirations reflect the strength of individuals' desires to achieve these five significant aspects. Subjective occupational aspirations stand in contrast to the general notion of occupational aspirations in that it focuses on inner longings or preferences represented by various occupations, rather than a sole focus on societally-defined (often stereotypical) job titles. Subjective occupational aspirations represent, "What individuals want their future jobs to be like" rather than "What specific jobs they want to have."

Compared to existing approaches to measuring occupational aspirations, the Subjective Occupational Aspiration Scale (SOAS) was expected to exhibit several advantages. Primarily, the SOAS reflects individuals' aspirations toward general preferences for work and life without being restricted by existing occupational schemes. As a result, aspirations are not restricted by the limitations entailed within existing schemes (i.e., limited knowledge of occupations, falling behind in reflecting fast-changing society). Second, the SOAS does not reflect constrained or stereotypical knowledge of the world of work. Rather, knowledge gleaned from the SOAS may provide respondents and counselors with a clearer idea of actual preferences and orientations because of its focus on the foundational elements that ultimately define occupations. For example, an individual with an aspiration to become a lawyer may like the high income many lawyers command, but be reluctant to acquire the level of education required. In this case, the stated aspiration conflicts with a critical element of the occupation (i.e., education required). Knowledge of the subjective elements forming the aspiration can highlight the two discrepant preferences. Last, in practical terms, the SOAS may be more inclusive and useful for counseling and

exploration activities than the identification of a single occupation and results can be connected to a number of different occupational possibilities.

Developing the SOAS using the Rasch Model-Based Approach

Construction of the SOAS was accomplished using item response theory (IRT), viz., the Rasch model. Although factor analytic methods are more predominant in the development and analysis of career assessment measures, IRT models represent several advantages in scale development over traditional factor analytic models. First and foremost, traditional models are mainly concerned with linearly limited structural and test-level features of a test (i.e., reliability) and offer little or limited item-level information. IRT approaches, on the other hand, provide extensive item-level information, yielding better descriptions of item performance (i.e., item difficulty; Hambleton, Jaeger, Plake, & Mills, 2000; Miguel, Silva, & Prieto, 2013). IRT approaches make it possible to construct a more precise instrument by creating and mending individual items with varying difficulties to better fit developers' intentions. Also, IRT approaches produce a *Wright map*, where items and people are located together on the same continuum of the measurement using the logit scale (Engelhard, 2013). Items are aligned on a continuum based on difficulty and people with their ability. Thus, researchers are able to interpret scores in a more concrete way by comparing participants' ability with specific capabilities or traits manifested through individual items.

Engelhard (2013) suggested a four-building-block scheme for applying the Rasch model. The scheme identifies the domains that should be considered when developing psychometric instruments. Those domains are (1) the latent variable, (2) observational design (items), (3) scoring rubric, and (4) the Rasch measurement model. In the following sections, we delineate each of these domains and explain how they were applied to the development of the SOAS.

Step 1: The latent variable. The first domain, the latent variable, involves a prototypical variable map in which the construct being measured is defined and conceptualized on a unidimensional continuum. The continuum represents the qualitative order (e.g., low to high) of the construct being

measured. A researcher can elaborate on the continuum by adding *typical responses* (manifestations) to the continuum of persons with different levels of the construct (trait).

We defined subjective occupational aspiration as a unidimensional construct that reflects individuals' preferences for selected aspects that, collectively, support the expression of occupations. A prototypical variable map was thus developed and is shown in Figure 3.1. Column 1 is the logit scale on which difficulties of items and levels of persons' subjective occupational aspiration are expressed. Column 2 presents, in order, persons who possess different levels (high, medium, low) of subjective occupational aspirations. Column 3 provides brief descriptions of typical responses (psychological or behavioral) of persons with varying levels of subjective occupational aspirations. These descriptions can be used in the next step as standards in developing individual items with different difficulties.

Logit Scale	Persons' Subjective Occupational Aspiration	Typical Responses (Items)
5.00	High subjective occupational aspirations	One aspires to very high achievement in selected dimensions of work.
4.00		
3.00		One aspires to high achievement in selected dimensions of work.
2.00		
1.00	Medium subjective occupational aspirations	One aspires to average achievement in selected dimensions of work.
.00		
-1.00		
-2.00	Low subjective occupational aspirations	One's aspiration to achieve in selected dimensions of work is low
-3.00		
-4.00		One's aspiration to achieve in selected dimensions of work is very low.
-5.00		

Figure 3.1. Prototypical variable map of the SOAS.

Step 2: Observational design. The second domain generates an observational design, a set of items that can collect responses or draw observations from respondents. Two components are typically constructed, content and levels. Content is related to what respondents are expected to know or show regarding the measurement construct. Levels reflect the vertical dimension of the construct (e.g., low to high) and are applied to each content of the measurement construct. Then, researchers develop individual items that correspond to each intersection between layers of contents and levels.

For the SOAS, contents can be interpreted as subcomponents that conceptually consist of the subjective occupational aspiration. The literature on occupational aspirations was reviewed to identify content of subjective occupational aspirations. It was assumed that subjective occupational aspirations are a construct that has a vertical dimension, so there exists high and low aspirations. Given this, we focused on the literature that addressed elements constituting the level of occupations or the perceptions of occupations.

Historically, the level of occupational aspirations is generally decided by “a vertical dimension of classification based on occupational prestige” (Rojewski, 2005, p. 135). Typical indicators of occupational prestige include economic rewards, degree of authority, freedom of action, amount of education required, and intelligence and task complexity (Rojewski, 2005). Similarly, Gottfredson (1996) asserted that “prestigious occupations require more education, pay more money, are more complex, exercise authority, and require higher levels of ability, whereas occupations low in prestige require little education, pay poorly, involve simple tasks, are directed by others, and require little cognitive ability” (p. 68).

Crawley and Cardinale (2008) developed the Perception of Occupational Status Survey (POSS) to measure the degree of prestige or status of a certain occupation perceived by an individual. In the POSS, a set of items that reflects various aspects of the chosen occupation that typically affect one’s perception on the prestige status of an occupation is given to respondents. The occupational aspects presented to respondents include social recognition, required education, required commitment, difficulty of job tasks,

required intelligence and skills, monetary rewards, selectivity of entering, degree of authority, and degree of dishonesty.

To sum up, previous researchers have suggested that occupational levels have has five defining aspects—including (1) economic rewards, (2) degree of authority, (3) freedom of action, (4) education required, and (5) academic ability required. Thus, we selected these five aspects of occupations to constitute the main components of subjective occupational aspirations. In other words, the combination of one's preferences (or achievement aspirations) toward the five selected dimensions constitutes subjective occupational aspirations. The difference between socioeconomic and subjective occupational aspirations lies in the fact that the former uses societal indicators to quantify the selected dimensions (i.e., SEI), while the latter focuses on personal emotion and thoughts toward the dimensions.

Next, the levels of subjective aspirations which constituted the vertical dimension were addressed. Three levels were selected for the variable map (developed in the previous stage); (1) high, (2) medium, and (3) low. Given the five contents and three levels, 15 possible combinations of each content and level existed. Based on a literature review, we developed several items for each combination, resulting in a total of 36 initial items for the instrument. Through subsequent reviews and revisions, 12 items were removed, resulting in 24 final items (see Table 3.1). Each item was designed to reflect respective content and level of subjective occupational aspirations. All five content components, except for the education required, included five items. The education-required component had four items with only one item at the low level. The IRT-based approach does not assume a particular number of items for subscales; a good instrument includes an appropriate number of items that can reasonably represent a hypothesized range of the latent construct (Engelhard, 2013; Wilson, 2005). Thus, we finalized the SOAS with 24 items in total. Finally, two external experts from career education/counseling and educational measurement fields assessed the face and content validity of the items.

Table 3.1

Initial Items of the Subjective Occupation Aspirations Scale According to the Distributional Components

Content Level	Economic rewards	Degree of authority	Freedom of action	Education required	Academic ability required
High subjective occupational aspiration	I want my future job to pay enough for me to purchase basic life necessities. (ER1)	In my future job, I do not want to be controlled by other people for every little thing I do. (DA6)	I aspire to a job that allows me to take a day off if I am sick or injured. (FA11)	I want my future job to require education equal or higher than compulsory education (K-12). (EDU16)	I want my future job to involve tasks that require at least basic literacy skills. (AA20)
	I want my future job to pay enough for me to live at least an average life. (ER2)	I aspire to a job where I have control of my daily work. (DA7)	I aspire to a job that allows me to easily take vacations on official leave days or national holidays. (FA12)	I aspire to a job that requires at least a 4-year college education. (EDU17)	I want to have a job that involves at least a medium level of academic difficulty, such as basic reading and math skills. (AA21)
Medium subjective occupational aspiration	I aspire to a job that pays fairly well, allowing me to purchase high-quality goods and services and live a comfortable life. (ER3)	I aspire to a job where I can make decisions that influence the future of my organization and can manage many people in the organization. (DA8)	I aspire to a job that allows me to have enough time for my personal, non-work life. (FA13)	I aspire to a job that requires either graduate degrees or professional certificates such as lawyer or doctor. (EDU18)	I aspire to a job that involves fairly complex tasks that only a person of average intelligence or higher can complete. (AA22)
Low subjective occupational aspiration	I aspire to a job that pays very well, allowing me to purchase highly luxurious houses, cars, and goods and live an immensely comfortable life. (ER4)	I aspire to a job where I have an influence on a state-size area or a nation-wide large group of people. (DA9)	In my future job, I want to be able to adjust my working hours flexibly depending on my personal schedule. (FA14)	I aspire to a job that requires an elite education that only few select people possess. (EDU19)	I aspire to a job that involves very complex tasks that can be performed by only a very intelligent person. (AA23)
	I aspire to a job that pays extremely well and provides the greatest comforts and luxury in life but only few people can obtain. (ER5)	I aspire to a job where my decisions affect the whole country or most people in the country. (DA10)	I aspire to a job where I can freely choose what to perform as daily tasks. (FA15)	-	I aspire to a job that involves extremely complex tasks that can be performed by only a few people (less than 5% of people). (AA24)

Step 3: Scoring rubric. The third domain, scoring rubric, concerns categorizing responses and deciding on a scoring scheme. Respondents' answers are categorized to reflect meaningful increments (or change) in the level of the construct. Scoring rules, such as dichotomous or polytomous schemes are also determined. A 4-point, Likert-type scale was used that directed respondents to select their degree of agreement with each item statement.

Step 4: The Rasch measurement model. In the last domain, the Rasch measurement model is used to locate items and persons on the continuum of the measurement construct. In this step, the quality of the developed instrument is examined by evaluating the fit of respondents and items to the requirements of the Rasch model. The locations of persons and items fitted by the Rasch model (i.e., Wright map) are also evaluated to determine the fit with the hypothesized prototypical variable map developed in previous stages.

Participants' answers on the individual items of the SOAS were analyzed using the techniques of the Rasch model. Rasch analyses were used to estimate person separation reliability, infit and outfit statistics, item discrimination (bi-serial correlation), item difficulty distribution, and the Wright map. Also, the Wright map of the SOAS was compared to the prototypical variable map constructed in Step 1.

Gender Differences in Occupational Aspirations

Gender differences in occupational aspirations using the SOAS were also explored. This exploration was motivated by the possibility that previous efforts to investigate gender in relation to occupational aspirations might have been limited due to the aforementioned issues in the SEI-based measure of occupational aspirations. Gender differences were investigated from both socioeconomic and subjective occupational aspirations perspectives.

One of the important influences on occupational aspirations is gender. In her theory of career circumscription and comprise, Gottfredson (2005) explained that occupational aspirations are gradually compromised throughout childhood as perceptions of size and power (3-5 years of age), sex roles (6-8 years of age), social valuation (9-13 years of age), and unique self (14 years of age and older) are formed.

Particularly during the sex-roles stage, children start to restrict their occupational alternatives by eliminating options that they consider inappropriate for their gender. Eventually, tolerable-sex type boundaries are developed, residing within jobs considered acceptable—thinking that certain gender images associated with the jobs are suitable for, or at least tolerable to, them (Gottfredson, 2005).

A good deal of empirical research has been conducted on gender difference in occupational aspirations using SEI-based schemes. This research, though, has produced mixed findings. Some studies have reported higher levels of occupational aspirations for women than men (e.g., Patton & Creed, 2007), whereas others have reported the opposite (e.g., Lee & Rojewski, 2009). Also, some research has shown that women tended to restrict themselves to the tolerable-sex type boundaries to a lesser degree than did men. Leung and Plake (1990) found that women were more likely to cross-sex work than men if the cross-sex work provided higher prestige. Similarly, Looker and McNutt (1989) reported that adolescent men tended to stick to male-dominated jobs regardless of prestige status, while adolescent women aspired to traditional female or high-status traditional male jobs. Rojewski and Kim (2003) found that adolescent men were likely to aspire to moderate-prestige occupations, while adolescent women tended to choose either low- or high-prestige occupations.

While helpful in understanding certain aspects of gender in relation to occupational aspirations, these studies neglected to look into genuine psychological differences in preference or orientation toward jobs between men and women. This is because the focus of their studies was on differences in social desirability of jobs preferred by men and women in relation to gender-stereotypical notions about those jobs (or gender traditionality). This is also in line with the Gray and O'Brien's (2007) criticism that socioeconomic occupational aspiration cannot reflect the achievement aspirations within certain fields. They emphasized the possibility of underestimating aspirations of women because many traditional female jobs are characterized as low income and less prestigious (Crawley, 2014).

Subjective occupational aspirations can remove the effect of gender-stereotypical notions about jobs in measuring individuals' occupation. It does so by letting respondents focus on their internal

longings or preferences regarding the five selected dimensions of future occupations, rather than on societally-defined job titles that are often associated with prescribed gender images. In addition, the SOAS can facilitate discussion about possible gender differences because it can reflect both overall aspirations and aspirations toward occupational subdimensions.

Purpose of the Study

The purpose of this study was two-fold: (1) to develop and validate the SOAS and (2) to investigate gender difference in subjective and socioeconomic occupational aspirations. First, a Rasch model-based approach was used to develop and validate the SOAS. The overall structure of the measure and individual items was constructed using Engelhard's (2013) four-building-block scheme. The study employed Rasch analyses to evaluate the validity, reliability, and quality of SOAS items. It examined the person-separation reliability, infit and outfit statistics, item discrimination, item difficulty distribution, and the Wright map. To establish validity, it examined relationships between subjective occupational aspirations and other study variables—(1) socioeconomic occupational aspirations and (2) selected demographic variables.

Second, once validity and reliability of the SOAS was established, gender differences in occupational aspirations were explored using both socioeconomic (prestige-based) and subjective measures. We sought to determine if the previously reported relationships between gender and socioeconomic occupational aspirations (e.g., Lee & Rojewski, 2009; Leung & Plake, 1990; Patton & Creed, 2007) can also be detected using a measure of subjective occupational aspirations.

Then, the relationship between occupational aspirations and gender traditionality of occupational aspirations was determined. Traditionality of occupational aspirations refers to the degree to which one's expressed career goal is "socially traditional in terms of an individual's gender" (Barak, Golan, & Fisher, 1988, p. 287). For example, career goals in the STEM fields have typically been traditional aspirations for men but nontraditional for women. The relationship between occupational aspirations and the degree of individuals' gender conformity was also analyzed, i.e., the degree of alignment between the traditionality

of one's occupational aspirations and gender. Hypotheses created based on previous studies on gender (Lee & Rojewski, 2009; Leung & Plack, 1990; Looker & McNutt, 1989; Patton & Creed, 2007; Rojewski & Kim, 2003) included,

H₁. There is no statistically significant difference in the subjective occupational aspirations of men and women.

H₂. A statistically significant difference exists in the level of socioeconomic (prestige-based) occupational aspirations of men and women.

H₃. A statistically significant difference exists in the level of traditionality of aspired occupations of men and women.

H₄. There is no statistically significant relationship between subjective occupational aspirations and the degree of occupational traditionality.

H₅. A statistically significant relationship exists between socioeconomic-based occupational aspirations and their degree of occupational traditionality.

H₆. More women aspire to traditionally male jobs than men who aspire to traditionally female jobs.

H₇. There is no statistically significant difference in subjective occupational aspirations between women whose aspired occupations are traditionally female and those whose aspired occupations are traditionally male.

H₈. A statistically significant difference exists in socioeconomic occupational aspirations between women whose aspired occupations are traditionally female and those whose aspired occupations are traditionally male.

Method

Participants

Although a particular target population was not assumed in terms of age, gender, or race/ethnicity, the SOAS may be particularly beneficial for adolescents and young adults making

important decisions about their future careers (Super, 1990). Thus, an initial validation of the SOAS was conducted using data from college students.

From a large 4-year public university in the Southeast U.S., 245 undergraduate students from 10 elective courses were recruited for participation. A sample size of 245 satisfies the minimum sample size requirements for Rasch analyses (Embretson & Reise, 2000). Diversity in majors and grade years were considered by recruiting from both lower- and upper-level elective courses where students with diverse backgrounds could be accessed. Out of 245 participants, 100 (40.8%) were men and 145 (59.2%) were women. The average age and GPA of participants were 20.02 and 3.49, respectively. Participants were composed of 65 (26.5%) freshmen, 55 (22.4) sophomores, 61 (24.9%) juniors, 50 (20.4) seniors, and 12 (4.9%) fifth-year students.

Measures

Subjective occupational aspiration. Subjective occupational aspirations were measured using the SOAS. The SOAS consists of five content components—economic rewards, degree of authority, freedom of action, education required, and academic ability required. The instrument includes 24 items that ask respondents to indicate their level of agreement with each item statement. Items are scored using a 4-point Likert-type scale (1 = strongly disagree, 4 = strongly agree). A composite score of responses to all 24 items indicated respondents' level of subjective occupational aspirations. The higher the SOAS score, the higher the subjective occupational aspiration of a person. A high subjective occupational aspiration reflected one's strong preferences for and desires to achieve the composite of the five occupational aspects, i.e., economic rewards, degree of authority, freedom of action, education required and academic ability required.

Occupational aspirations. Participants were asked to indicate an occupation most desirable to them without considering limiting factors such as money, education, or talent, i.e., their occupational aspiration. Answers were coded using the SEI developed by Hauser and Warren (1996), the most recent U.S.-based SEI available at the time of this study. Hauser and Warren's (1996) SEI estimates 501

occupations' socioeconomic scores based on individual occupations' average earnings and education levels reported in the 1990 Census (U.S. Bureau of the Census, 1992) as well as prestige ratings calculated by Nakao and Treas (1994). Scores in the Hauser and Warren's (1996) SEI ranged from shoe machine operator (7.13) to physician (80.53). Participants' specified occupations were placed into categories defined in the SEI and scored according to SEI scores that correspond to each category. Occupations not identified by the SEI were placed into and assigned an SEI score of the most comparable occupational categories. Participants' occupational aspirations were fairly representative in terms of career pathways. Specifically, participants' aspirations included the following 14 types of career fields: arts, a/v technology, and communications (56); health science (37); hospitality and tourism (30); education and training (29); information technology (19); science, technology, engineering, and mathematics (19); marketing (14); law, public safety, corrections, and security (11); business management and administration (7); agriculture, food, and natural resources (5); finance (5); human service (4); transportation, distribution & logistics (1); others (8).

Traditionality of occupational aspirations. The traditionality of participants' expressed occupational aspirations were decided by assigning each aspiration a male dominance score. The score simply represents the percentages of males employed in that chosen occupation reported by Hauser and Warran (1996). For example, 79.4 % of males are employed as physicians. Thus, a person with this occupational aspiration was assigned a traditionality score of 79.4. On the other hand, 5.6 % of males are employed as registered nurses, so the traditionality score of this occupational aspiration was 5.6. As such, higher traditionality scores indicate a more male-dominated occupation while lower scores reflect a more female-dominated occupation.

Demographic and academic information. Participants reported demographic information including age and gender. Also, they reported information regarding their academic status including grade year and GPA.

Data Analysis

SPSS version 20.0 (IBM Corp, 2011) was used to analyze descriptive statistics. Prior to Rasch analyses, we examined the assumptions of unidimensionality and local independence by looking at the portion of variance of the SOAS explained by the Rasch model. In general, if the Rasch model explains more than 20% of the total variance of the data, it is assumed that both assumptions are satisfied and subsequent analyses can be performed within the Rasch measurement perspective (Walker, Engelhard, & Thompson, 2012).

Rasch analyses were then performed using the computer program FACET (version 3.71.3; Linacre & Wright, 1988). We used the rating scale model (RSM), a model generally used when all items within an instrument have the same number of polytomous response choices (Engelhard, 2013). The RSM is an extension of the Rasch model for polytomous items and is provided by:

$$\log\left(\frac{P_{nik}}{P_{ni(k-1)}}\right) = \theta_n - \delta_i - \tau_k$$

where P_{nik} is the probability of participant n endorsing answer choice k on an item i ; $P_{ni(k-1)}$ is the probability of participant n endorsing answer choice $k-1$ on an item i , θ_n is the level of career aspiration of n th participant, δ_i is the difficulty of endorsing item i , and τ_k is a threshold of the k rating compared to $k-1$ rating. Also, for the estimation process, the joint maximum likelihood estimation (JMLE) approach was applied.

Rasch analyses first estimated the person separation reliability to evaluate the reliability of the SOAS. This statistic, analogous to Cronbach's α in factor analytic models, indicates how efficiently the developed set of items separates (or show differences among) respondents according to their level of the subjective occupational aspiration. A person separation reliability value of over 0.7 is considered acceptable (Walker et al., 2012).

Then, infit and outfit statistics for both items and persons were estimated. Fit values for items assessed how well the Rasch model predicted individual items' functioning. The outfit statistic, also known as an unweighted mean-square, reflects outlier observations that are far off from what is expected

by imposing penalties on those outliers. Conversely, the infit statistic, or weighted mean-square, is sensitive to observations that were taken into account (or predicted) by the Rasch model. The infit statistic usually goes unreported because they approximate the outfit when data are stratified by category (Linacre, 2014).

Typically, a reasonable range for outfit (and infit) values is from 0.6 to 1.4. Values above 1.4 indicate that more unexpected variance exists (40% or more) than predicted by the model. On the other hand, values under 0.6 indicate that the data has less variance (40% or less) than the model predicted (Walker et al., 2012; Wright, Linacre, Gustafson, & Martin-Löf, 1994). From a conservative perspective, outfit statistics below 0.6 or above 1.4 are considered to be model misfits, which indicate that the Rasch model does not fit the data collected from the constructed instrument well. However, in applied research, it is known that an outfit value below 0.6 or between 1.4-2.0 cause no real problems. Outfit statistics in such ranges only mean that the instrument may be less productive in measuring the construct, but not distorting the measurement system (Linacre, 2004; Smith, 1996). However, outfit values above 2.0 can be problematic because the instrument tends to distort or degrade the measurement system (Linacre, 2002).

Infit and outfit statistics can be also estimated for persons (abilities). Fit values for persons are used to examine the quality of the measurement system. Essentially, the interpretations and mathematical properties of the values are the same as those for items. However, Wright et al. (1994) suggested a more lenient criterion for the person parameters because unlike item parameters, which are estimated using data from a large number of participants, the person parameters are estimated from a limited number of items. Although the literature lacks any extensively agreed-upon criterion for the person parameter, prior studies (e.g., Miguel et al., 2013) have considered it to be a low misfit rate when the portion of their sample showing misfits was less than 20%.

Next, item discrimination of the SOAS was evaluated based on a point-biserial correlation of items. Item discrimination refers to the ability for items to discriminate between participants with different levels of latent trait. The point-biserial correlation is the Pearson correlation between an item

score and the score of the total instrument. An item with a positive point-biserial correlation means that participants who answered high on that item are likely to have higher total scores on the instrument while participants who answered low on the item are likely to have lower total scores. In other words, items with positive, and ideally high, point-biserial correlations are assumed to well discriminate participants' abilities. On the other hand, a negative point-biserial correlation means the opposite—a poor discrimination of the item. In general, positive point-biserial correlations are desirable. Specifically, point-biserial correlation values larger than at least 0.15 are recommended (Varma, 2006). Lower or negative point-biserial correlation of an item suggest further examination is needed on that item in terms of its wording, presentation, or contents.

Item difficulty was also examined. Item difficulty indicates the level of the latent trait (i.e., subjective occupational aspiration) represented by an item. Simultaneously, the RSM model estimates participants' level of the latent trait (or ability) based on their responses. Both item difficulties and person abilities are estimated using a logit scale, enabling researchers to directly compare participants with items. Item difficulties and participants' abilities can be displayed together on the Wright map. On the Wright map, items and respondents are located on a line of the continuum of the latent trait. The Wright map can be compared with the prototypical variable map that was developed in the beginning stage of the instrument development process for a researcher to ensure that the instrument has been constructed properly according to his or her initial plan.

Finally, the relationships between subjective occupational aspirations and other selected variables, including socioeconomic occupational aspirations, age, grade year, and GPA, were explored using correlation analyses. With regard to gender differences, descriptive statistics (H_6), t -tests (H_1 , H_2 , H_3 , H_7 , H_8), chi-square difference (H_6), and correlation analyses (H_4 , H_5) were performed.

Results

Validation

Descriptive statistics. Table 3.2 displays means and standard deviations of the SOAS and its content components. Possible SOAS scores ranged from 24 to 120 which were transformed into 4-point scale scores for analyses. The overall data exhibited a tendency toward negative skewness with a mean of 3.19. However, the skewness fell into an acceptable range for the normality assumption (Rose, Spinks, & Canhoto, 2014). Among the five content components, freedom of action showed the highest mean, while degree of authority showed the lowest. The Rasch model was able to explain 49.46% of the total variance of the data, suggesting the presence of unidimensionality and local independence in the SOAS.

Table 3.2

Means and Standard Deviations of the SOAS

	Total		Men		Women	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Overall subjective occupational aspiration	3.19	0.310	3.23	0.281	3.16	0.327
Economic rewards	3.31	0.421	3.37	0.404	3.28	0.430
Degree of authority	2.89	0.526	2.98	0.491	2.83	0.543
Freedom of action	3.48	0.447	3.46	0.461	3.50	0.439
Education required	3.12	0.555	3.09	0.604	3.14	0.520
Academic ability required	3.12	0.526	3.22	0.457	3.05	0.560

Correlations among the five content components were also examined. Table 3.3 presents the correlation matrix of the five components. All pairs of individual components, except for the pair of education required and freedom of action, were significantly correlated to a weak degree. The highest was the correlation between economic rewards and degree of authority (.369), while the lowest was the correlation between degree of authority and education required (.142).

Table 3.3

Correlation Matrix of Content Components of the SOAS

	Economic rewards	Degree of authority	Freedom of action	Education required	Academic ability required
Economic rewards	1.000	-	-	-	-
Degree of authority	.369**	1.000	-	-	-
Freedom of action	.270**	.192**	1.000	-	-
Education required	.142*	.197**	.116	1.000	-
Academic ability required	.297**	.282**	.197**	.357**	1.000

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

Summary statistics for the Rasch model. Table 3.4 provides summary statistics from the Rasch model analysis, including means and standard deviations of estimated latent trait and fit statistics and persons/items separation reliability values. The person separation reliability was .81, indicating good reliability.

Table 3.4

FACET Summary Statistics

	Measures			Infit		Outfit		Separation reliability	χ^2	<i>df</i>
	<u>M</u>	<i>SD</i>	<i>n</i>	<u>M</u>	<i>SD</i>	<u>M</u>	<i>SD</i>			
Persons	1.33	0.77	245	1.00	0.66	1.06	0.93	0.81	1089.5*	244
Items	0.00	1.14	24	1.07	0.32	1.06	0.27	0.99	2916.6*	23

Infit and outfit statistics and item discrimination. Fit values for persons were examined first. Out of 245 participants, 42 students showed outfit values higher than 1.4. These participants with misfits constituted 15.9% of the whole sample, which could be considered low. Next, fit values for items were explored. The means of infit and outfit values were 1.07 and 1.06, respectively. Fit values for each item

are provided in Table 3.5. All items, except for Item 1, 2, and 20, showed outfit values that fell into the acceptable range of 0.6-1.4. Outfit values of Items 1, 2, and 20 were 1.80, 1.44, and 1.55, respectively, slightly exceeding the acceptable range. However, they were lower than 2.0, suggesting they were neither problematic nor distorted the measurement system. Table 3.5 also displays point-biserial correlations of items of the SOAS. Two items, Item 1 and Item 11, exhibited point-biserial correlations that were smaller than the recommended criterion value of 0.15.

Table 3.5

Infit and Outfit Statics, Point-Biserial Correlations, and Item Difficulties

Items ^a	Total score	Total count	Average score	Infit	Outfit	Point-biserial correlation	Item difficulty ^b
DA10	503	245	2.05	1.20	1.22	0.33	2.00
AA24	516	245	2.11	0.93	0.97	0.46	1.92
EDU19	526	245	2.15	0.99	1.02	0.37	1.86
ER5	589	245	2.40	1.02	1.03	0.37	1.48
DA9	614	245	2.51	0.99	1.03	0.38	1.33
AA23	702	245	2.87	0.94	0.94	0.41	0.79
EDU18	706	245	2.88	1.19	1.18	0.28	0.76
ER4	727	245	2.97	0.79	0.80	0.43	0.63
FA15	739	245	3.02	0.84	0.86	0.39	0.55
DA8	782	245	3.19	0.78	0.81	0.39	0.24
DA6	799	245	3.26	0.79	0.84	0.29	0.11
FA14	803	245	3.28	0.81	0.83	0.39	0.08
AA22	840	245	3.43	0.92	0.93	0.41	-0.25
DA7	849	245	3.47	0.67	0.68	0.38	-0.34
AA21	879	245	3.59	1.18	1.13	0.33	-0.67
FA12	881	245	3.60	0.98	1.00	0.33	-0.70
ER3	884	245	3.61	0.70	0.71	0.39	-0.73
AA20	889	245	3.63	1.56	1.50	0.21	-0.80
FA13	904	245	3.69	0.88	0.88	0.31	-1.02
EDU17	911	245	3.72	1.34	1.32	0.30	-1.13
EDU16	915	245	3.73	1.49	1.27	0.27	-1.20
ER2	930	245	3.80	1.52	1.44	0.16	-1.50
ER1	936	245	3.82	2.01	1.80	0.13	-1.64
FA11	941	245	3.84	1.09	1.40	0.08	-1.77

^aItems are listed in a difficulty order. ^bThe unit of the values is logit.

Item difficulty distribution and Wright map. The difficulties of each item of the SOAS on a logit scale are presented in Table 3.5. Difficulties of items ranged from -1.77 to 2.00. In a test setting or a binary scoring scheme, a higher difficulty of an item indicates that respondents are more likely to provide a wrong answer or “no” to the item than to an easier item. Similarly, in a polytomous scheme, a difficult item means respondents would rarely give the item a high score. On the other hand, an item with a low difficulty means that the item is an easy item on which respondent are likely to provide a correct answer or higher scores. For example, the most difficult item in the SOAS was Item 10, which asked respondents their degree of agreement with the statement, “I aspire to a job where my decisions affect the whole country or most people in the country.” To this item, only 10.2% ($n = 25$) of the participants answered 1 (strongly agree) while 35.9% ($n = 88$) answered 4 (strongly disagree). As such, the only respondents who would give high answers (i.e., 3 or 4) to Item 10 would be those with a very high level of subjective occupation aspiration. In contrast, the easiest item was Item 11, “I aspire to a job that allows me to take a day off if I am sick or injured.” To this item, 85.3% ($n = 209$) of participants answered 4, whereas no one answered 1. In other words, a respondent even with a very low subjective occupational aspiration would give high answers to this item.

The Wright map is shown in Figure 3.2. The first column of the Wright map represents the logit scale from -2 to 5. The second and third columns show the vertical location of items and participants in order of their difficulty and ability levels. Participants’ levels of subjective occupational aspirations ranged from -0.47 to 6.12. The range of the distribution of items, compared to that of participants, was located in the slightly lower part of the Wright map.

Logits	Items	Participants	Scoring
+ 5	<i>Difficult item</i>	▪ (Maximum)	4
		▪	
+ 4			
		▪	
+ 3		▪▪▪▪	
		▪▪▪▪▪▪	
		▪▪▪▪	
		▪▪▪▪▪▪▪▪▪▪	
+ 2	DA10 AA24	▪▪▪▪▪▪	
	EDU19	▪▪▪▪▪▪▪▪▪▪	
		▪▪▪▪▪▪▪▪▪▪	
	ER5 DA9	▪▪▪▪▪▪▪▪▪▪▪▪	
		▪▪▪▪▪▪▪▪▪▪▪▪	
+ 1		▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪	
		▪▪▪▪▪▪▪▪▪▪	
	ER4 DF15	▪▪▪▪▪▪▪▪▪▪▪▪	3
		▪▪▪▪▪▪▪▪▪▪	
	DA8 DA6	▪▪▪▪▪▪	
0	DF14	▪▪▪▪	
	AA22	▪	
	DA7	▪	
	AA21 DF12		
	ER3 AA20		2
-1	DF13		
	EDU17 EDU16		
	ER2		
	ER1		
	DF11		
-2	<i>Easy item</i>		1

Figure 3.2. Wright map of the SOAS.

We then compared the Wright map with the prototypical variable map. While the prototypical variable map predicted respondents would range evenly from low to high aspirations, our participants showed a tendency of negative skewness. Most participants showed subjective occupational aspirations that were higher than the medium level (the logit score of 0). Scarcely observed were participants with low levels of subjective occupational aspirations. With regard to the order of difficulty of individual items, almost all items were shown to reflect correct difficulties; items under each of the five content components properly represented the gradually increasing levels of the component in an expected order. However, two sets of items turned out to have reversed difficulties. Under degree of authority, Item 6 (“In my future job, I do not want to be controlled by other people for every little thing I do”) was more difficult than Item 7 (“I aspire to a job where I have control of my daily work”). Similarly, under freedom of action, Item 12 (“I aspire to a job that allows me to easily take vacations on official leave days or national holidays”) was more difficult than Item 13 (“I aspire to a job that allows me to have enough time for my personal, non-work life”). This indicated that each set of items was perceived by participants differently from what was expected. Participants found item 6 to be more difficult than item 7 and item 12 more difficult than 13.

Correlations with selected variables. Table 3.6 is a correlation matrix of selected variables. The subjective occupational aspiration was significantly correlated only with the socioeconomic occupational aspiration ($r = .30$). Among other variables, grade year and age, as well as age and GPA, were significantly correlated.

Table 3.6

Correlation Matrix of Selected Variables

	Subjective OA	SEI OA	Age	Grade year	GPA
Subjective OA					
<i>r</i>	1.00	-	-	-	-
<i>p</i>	-	-	-	-	-
n	245	-	-	-	-
SEI OA					
<i>r</i>	.300***	1.00	-	-	-
<i>p</i>	.00	-	-	-	-
n	238	238	-	-	-
Age					
<i>r</i>	-.077	-.083	1.00	-	-
<i>p</i>	.233	.201	-	-	-
n	243	237	243	-	-
Grade year					
<i>r</i>	-.036	-.032	.552***	1.00	-
<i>p</i>	.578	.622	.000	-	-
n	243	236	241	243	-
GPA					
<i>r</i>	.073	.088	-.307***	-.331***	1.00
<i>p</i>	.308	.227	.000	.000	-
n	195	190	194	194	195

*** $p < .001$ Revising the SOAS

Three additional Rasch analyses were performed to explore possible modifications that would improve the SOAS. Specifically, we re-ran models without Items 1 and 6, which appeared to require further examinations. None of the three models—i.e., model without Item 1, model without Item 6, and model without both items—produced any noticeable difference from the initial model.

Gender Difference in Occupational Aspirations

A series of analyses, including *t*-test, chi-square difference test, and correlation analysis, was performed to test the eight hypotheses of gender difference in occupational aspirations. Table 3.7 displays the results of analyses that tested Hypotheses 1, 2, 3, 4, and 5. First, there was no statistically significant difference in the level of subjective occupational aspirations of men and women. Thus, Hypothesis 1 was retained. Second, a gender difference neither existed in socioeconomic occupational aspirations. Thus, Hypothesis 2 was rejected. Third, the traditionality of women's aspired occupations was significantly lower than the traditionality of men. In other words, jobs that women wanted, on average, were more female-dominated than jobs men wanted. As a result, Hypothesis 3 was retained. Fourth, subjective occupational aspirations were significantly associated with occupational traditionality ($r = .215$). That is, participants who aspired to more male-dominated jobs tended to have higher subjective occupational aspirations. Thus, Hypothesis 4 was rejected. Fifth, we found a large significant association between socioeconomic occupational aspirations and the occupational traditionality ($r = .513$). This meant that participants who wanted more male-dominated jobs were likely to have higher socioeconomic occupational aspirations. However, it should be noted that this result is essentially a representation of the data pattern of the index used (Hauser & Warren, 1996) rather than a newly-found association between the two concepts, since occupational traditionality and socioeconomic occupational aspirations were coded using the same index.

Table 3.7

Gender Difference in Occupational Aspirations and Correlation between Occupational Traditionality and Aspirations

Scores		Overall	Men	Women	Diff. test	Hypothesis
Subjective occupational aspiration (SOA)	<u>M</u>	3.19	3.23	3.16	$t = -1.658$	H ₁
	<i>SD</i>	0.31	0.28	0.32	$p = .099$	
	<i>n</i>	245	100	145		
Socioeconomic occupational aspiration (SEI-OA)	<u>M</u>	56.20	54.96	57.06	$t = 1.180$	H ₂
	<i>SD</i>	14.07	12.06	15.30	$p = .239$	
	<i>n</i>	238	98	140		
Occupational traditionality (OT)	<u>M</u>	58.93	62.59	56.36	$t = -2.610^*$	H ₃
	<i>SD</i>	18.35	16.58	19.13	$p = .010$	
	<i>n</i>	238	98	140		
SOA – OT	<i>r</i>	.215**	-	-	-	H ₄
	<i>p</i>	.001				
SEI-OA – OT	<i>r</i>	.513***	-	-	-	H ₅
	<i>p</i>	.000				

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

Next, Table 3.8 presents the results of analyses that tested Hypotheses 6, 7, and 8. In regard to gender-traditionality congruence, we operationally defined that jobs that have traditionality scores (or male-dominance score) of less than 40.0 were female-dominated and that jobs with traditionality scores larger than 60.0 were male-dominated. Then, when the gender-dominance type of a participant's aspired job was in congruence with the his/her own gender, the participant was coded as "congruence." In contrast, if the gender-dominance type of a participants' aspired job was the opposite of his/her own gender, the participant was coded as "incongruence." Those who were neither congruent nor incongruent were coded as "neutral."

More than half of male participants (62.2%) aspired to jobs that were male-dominated (congruence) but only 6% wanted female-dominated (incongruence). On the other hand, only 15% of female participants wanted female-dominated jobs (congruence) while 42.8% hoped for male-dominated ones. Thus, Hypothesis 6 was retained. We then examined subjective and socioeconomic occupational aspirations of women according to their congruence type. Women of congruence—those who aspired to female-dominated jobs—had a significantly lower level of subjective occupational aspiration than women of incongruence. This ran counter to Hypothesis 7, which was then rejected. It was interesting though that men did not differ in subjective occupational aspirations according to their congruence type. Examined last was the socioeconomic occupational aspiration. For both men and women, there was a significant difference in the level of socioeconomic occupational aspirations of congruent and incongruent women. Thus, Hypothesis 8 was retained.

Table 3.8

Gender Difference in Occupational Traditionality and Aspirations

	Gender	Congruence	Neutral	Incongruence	Diff. test	Hypothesis
No. of participants	M	61 (62.2%)	31 (31.7%)	6 (6.1%)	$\chi^2 = 65.320^{***}$ $df = 1$ $p = .000$	H ₆
	W	22 (15.7%)	58 (41.5%)	60 (42.8%)		
Subjective occupational aspiration	M	$\underline{M} = 3.24$ $SD = 0.29$	-	$\underline{M} = 3.09$ $SD = 0.19$	$t = 1.24$ $p = .22$	H ₇
	W	$\underline{M} = 2.98$ $SD = 0.28$		$\underline{M} = 3.24$ $SD = 0.33$	$t = 3.291^{**}$ $p = .001$	
Socioeconomic occupational aspiration	M	$\underline{M} = 57.19$ $SD = 13.85$	-	$\underline{M} = 40.38$ $SD = 9.88$	$t = 2.892^{**}$ $p = .005$	H ₈
	W	$\underline{M} = 44.47$ $SD = 15.16$		$\underline{M} = 66.40$ $SD = 15.07$	$t = 5.829^{***}$ $p = .000$	

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

Discussion

This study developed and validated a new psychometric instrument, the Subjective Occupational Aspiration scale, using a Rasch model-based approach. The results of Rasch analyses supported the overall reliability and validity of the SOAS, suggesting that the instrument was appropriate for measuring individuals' subjective occupational aspirations. Specifically, the instrument satisfied the unidimensionality and local independence assumptions and exhibited a good person separation reliability. Also, all items of the SOAS produced acceptable outfit values. Most items were distributed in the correct order of difficulty as designed during instrument development. This implies that the logic used to develop individual items was reasonable and that items were appropriate for reflecting incremental levels of respondents' subjective occupational aspirations.

The average participants' scores on the SOAS was 3.19, showing a tendency toward negative skewness. Among the five content components, the freedom of action component had the highest mean and the degree of authority had the lowest. Our participants hoped for jobs that could provide them with a great deal of freedom of action (e.g., work flexibility, time for personal life). They were less concerned with how much authority the jobs might confer to them.

We found a significant positive association between subjective and socioeconomic occupational aspirations. The fact that the two aspirations were associated, but to a weak degree, appears to reflect two aspects of measurement. First, the two variables share certain aspects in common since some components of subjective occupational aspirations (i.e., economic rewards, education required, academic ability required) are also reflected by the indicators of the socioeconomic measure of occupational aspiration (i.e., wage, education required, prestige score). Participants may have responded to the SOAS thinking of a specific occupation (possibly the one they specified for the socioeconomic occupational aspiration question) or they may have just expressed their general preferences toward the five components. Whichever the case, they appeared to be fairly consistent in specifying their occupational aspirations. Second, despite such consistency, the correlation between subjective and socioeconomic occupational

aspirations was not large, possibly because the two variables were differentiated by other factors. These factors could include the following: (1) the difference between specifying a single simple career goal and detailing preferences regarding work and subsequent lifestyles, (2) the other components of the SOAS (i.e., degree of authority, freedom of action) that are not directly related to the SEI indicators, (3) ignorance of the work world, (4) misspecified expressed career goals, or (5) noise caused by the inaccuracy of the SEI.

The following paragraphs discuss item-level aspects of the SOAS—the primary concern of Rasch analyses. Overall, items of the SOAS properly discriminated participants according to their levels of subjective occupational aspirations. However, the negatively skewed pattern of data, as well as the item-difficulty distribution in the Wright map, suggested that for our sample there were many easy items in the SOAS. Indeed, more items were answered with high scores than with low scores. This tendency makes sense given the nature of the measurement construct and the demographic characteristics of our sample. First, the subjective occupational aspiration reflects one's future-oriented cognition regarding one's career without being refined by limiting factors such as perceived abilities, societal norms, and others' expectations (Eccles, Barber, Stone, & Hunt, 2003; Nurmi, 2004). People tend to evaluate such future-oriented cognitive traits as high in general or as higher than their realistic expectations, which are formed after being refined by limiting factors (e.g., Beal & Crockett, 2010). Second, high subjective occupational aspirations may partially be attributed to the academic characteristic of our sample. Our sample represented U.S. college students who possess relatively high academic goals. Previous research has also reported a positive association between educational achievement and occupational aspirations (Rojewski, 2005).

Although the overall functioning of the instrument was good, several items appeared to require further examinations. First, three items (Item 1, 2, and 20) showed outfit values higher than 1.4 but, for applied research, they all fell into an acceptable range (< 2.0). Item 1, though, caught our attention because its infit, which generally goes unreported, was slightly higher than 2.0 (2.01). Furthermore, Item

1 had a low point-biserial correlation (0.13). While the degree of misfit that these indicators (infit and point-biserial correlation) signify was not critical, we speculated about the cause. The first possibility is that Item 1 (“I want my future job to pay enough for me to purchase basic life necessities”) might have been too easy to distinguish respondents’ different levels of subjective occupational aspirations. In order for an item to have proper discriminating function, the item must be able to draw low answers from respondents with the low levels of measurement construct and high answers from respondents with high levels of measurement construct. In this sense, if an item is so easy that all respondents give the highest answer to it, then the item is unable to function to discriminate different levels of measurement construct. Indeed, approximately 95% ($n = 233$) of the sample gave to Item 1 a score 4 (strongly agree) or 3 (mildly agree). The second possibility is that the item might have been contaminated by other constructs. Particularly, the high infit and outfit of Item 1 indicate that the item had a rather large unexpected variance unexplained by the Rasch model, but could be explained by other constructs. For Item 1, it is possible that a few participants misunderstood the statement as “I want my future job to pay to an amount for me to be able to purchase *only* basic life necessities.” This misunderstanding may have prevented Item 1 from measuring participants’ aspiration toward economic rewards and allowed it to measure their agreement with the option that their future job provides only minimal economic rewards.

Second, Item 11 showed a low point-biserial correlation (.08) but had a proper outfit. Thus, it was likely that the low point-biserial correlation resulted only from the low difficulty of the item as explained with regard to item 1, and would not distort the overall measurement system. Actually, Item 11 was the easiest item in the SOAS with nearly 99% ($n = 242$) of the sample answering either 4 or 3 on the item.

Third, two sets of items showed reversed difficulties: Items 6 and 7 and Items 12 and 13. Both Items 6 and 7 measured the degree of authority. Item 6 was originally designed as easier than Item 7. However, our analyses showed that participants responded in a way that Item 6 (“In my future job, I do not want to be controlled by other people for every little thing I do”) was more difficult than Item 7 (“I aspire to a job where I have control of my daily work”). We constructed the two items that way based on

the assumption that the wording “every little thing” would convey a weaker tone of aspiring to authority than “daily work.” As we re-examined the two items, however, we conceived that Item 6 could be understood in a different way by participants from what we expected due to its negatively-worded statement (i.e., “do not want to be”). Many researchers have been critical of the usage of negatively-worded items. The construct measured by such items is essentially different from the construct measured by positively worded items in the same instrument (DiStefano & Motl, 2006). For example, it is possible that participants’ responses to Item 6 might actually have been their preferences toward the idea of “being controlled by other people,” not their aspirations toward the occupational authority. If this discrepancy was real, the item could not be aligned with other degree-of-authority items (Items 7 to 10). This also can account for the fact that Item 6 did not represent a correct difficulty in relation to the other four items.

Items 12 and 13, which measured the freedom of action, also had reversed difficulties; Item 12, which was supposed to be easier, turned out to be more difficult than Item 13. After thoroughly examining the five items under the freedom-of-action component, we posited that this discrepancy was likely to be a wording issue. We assumed that Item 13 (“I aspire to a job that allows me to have enough time for my personal, non-work life”) would be more difficult than Item 12 (“I aspired to a job that allows me to easily take vacations on official leave days or national holidays”). Item 13 was thought to be concerned with a more significant matter—the work-life balance, which is one of the major issues in both literature and real lives of people (Byron, 2005)—than was Item 12, which represented one’s freedom to take lawfully designated holidays. Overturning our assumption, the two items’ difficulties were perceived in a reverse way. This discrepancy may have occurred because the word “personal, non-work life” was less substantive than “official leave days or national holidays.” It is possible that, when answering Item 13, participants focused on the “appropriateness” to be granted personal time from jobs; on the other hand, they might have focused on the “possibility” of taking holidays. It appears that our participants perceived the latter as harder and less important. The reversal might also be due to our sample being made up of college students; they might have felt the work-life balance issue to be a remote one.

Subsequent additional Rasch analyses were performed to examine the validity of the revised SOAS that removed either Item 1 or Item 6, or both, from the initial SOAS. In the IRT scheme, a common approach to improving an instrument is to remove problematic items. Since the literature offers no particular standard for the removal, researchers must clearly state the criteria they employed to determine which items could be removed from the instrument (Weinhardt, Morse, Chimeli, & Fisher, 2012). We considered removing two items because we thought it possible they were contaminated. That is, we suspected that the two items, due to their wording, might have measured constructs other than, or in addition to, subjective occupational aspiration. The results of the analyses, however, indicated that there was no noticeable improvement in any of the revised versions. Given that the misfits shown by both items were rather negligible and that their functioning had no critical problems, we retained all 24 items in the SOAS.

Our findings illustrated how college men and women differed on the two types of occupational aspirations, actual and subjective. The socioeconomic occupational aspiration did not significantly differ across gender, not supporting our prediction (H_2). This finding was also inconsistent with previous studies that reported the existence of gender difference in occupational aspirations of adolescents (Lee & Rojewski, 2009) or high school students (Patton & Creed, 2007). This result can be better interpreted with the concept occupational traditionality. In the SEI used for this study (Hauser & Warren, 1996), a strong correlation between occupational aspirations and traditionality existed (H_5). That is, occupations that have high socioeconomic scores tend to be more male-dominated. We found more women aspired to female-dominated and thus less prestigious jobs. Even so, men and women's averaged socioeconomic occupational aspirations were not significantly different given the tendency of women to be more likely than men to aspire to cross-sex occupations (H_6).

A greater portion of women had male-dominated or neutral aspirations than men had female-dominated or neutral aspirations. This tendency is in line with studies (Leung & Plake, 1990; Looker & McNutt, 1989; Rojewski & Kim, 2003) that have claimed women tend to want either female-dominated,

low-prestige jobs or male-dominated, high-prestige jobs and that men are likely to stick to male-dominated or at least neutral jobs regardless of their prestige status. In the SEI frame, it seems natural that a major portion of women wanted male-dominated jobs because those jobs were likely to provide them with higher status and quality of life than female-dominated jobs. This tendency also reflects the *blurred gender boundaries* of the mid-20th century, the emergence of which opened more opportunities for women to access higher quality jobs (Gersick & Kram 2002). Men's non-traditional career choices, on the other hand, can be harder to achieve. This is because such choices can challenge a man's masculinity and competency even when those choices are unlikely to provide better societal prestige or monetary rewards (Simpson, 2009).

Neither did we find any significant gender difference in subjective occupational aspirations (H_1). This was consistent with our prediction that male and female college students would not differ in the degree to which they aspired to the five components of the subjective occupational aspiration. However, our prediction of the relationship between subjective occupational aspirations and occupational traditionality was not supported (H_7). Our prediction was that women's subjective occupational aspirations would be the same for both women with male-dominated aspirations and women with female-dominated aspirations. This was based on our assumption that gender orientation of women's career goals would be the result of gender socialization rather than the result of their level of aspiration.

In the process of gender socialization, both women and men learn how to conform to the socioculturally prescribed gender-appropriate behavior and norms—i.e., career choices. Thus, if a woman wants a female-dominated job it would be because of her learned psychological proximity to it not because she is attracted to its low-pay, low-prestige aspects, which are typically associated with many female-dominated jobs. Gray and O'Brien (2007) suggested the possibility that women's aspirations are underestimated when using the SEI measure because of the low scores of female jobs in SEI. Interestingly, however, our finding showed that women who hoped for female-dominated jobs actually had lower subjective occupational aspirations than women aspiring to male-dominated jobs. In other

words, women who aspired to female, low-prestige jobs had lower desires for achievement of the five components of the subjective occupational aspirations. For a fuller understanding of this result, future studies should look more deeply into the characteristics of each type of women. For example, researchers need to identify possible variables that may influence women's subjective occupational aspirations, variables such as female role models, self-efficacy, environmental barriers, work-family orientation.

We note several suggestions for future studies. First, since the SOAS aimed for a wide range of populations, further validation efforts need to be made with people other than college-aged ones. Good next targets would be middle and high school students who are facing important career choices (i.e., college and major). Second, in future validation efforts, researchers ought to reexamine several items that showed a slight possibility of misfit and reversed difficulties. Although our results showed that those items caused no major problems in the SOAS's measurement system, we strongly recommend that researchers ensure that this also holds for other samples. Third, to further establish the validity of the SOAS it would be helpful to examine the relationships between subjective occupational aspirations and other relevant variables, such as self-concept, perceived barriers and opportunities, career self-efficacy, career decision-making and career compromise. Fourth, future researchers could explore more aspects of gender difference in the subjective occupational aspirations. Such aspects include gender differences in subcomponents of the SOAS, association between women's work-life values and her subjective occupational aspirations, covariates of subjective occupational aspirations, and still more. In addition, findings on gender differences of this study can be attributed to the characteristics of college students; results for populations other than college students (e.g., middle/high schoolers) may differ. Thus, future investigations are encouraged to look at diverse populations. Last, although having different assumptions from those of IRT (i.e., linear versus nonlinear, unidimensional versus multi-dimensional), applying factor analytical approaches, such as bifactor model, can be beneficial in revealing some psychometric aspects of the SOAS that were not examined in this study. For example, relationships among the five content components of the SOAS will be better and more concisely examined through such an approach.

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CHAPTER 4

LONGITUDINAL LATENT CLASS ANALYSIS OF COLLEGE-EDUCATED WOMEN'S
ECONOMIC ATTAINMENT PATTERNS DURING MID-CAREER ³

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Abstract

The purpose of this study was to 1) identify latent classes of college-educated women's economic attainment (income) patterns during mid-career and 2) examine, within each latent class, the family and job satisfaction characteristics. Techniques of longitudinal latent class analysis were used to analyze 607 U.S. women's income data from 1990-2010 National Longitudinal Survey of Youth 1979. The analysis revealed five distinct patterns of women's economic attainment. A majority of the sample (72.7%) fell into the sustained growth group in which women's economic attainment increased, continuously and consistently. Approximately one-third of the sample exhibited sporadic (steady decline, early-sustained, and late rebound) or limited (stagnant growth) patterns. Both newly formed family and family-of-origin factors differed significantly across classes. What was not found, however, is any difference in job satisfaction among classes.

Introduction

Since the mid-20th century, there has been a dramatic increase in women's labor market participation. Today, women now represent almost half (47%) of the U.S. labor force (U.S. Council of Economic Advisers, 2015). Even so, women are still at a disadvantage when compared to men on many occupational indicators including a persistent gender gap in wages (U.S. Bureau of Labor Statistics, 2015) and narrower career choices (Hegewisch & Hartmann, 2014). Moreover, women's career paths are likely to be more heavily influenced by external factors such as family responsibilities than the career paths of men, which often hinders career progress and continuity (Metz & Tharenou, 2001).

Women typically experience interruptions—temporary and permanent—throughout their careers because of the family-related roles most women assume (O'Neil & Bilimoria, 2005). As a result, women's career development patterns are inherently heterogeneous (Betz & Fitzgerald, 1987; Huang, El-Khoury, Johansson, Lindroth, & Sverke, 2007) and depend, in large part, on their decisions about children and family. Given the heterogeneity of career experience, several theorists and researchers have focused on identifying and profiling different types of women's career development patterns (e.g., Betz, 1984; Gersick & Kram, 2002; Gerson, 1985; Hakim, 2000; Huang et al., 2007; Zytowski, 1969). Their findings have shed light on the reality and diversity of women's career experiences at different times throughout their working lives.

The present study examined the heterogeneity of women's career patterns using a U.S. national database, the National Longitudinal Survey of Youth 1979 (NLSY79). Specifically, we identified underlying classes of mid-career, college-educated women's economic attainment (income) patterns using longitudinal latent class analysis techniques. Economic attainment may not comprehensively reflect an individual's career status or satisfaction with work (Gunz & Heslin, 2005; Heslin, 2005) due to several limitations (e.g., inconsistent value of money in different settings, lack of attention on subjective aspects of career). However, many researchers recognize that money in the form of wages or salary is a meaningful indicator because of its importance in most people's lives. For example, economic attainment

has been considered and extensively used as an index for career success in the career literature (Heslin, 2005). Furthermore, human capital theory, asserts that financial compensation for work reflects, to some degree, individuals' developmental status assessed by society (Anand & Sen, 2000). Given the importance and relevance of economic attainment to career, it was used as an indicator of women's career experience.

Once underlying classes of career attainment were identified, we examined job satisfaction and family characteristics to describe the women experiencing each career pattern. Job satisfaction was examined to explore a subjective aspect of career attainment to compliment the objective measure of income. Family characteristics were described to determine possible relationships between family factors and women's career paths. While job satisfaction and family characteristics were important to a fuller understanding of women's career patterns, they were used only to describe career patterns not as elements in determining existing patterns.

College-educated women were selected for study, not only because they comprise a substantial portion of female workers in the labor market (U.S. Bureau of Labor Statistics, 2013), but they are likely to experience different career paths and accompanying conflicts between work and family than less educated peers. Differences can be attributed to a tendency for college-educated women to seek greater career attainment and express higher career aspirations and expectations, while still wanting to have children and families (Hoffnung, 2004). Higher prestige occupations are more likely to provide benefits like job sharing or flexible work scheduling to accommodate working mothers. In addition, college-educated women are also more likely to have greater access to outside resources, like childcare (Looze, 2014).

The career paths of college-educated women have been described as heterogeneous and complex (Anyadike-Danes & McVicar, 2010). We conducted a longitudinal inquiry of college-educated women's economic attainment from ages 34 to 46 (mid-career) because this stage reflects the time in most women's lives when the demands of family and work are likely to interfere with career development and

attainment (O'Neil & Bilimoria, 2005). The period chosen, 1980s-2000s, is also important as it represents a time of substantial change for women's participation in the workforce. Gersick and Kram (2002) suggested that the late 20th century saw the first generation of women who actively prepared for and entered professional careers typically held by men.

Women's Economic Attainment Pattern

Research in fields such as labor economics and sociology typically focus analyses on numerically describing or scrutinizing individuals' economic attainment (e.g., wages), while few are concerned with developmental or psychological aspects of economic attainment. While our analysis adopted the latter perspective, it was helpful to examine research from other fields of study.

The extant literature has consistently indicated that women's lifelong economic attainment patterns are generally different from men. Bosworth, Burtless, and Steuerle (2000) analyzed a representative sample of Social Security earnings from the 1990-1993 Surveys of Income and Program Participation (SIPP) to develop predictive models connected to Social Security reforms. Using standard econometric approaches, they concluded that the average earnings of American men born between 1927 and 1965 were higher than the average earnings of women throughout their working lives, and produced an arch-shaped pattern, peaking in the mid-40s age range. Throughout their careers, women's pay was not only less than men's but rose very little from their mid-20s to late 30s. In contrast to men, women's overall economic attainment pattern was negatively-skewed and arch-shaped, peaking in their early 50s.

Manning and Swaffield's (2008) results also highlighted longitudinal differences in income based on gender. These researchers analyzed data from the British Household Panel Survey (1991-2002), finding that women and men receive roughly equal pay when first entering the labor market as young adults. Over the ensuing decade, however, wages for men increase in a continuous and stable manner, while the wages of women early in their careers increase more slowly and are prone to wider fluctuations. The stagnation and fluctuation found in women's economic attainment patterns indicate that women are

likely to experience more complications that make their economic career patterns diverse and complex (Gersick & Kram, 2002).

Heterogeneity and Classification of Women's Career Development

Women's employment histories and career patterns reflect greater diversity largely because of complications associated with children and family (Hakim, 2003; Spain & Bianchi, 1996; U.S. Bureau of Labor Statistics, 2013). Childbirth has a significant influence on career path by interrupting work, either temporarily or permanently. Wide variations in the ages when women experience childbirth and in the number of children they have, as well as available support and resources, further complicate the likely influences on career development (Betz, 1993; Lee, 1994). Moreover, the still prevailing notion that women generally assume a greater role in childrearing and homemaking responsibilities makes career interruptions due to family more impactful for women (Betz, 1993).

England, Bearak, Budig, and Hodges (2016) found that time away from work because of childbirth resulted in significant wage penalties for women but not for men. Their analysis consisted of testing unconditional quantile regression models with women in low- and high-wage groups before and after childbirth. Interestingly, the most privileged women in their sample, i.e., those who were highly paid and highly skilled, experienced fairly continuous employment throughout their adult lives, but also experienced the greatest wage penalties when they returned to work after childbirth. Other studies (e.g., Berger & Waldfogel, 2004; Hofferth & Curtin, 2006) have also described the wage penalties that women are likely to incur when they become mothers.

Several efforts have been made to classify the underlying patterns of women's career development in the last 50 years or so. For example, Zytowski (1969) theorized that three distinct career patterns existed for women; (a) mild pattern (very early/late entry, brief span, limited participation), (b) moderate pattern (early entry, lengthy span, limited participation), and (c) unusual pattern (early entry, lengthy span, high degree of participation). Wolfson (1976) used Zytowski's conceptual framework to design a 25-year follow-up study of 306 women who had graduated from college in the 1930s, resulting

in the addition of two career patterns, viz., never worked and high moderate (lengthier work span than moderate type). The focus of Wolfson's work was to discriminate among these groups using selected motivational, internal, and external factors. While she could not predict a woman's career path when entering college, prediction was possible 5 years after entering college using career experiences and outcomes. Undoubtedly, Zytowski's (1969) unusual career pattern—early work entry, maintained employment, and high degree of participation in the work role—is more likely to be the norm for women today rather than an anomaly. In fact, most early descriptions of women's career patterns reflect the social expectations and practices of the middle 20th century, where a typical career pattern for women was full-time homemaker (Fitzgerald, Fassinger, & Betz., 1995).

Betz (1984) extended the classification schemes proposed by Zytowski (1969) and Wolfson (1976) by studying the educational and employment histories of 498 college-educated women, 10 years after their college graduation. She organized career patterns into two dimensions. The traditionality dimension accounted for a then-changing society in which women were less restricted to female-dominated occupations, and beginning to choose work in non-traditional, male-dominated industries. A second dimension, degree of commitment, was added to account for length of employment. These two dimensions were combined to identify seven specific work patterns. Almost one-quarter (23.5%) of Betz's (1984) sample of college-educated women belonged to the high-commitment-pioneer group, while only 1.4% fell in the never worked group.

More recently, Hakim (2000, 2006) applied preference theory to construct three prominent career patterns for women that explained persistent gaps in wages and career opportunities between men and women. Hakim proposed that women's career patterns fall into three sociologically-based groups according to individuals' preferences for work and personal lifestyle; (a) home-centered (20%; full-time homemakers once married), (b) work-centered (20%; career-oriented, primary focus on work not family), and (c) adaptive (60%; combining work and family). She asserted that work-centered women represent a minority of all women, "despite the massive influx of women into higher education and into professional

and managerial occupations in the last three decades” (p. 289). In contrast, a majority of men are considered work-centered.

Finally, Huang et al. (2007) studied the career development of a representative sample of 549 Swedish women by examining the interactions of work and other career-related life domains. Using optimal matching analysis, these authors identified nine categories that described varying employment patterns. These patterns were determined by women’s level of engagement in work (none, part-time, full-time) and age of starting a family (early or delayed child birth). The complexity of women’s career patterns was driven, in part, from decisions about whether or not to return to work and in what capacity (e.g., part- or full-time) after children were born.

Job Satisfaction

This study examined the job satisfaction of women experiencing different economic attainment patterns to examine one aspect of the subjective nature of their careers. Job satisfaction refers to “how people feel about their jobs and different aspects of their jobs” (Spector, 1997, p. 2) and reflects the subjective or emotional aspect of one’s career attainment. The relationship between career attainment patterns and job satisfaction has been studied, but results have been inconsistent. Jepsen and Choudhuri (2001) reported that individuals who experienced more occupational changes were more likely to, in mid-career, positively evaluate their past occupations than individuals with less occupational change. On the other hand, O’Neil, Bilimoria, and Saatcioglu (2005) found that mid-career women who had predictable career patterns were more satisfied with their careers than women whose career patterns were characterized by less predictableness, and more fluctuation and interferences. Huang et al. (2007) reported no significant differences in job satisfaction among women with different career patterns.

Family Characteristics

A prominent topic in the discourse on women’s career development is family. Family is usually considered, in studies of women’s careers, in one of two ways, family of origin—typically referred to as one’s natural family or family into which one is born or adopted and raised (Sauber, L’Abate, Weeks, &

Buchanan, 1993)—and newly formed family—a family “based on legal ties, beginning with marriage between two people” (Schwartz, 1993, p. 430).

Research on adult women’s careers has usually been more concerned with newly formed families than family of origin due to the proximity of a newly formed family to a woman’s career. Since women increasingly maintain their careers regardless of marital status, the impact of marriage on women’s career has decreased (Hoffnung, 2004). However, parental status can still have a negative influence on women’s careers, i.e., more children often results in lower career involvement and achievement (Metz & Tharenou, 2001) and less commitment to career (Spain & Bianchi, 1996). In contrast, some researchers have argued that women benefit from newly formed families because of the emotional and practical support they receive helps them handle multiple roles (Hobfoll, 1986). Spousal support can reduce women’s work-family conflict (Grzywacz & Marks, 2000) and enhance job satisfaction (Bures, Henderson, Mayfield, Mayfield, & Worley, 2011).

Some studies have implied a possible relationship between family of origin and women’s career patterns. For example, early career orientation and women’s aspirations have been found to be significantly related to the influence of female role models (Hackett, Esposito, & O’Halloran, 1989), and mother’s career orientation (Gerson, 1985). Also, women’s nontraditional career choices are positively associated with the influence of female role models (Hackett et al., 1989), support from family (Houser & Garvey, 1983), and mother’s gender stereotype (Steele & Barling 1996).

The Present Study

The purpose of our study was to longitudinally examine and classify the career development of mid-career, college-educated women. Longitudinal latent class analysis was used to classify the career patterns of women using income as the indicator of labor market participation and attainment. While the specific number of career patterns was not known a priori, we expected to identify multiple patterns, some reflecting volatility due to the more complicated relationships between work/career, childbirth, and, family responsibilities for women than for men.

Once underlying classes of career attainment were identified, job satisfaction and family characteristics were used to describe the women that comprised each career pattern. Here, we anticipated that negative relationships would characterize women with higher economic attainment on newly-formed family factors such as spousal income, number of children, and marital status. In contrast, we expected that positive relationships would exist between women with higher economic attainment and their parents', especially mothers' higher educational and occupational achievements. Also expected was that job satisfaction would be higher for women who presented stable and relatively high economic attainment.

Method

Sample

Participants were selected from the NLSY79, a nationally representative database developed by the U.S. Bureau of Labor Statistics to gather information on labor market activities and other significant life events of American men and women. The NLSY79 initially included 12,686 individuals who, when interviewed in 1979, were 14 to 22 years of age. The most recent NLSY79 data was collected in 2012 when 7,565 individuals (men=3,669; women=3,896), ages 45 to 53, were interviewed.

Women respondents who, in the 1988 interview, reported holding a bachelor's degree or higher (n=820) were initially selected. The average age of respondents in 1988 was 27.2 (ranging from 23 to 31). Women who earned bachelor's degrees after 1988 were not included as it was likely these respondents were nontraditional students. To enhance validity, some respondents were deleted from this initial data pool. First, we deleted 157 women from supplemental and military samples that were not followed after 1984 and 1990. We also excluded 56 women who did not reported economic attainment for three or more time points (42% missingness). Researchers and statisticians continue to discuss the issue of handling missing data in longitudinal research. Indeed, only a few guidelines are available about the proper analytical approach for longitudinal data with missing values (Young & Johnson, 2015). Thus, our decision to exclude participants with three or more missing time points was based on a theoretical

concern. Among career patterns reported in previous studies (e.g., Huang et al., 2007), some patterns have shown a tendency to fluctuate in employment status (i.e., Scandinavian family-builder women who had employment-unemployment-re-entry patterns). This implies that quadratic- or even cubic-shaped trajectories are likely to be found in our income analysis; thus, we assumed that at least four time points would be required to stably capture those possible trajectories. The final data pool included 607 women—429 White (70.7%), 124 Black (20.4%), and 54 Hispanic women (8.9%).

Since participants' ages varied in the base line year of 1979 from 14 to 22, ages for individual survey years were not identical. Therefore, an adjustment was necessary to ensure that each time point represented the same age period. To determine annual income data from women's mid-career phase, we (a) assigned each participant to one of five cohorts that reflected their age in 1979, the baseline year, and (b) selected particular survey years, for each cohort, that corresponded to the age range of interest. The overall annual income data from the 7 selected time points corresponded to each participant's ages from 33 to 45. ANOVA tests detected no significant differences in selected variables, indicating that our adjustment scheme was valid.

Measures

Economic attainment. Women's economic attainment was measured using reported annual income. Participants reported their total annual income, in dollars, for the year prior to each interview year. Biennial data from 7 time points were used and corresponded to individuals' ages from 33.8 to 45.7.

All annual income data were converted to constant dollars—dollar values after adjustment for inflation—on the basis of the 2015 consumer price index (CPI; U.S. Bureau of Labor Statistics, 2015). This conversion was necessary because raw annual income data were pulled from different years depending on assigned cohorts, all having inconsistent dollar values. Furthermore, women's genuine progress, as evidenced by economic attainment, was likely to be captured more accurately as increases in annual income due to inflation were eliminated.

Participants' annual income in constant dollars was then transformed using a natural logarithm based on the fact that log-income better captures people's perception of income change than does a dollar scale (Kahneman & Deaton, 2010). The distributional nature of a logarithm reflects people's tendency to discern a percentage change in income more sensitively than a change in absolute value. For instance, \$100 dollar monthly raises, one given to a CEO of a major company and another to a minimum wage worker, is sure to hold widely different levels of significance because the percentages of the raise are likely be very different. For this reason, many researchers prefer the log-transformation to investigate income (Kahneman & Deaton, 2010). In addition, while income distribution is usually skewed, as it was in our analysis, log-income better fits assumptions of normality (Barbieri & Cutuli, 2009).

Demographic and occupational characteristics. Race/ethnicity of women, in 1978, was used to assign members of the sample to one of three categories; White, Black, and Hispanic. Educational attainment was reflected by the highest degree each participant had completed as of the final time point. Values for this indicator ranged from 15 (3rd year college) to 20 (8+ years of college) for our sample. Occupations reported at the first time point were also included and categorized into one of 10 types including managerial and professional specialties; technical; sales; administrative support and clerical; service; farming forestry and fishing; precision production, craft, and repair; operators-machine, assembler and inspectors; operators-transportation, and material moving; and operators-handlers, helpers, laborers.

Job satisfaction. Participants reported how much they liked their primary jobs at time points when they were in employment. A 4-point Likert-type scale was used, with 1 being "like it very much" and 4 being "dislike it very much." For our analysis, participants' responses were reversed coded. Thus, scores ranged from 1 to 4 with high scores indicating greater job satisfaction.

Family of origin. Parents' educational attainment was recorded using the highest degree each parent had completed. These values ranged from 0 (none) to 20 (8+ years of college). Parents' occupations (from the 1979 interview) were coded using two-digit Duncan (1961) socioeconomic index

scores (DSEI). The DSEI estimates socioeconomic status of individual occupations using a composite of occupational prestige, income, and education. Scores ranged from 0 to 97, with higher scores representing more prestigious occupations.

Newly formed family. At each of the 7 time points, participants reported their marital status as married, not married, or separated/divorced/widowed. A marital history score was determined by counting the time points when each woman indicated being married. Thus, scores ranged from 0 to 7. The average income of spouse/partner was calculated using spousal income. Number of children was recorded as the largest number reported during the data collection period. Values ranged from 0 to 8.

Data Analysis

Longitudinal latent class analysis (LLCA) was used to identify existing subgroups or patterns from the economic attainment data. Since our focus was on classifying longitudinal patterns of women's economic attainment, growth mixture modeling (GMM) was considered. However, prior classification studies have suggested that some women's career patterns may be non-linear or can even be almost arbitrary (e.g., early-mothers pattern; Huang et al., 2007). Although GMM can capture some non-linear patterns, such as quadratic and cubic patterns, such complex, arbitrary patterns of women's career would not be properly reflected through GMM especially given the seven time points. LLCA does not presume a linear pattern but treats each time point as separate, individual segment information in piecewise fashion. Thus, women's economic attainment patterns, whether linear or non-linear, can be flexibly identified using LLCA.

In LLCA, individuals' class memberships are determined by Bayes rule, shown in the equation below. On the left side of the equation, $f(x|y)$ is the density of an individual whose joint distribution (response pattern) equals y belonging to class x . This is called *posterior probability* (density) and can be obtained using the *prior probability* (density), $f(y|\mu_x, \Sigma_x)$. The prior probability is the probability of a person, who belongs to a class with the mean μ_x and the covariance matrix Σ_x , having a joint distribution y . $P(x)$ is the proportion of persons in each of the components. The most typical classification rule is

modal assignment by which one is assigned to the latent class with the highest posterior probability, $f(x|y)$.

$$f(x|y) = \frac{P(x)f(y|\mu_x, \Sigma_x)}{f(y)}$$

The final model is selected by deciding on the number of groups that best describe the data. The Bayesian information criterion (BIC) index and the Vuong-Lo-Mendell-Rubin (VLMR) adjusted likelihood ratio test were used to determine the number of categories (Nylund, Asparouhov, & Muthén, 2007). In general, the model with the smallest absolute BIC value is considered to best fit the data. Next, the Vuong-Lo-Mendell-Rubin-adjusted (VLMR) likelihood ratio test assesses whether the (n)-class model (H_1) significantly fits data better than the (n-1)-class model (H_0). Therefore, a model with the lowest BIC value, as well as a significant LMR test p-value, is considered a final model that best fits the data. Other considerations include successful convergence, high entropy value, no less than 1% of total count in a class, and high posterior probabilities (Jung & Wickrama, 2007).

Mplus 7.0 was used to calculate parameter estimations using the maximum-likelihood (ML) method. To avoid non-convergence or local-maxima problems, 100 random sets of starting values and 25 optimizations were employed. The model was replicated several times, yielding identical results every time; thus, ensuring the validity of the solution (Nylund et al., 2007). Finally, data missing were managed with full information maximum likelihood (FIML) estimation.

Once the optimal number of economic attainment classes was identified, descriptive statistics and ANOVA were used to provide profiles of each class. Specifically, differences in job satisfaction and family characteristics across classes were examined using SPSS, version 20.0 (IBM, 2011). Since the sizes of identified classes were unequal, adjusted sum of squares were used in the ANOVA estimation. For variables for which omnibus ANOVA tests detected significant differences among classes, Tukey HSD post-hoc tests were further conducted with an alpha level of .05.

Results

Determining Optimal Number of Classes

First, we examined the heterogeneity of college-educated women's economic attainment patterns by looking at a combined graph of individuals' changes in economic attainment over 12 years (see Figure 4.1). The graph of individuals' economic attainment trajectories did not exhibit a single pattern but revealed multiple patterns, suggesting potential sub-populations. This result indicated that LLCA was appropriate for investigating sub-populations of women's economic attainment.

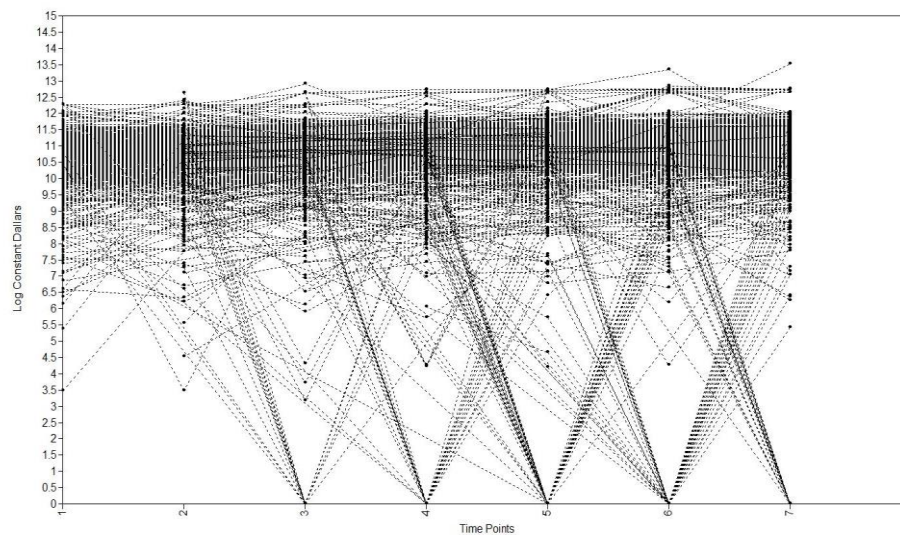


Figure 4.1. Economic attainment patterns of all participants.

Models with 1-7 classes were tested to identify the optimal number of classes. Models with more than 7 classes were not considered because they included classes with too few individuals (i.e., less than 2% of the total sample). Table 4.1 provides BIC, VLMR, and entropy values of individual models. BIC values decreased as the number of classes increased, suggesting that it was not an appropriate indicator for our model. VLMR indices supported the 5-class model. Also, all five classes identified in the 5-class model appeared to represent distinctive career patterns of women that were described in previous studies. Although one of the five classes contained only 2% of the sample, the class seemed to reflect one type of

adaptive women's career pattern (Hakim, 2003). Thus, the 5-class model was both statistically and theoretically viable. In addition, in models with more than five classes, no theoretically meaningful difference between classes was identified. Thus, we concluded that the 5-class model best fit the data.

Table 4.1

Fit Indices and Entropy Values of Individual Models with 1 through 7 Classes

Number of Classes	BIC	VLMR Test	Entropy
1	17763.639	-	-
2	15545.060	2269.847***	.999
3	14976.163	620.165**	.973
4	14436.182	591.249*	.997
5	13854.756	632.694*	.978
6	13638.169	267.855	.982
7	13201.134	441.655	.971

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

The initial 5-class model was estimated with equal within-class variances. That is, all variances of log-constant dollars were constrained to be equal across classes. Despite the benefit of constraining within-variances across classes (i.e., clear class identification and less computation burden), constrained models may not accurately represent the real world. Therefore, it is not unusual in latent class models to free all or particular within-class variances across classes depending on theories or observed data (Jung & Wickrama, 2007; Muthén & Muthén, 2010). We freed variances of log annual income at time point 7 in Class 1 and at time point 6 in Class 3 after looking at individual class plots and modification indices. The BIC of the modified model improved to 13213.75. In the end, we chose the modified 5-class model as the most likely representation of mid-career, college-educated women's economic attainment patterns.

Economic Attainment Patterns of Five Latent Classes of College-Educated Women

Figure 4.2 presents the average economic career patterns of the five identified latent classes. The largest portion of women (n=441, 72.7%) fell into Class 1, followed by Class 2 (n=68, 11.2%), Class 3 (n=67, 11.0%), Class 4 (n=19, 3.1%), and Class 5 (n=12, 2.0%). Each of these latent classes is briefly described next (see Figure 4.3 and Table 4.2).

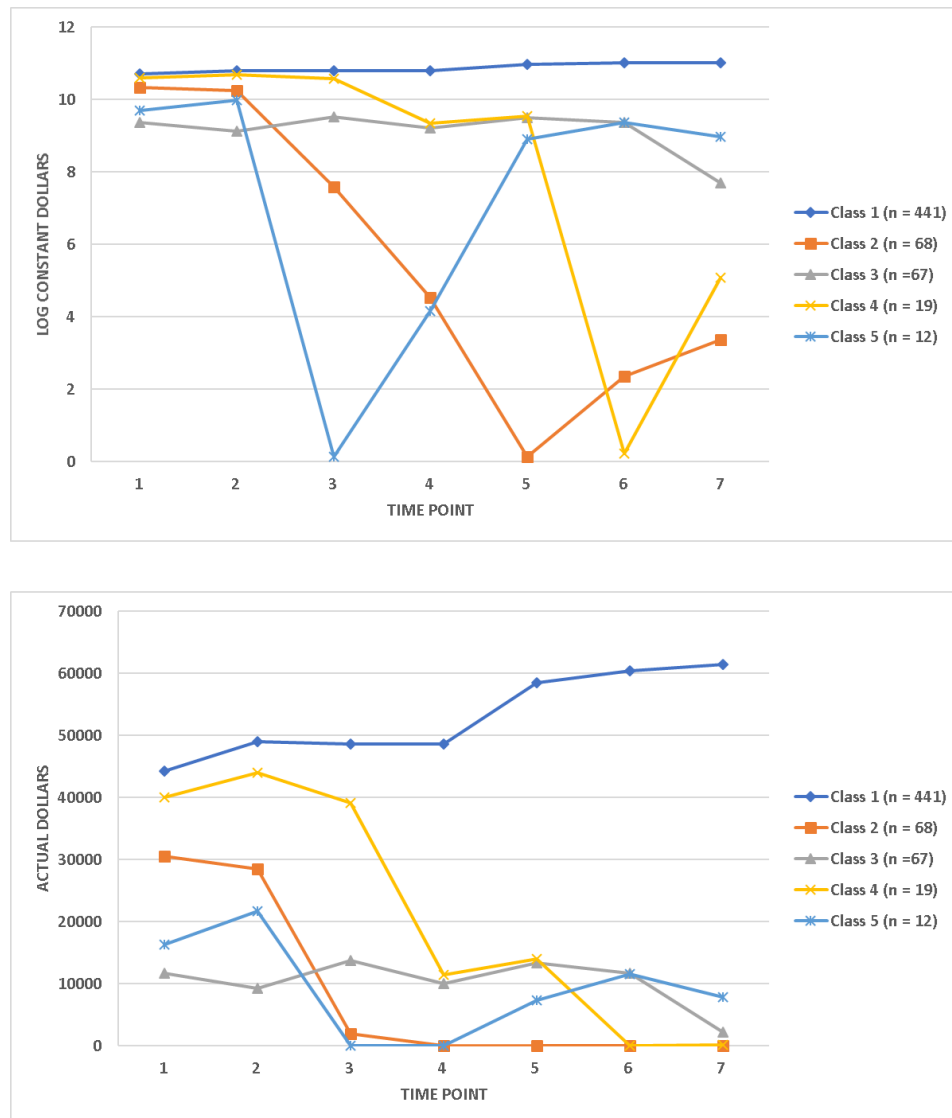


Figure 4.2. Average (estimated means) economic attainment patterns of each latent class in log constant and actual dollars.

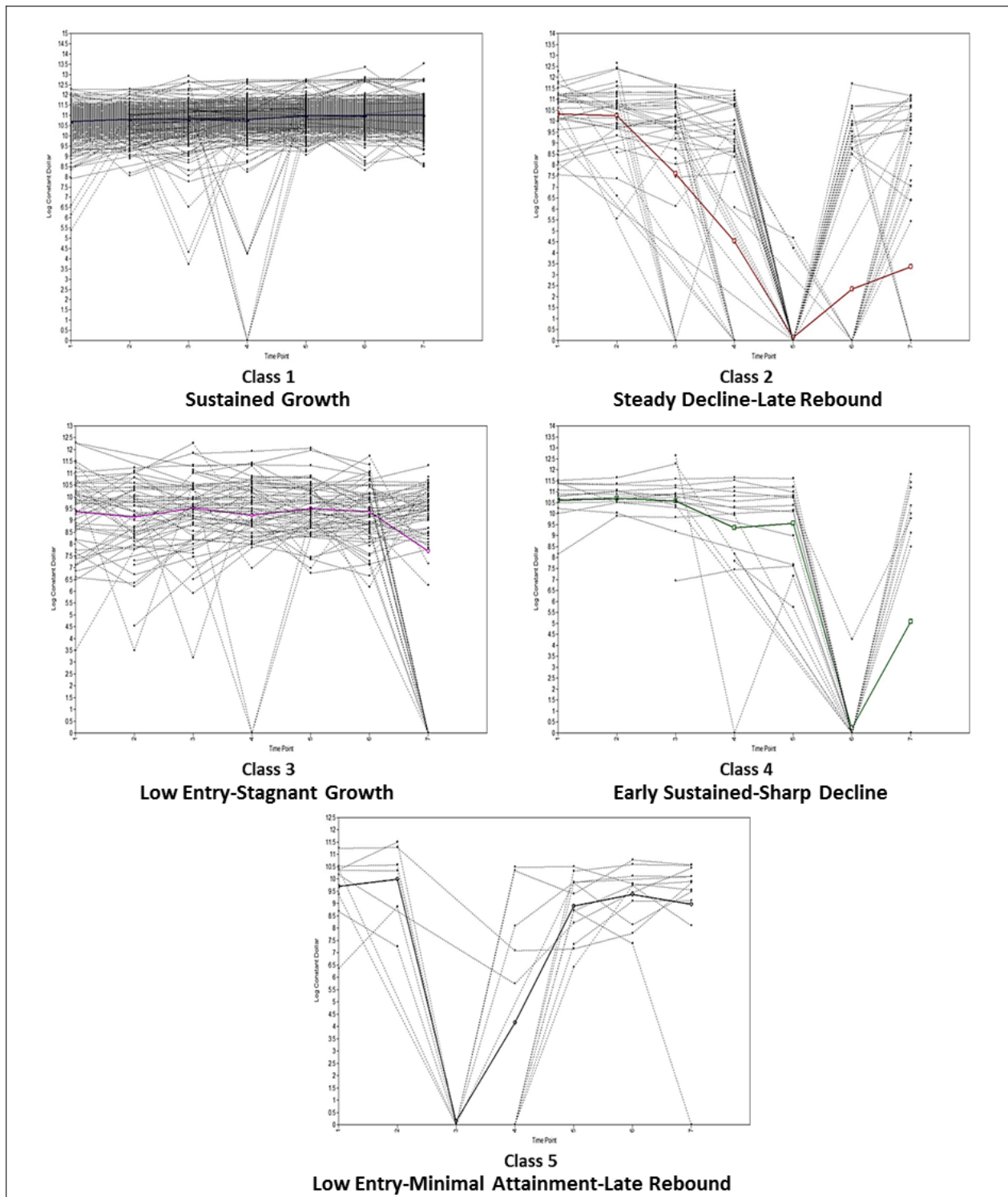


Figure 4.3. Average (estimated means) and observed economic attainment patterns of each latent class.

Table 4.2

Estimated Group Average of Women's Economic Attainment Patterns

Time Point	Unit	Class 1	Class 2	Class 3	Class 4	Class 5
1	Log \$ \$	10.698	10.328	9.366	10.597	9.704
		44267.23	30576.90	11684.28	40014.61	16383.01
2	Log \$ \$	10.801	10.256	9.134	10.691	9.986
		49069.85	28452.75	9265.01	43958.44	21720.24
3	Log \$ \$	10.791	7.599	9.527	10.576	0.145
		48581.59	1996.20	13725.35	39183.07	1.16
4	Log \$ \$	10.793	4.529	9.221	9.347	4.157
		48678.85	92.67	10107.17	11464.38	63.88
5	Log \$ \$	10.977	0.135	9.498	9.547	8.903
		58512.75	1.14	13333.03	14002.62	7354.00
6	Log \$ \$	11.009	2.349	9.365	0.222	9.363
		60415.44	10.48	11672.61	1.25	11649.28
7	Log \$ \$	11.026	3.372	7.696	5.084	8.965
		61451.28	29.14	2199.53	161.42	7824.38

Class 1: Sustained growth. A total of 441 women belonged to Class 1, which reflected *sustained growth*, i.e., consistent growth in average economic attainment. The economic attainment of Class 1 women at age 34 (the first time point, T1) was 10.698 log-constant dollars, or \$44,267, the highest of all identified classes. Attainment continued to rise throughout the selected time period and, by T7 had reached 11.026 log-constant dollars or \$61,451. The annual economic attainment of women in this class averaged 0.055 log-constant dollars.

Class 2: Steady decline-late rebound. Class 2, containing 68 women, was labeled *steady decline-late rebound* (hereafter referred to as steady decline). Women in this class experienced a moderate level of initial economic attainment at T1 (10.328 log-constant dollars, \$30,577), which began to decline substantially after T2. Attainment continually decreased into the mid-40s (through T5) when average economic attainment was almost zero (0.135 log-constant dollars, \$1.14). Despite a slight, late rebound from T5-T7, the degree of this increase was rather small as women recovered very little of their initial attainment.

Class 3: Low entry-stagnant growth. A total of 67 women belonged to Class 3, referred to as *low entry-stagnant growth* (hereafter referred to as stagnant growth). The initial average economic attainment of Class 3 women (T1) was the lowest of all five classes (9.366 log-constant dollars, \$11,684) and remained low throughout the 12-year period of our analysis. The overall economic attainment of low entry-stagnant-growth women started low and remained stagnant, not showing any particular growth or decline trends.

Class 4: Early sustained-sharp decline. Class 4 contained 19 women and was labeled *early sustained-sharp decline* (hereafter referred to as early-sustained). Initial average economic attainment for these women (T1) was the second highest (10.597 log-constant dollars, \$40,015) and remained so until around age 38 (T3). Despite a gradual decrease, these women continued to exhibit a moderate level of economic attainment until T5 (age 42) when they appeared to leave the labor market almost entirely (0.222 log-constant dollars, \$1.25). Although a slight rebound in attainment was observed between T6-T7, their economic attainment at age 46 (T7) equaled about one-third of their initial attainment.

Class 5: Low entry-minimal attainment-late rebound. Twelve women belonged to Class 5, referred to as *low entry-minimal engagement-late rebound* (hereafter referred to as late rebound). Women in this class started with a relatively low level of economic attainment (9.704 log-constant dollars, \$16,383) which increased slightly during the first 2 time points. However, at T3 (age 38) the average economic attainment rapidly decreased (0.145 log-constant dollars, \$1.16). Women in this class exhibited

a rebound in attainment after T4 (age 40), and again, four years later at T6, regaining almost 90% of their highest economic attainment.

Description of Economic Attainment Classes

Demographic and occupational characteristics. White women represented a majority of the members in each of the five classes. Two-thirds (69.9%) of all White women belonged to the sustained growth group. A greater percentage of all Black and Hispanic women were classified in the sustained growth group (87.3% and 72.2%, respectively). The percentage of White women was the highest in the steady decline group (80.9%), while the sustained growth and early sustained groups had higher portions of Black (23.1%) and Hispanic (26.3%) women, respectively. Given the composition of our sample, there was little variation in the education level of women ($M = 16.8$) across the five classes.

Information concerning women's occupation at T1 (age 34) was also tabulated by class (see Table 4.3). A majority of women from each class held occupations that were categorized as managerial or professional in nature. However, several distinctions were observed. First, women in sustained growth (66.4%) and late rebound (66.7%) groups experienced the highest rates of employment in the managerial/professional category. Conversely, less than half of women in the stagnant growth (45.5%) and early sustained (42.9%) groups held positions in these fields. Women in the early-sustained group held the most widely distributed occupations including 21.4% in administrative support/clerical and 21.4% in machine operator/assembler positions. Occupations held by women in the stagnant growth group were also scattered among several categories including 21.8% in service and 14.5% in administrative support/clerical positions.

Table 4.3

Women's Occupation at Time Point 1 by Classes

Class	1st	2nd	3rd	4th
Sustained growth (%)	Managerial and professional specialties (66.4)	Administrative support/clerical (13.2)	Technical (7.2)	Service (5.5)
Steady decline (%)	Managerial and professional specialties (57.5)	Sales (17.5)	Administrative support/clerical (10.0)	Technical (5.0)
Stagnant growth (%)	Managerial and professional specialties (45.5)	Service (21.8)	Administrative support/clerical (14.5)	Sales (10.9)
Early sustained (%)	Managerial and professional specialties (42.9)	Administrative support/clerical (21.4)	Operators-machine, assembler, inspectors (21.4)	Sales (7.1)
Late rebound (%)	Managerial and professional specialties (66.7)	Technical (11.1)	Service (11.1)	Administrative support/clerical (11.1)

*percentage within class

Job satisfaction. ANOVA tests indicated that there was no significance difference in the level of average job satisfaction among classes at all time points. Furthermore, average job satisfactions across seven time points did not significantly differ among classes (average job satisfactions of Classes 1-5 were 3.47, 3.42, 3.46, 3.26, and 3.45, respectively). We plotted trajectories of average job satisfaction of each class throughout seven time points in Figure 4.4. While sustained growth and stagnant growth women exhibited relatively stable average job satisfaction trajectories, women in the other three groups appeared to exhibit fluctuating trajectories. For the three groups that showed fluctuating job satisfaction—steady decline, early-sustained, and late rebound—analysis revealed no patterns or tendencies that were identifiable or seemed to covary with the economic attainment patterns (e.g., similarity in lowest-highest points or overall paths).

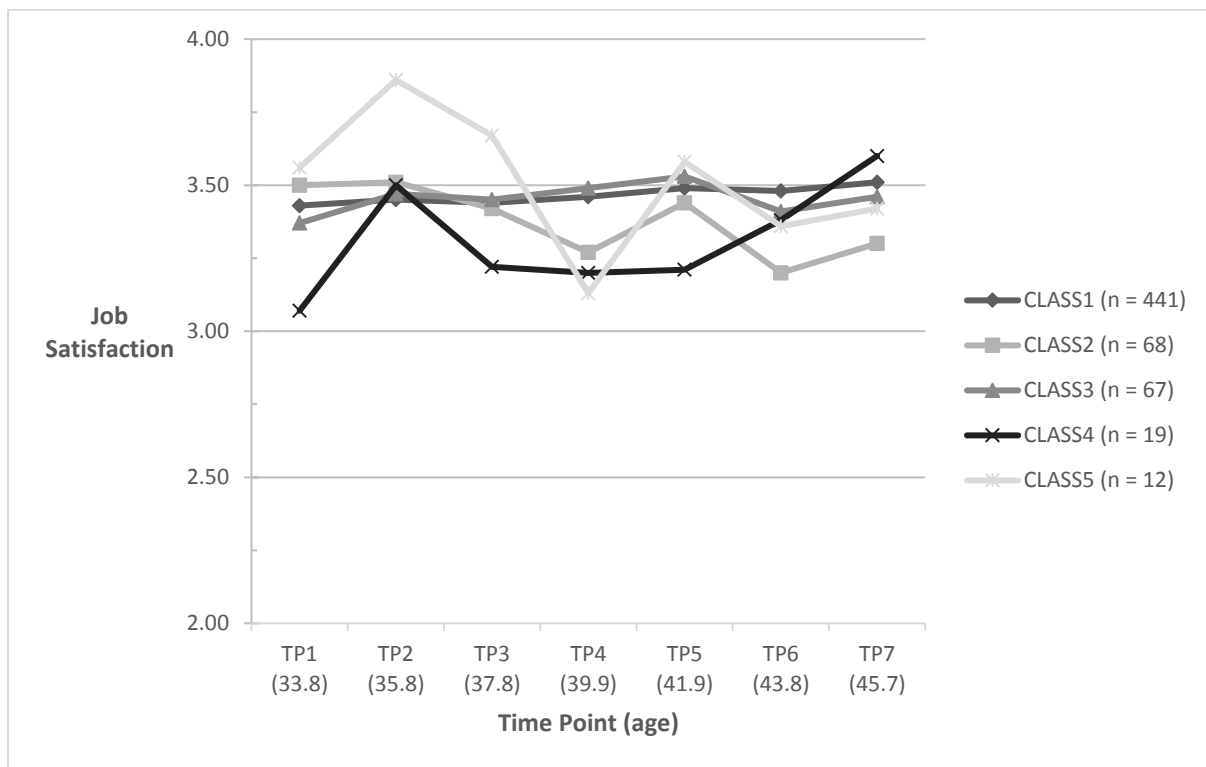


Figure 4.4. Average job satisfaction trajectories of each latent class.

Family-of-origin variables. Table 4.4 provides the means and standard deviations of family of origin variables by class. ANOVA tests indicated that significant differences existed in all four family of origin variables. Thus, subsequent post-hoc tests were conducted. First, mothers of early-sustained women had the lowest educational attainment ($M=10.8$), significantly lower than the educational attainment of mothers of sustained growth, steady decline, and stagnant growth women. Second, the educational attainment of fathers of steady decline women ($M=14.9$) was significantly higher than those of sustained growth women. Third, despite the significant omnibus ANOVA, post-hoc tests detected no significant differences between any pair of Classes on occupation. Last, the occupations of fathers of steady decline women were the highest ($M=60.5$) among the five classes and also significantly higher than those of sustained growth and stagnant growth women.

Table 4.4

Family Characteristics of Participants by Classes

Characteristics	Sustained growth (n = 441)	Steady decline (n = 68)	Stagnant growth (n = 67)	Early sustained (n = 19)	Late rebound (n = 12)	ANOVA Tests
<i>Family of Origin</i> ^a						
Mothers' educational attainment	12.7 (2.8)	13.5 (2.1)	13.4 (2.1)	10.8 (3.8)	13.1 (2.0)	$F = 4.812$ $df(b) = 4$ $df(w) = 602$ $p = .000$
Fathers' educational attainment	13.3 (3.5)	14.9 (3.2)	13.3 (3.5)	12.6 (5.0)	15.1 (2.2)	$F = 4.067$ $df(b) = 4$ $df(w) = 602$ $p = .002$
Mothers' occupations	27.6 (28.2)	20.1 (27.5)	28.1 (29.3)	11.3 (22.1)	22.8 (28.6)	$F = 2.532$ $df(b) = 4$ $df(w) = 602$ $p = .039$
Fathers' occupations	47.1 (27.4)	60.5 (23.7)	47.7 (25.7)	47.8 (29.4)	46.1 (26.5)	$F = 3.724$ $df(b) = 4$ $df(w) = 602$ $p = .005$
<i>Newly Formed Family</i> ^a						
Marital history ^b	4.5 (3.0)	6.1 (2.0)	6.0 (2.1)	5.4 (2.3)	6.5 (1.0)	$F = 9.271$ $df(b) = 4$ $df(w) = 602$ $p = .000$
Number of Children	1.5 (1.2)	2.3 (1.4)	2.2 (1.4)	2.2 (1.5)	2.1 (0.7)	$F = 10.491$ $df(b) = 4$ $df(w) = 602$ $p = .000$
Partner's income	\$49,128 (\$49,087)	\$140,868 (\$107,653)	\$85,619 (\$62,667)	\$87,726 (\$75,457)	\$65,684 (\$65,242)	$F = 36.241$ $df(b) = 4$ $df(w) = 602$ $p = .000$

^a Mean (Standard Deviation) ^b Marital history reflects the number of time points (out of 7 possible) that respondents indicated being married.

Newly formed family variables. Means and standard deviations of newly formed family variables by classes are displayed in Table 4.4. ANOVA tests showed that all chosen newly formed family variables significantly differed across classes. In regard to marital history, sustained growth women were married the shortest period of time (4.5 out of 7 time points). A post-hoc test indicated that this period is significantly shorter than the periods of steady decline (6.1) and stagnant growth (6.0) women who were married. In addition, a substantial portion of sustained growth women reported having never married (17.6%) while the remaining four classes had very small numbers of women who had never married (0-4.9%). Similarly, among the five classes, sustained growth women had the fewest children (1.5). This number was significantly smaller than the number of children had by steady decline and stagnant growth women. Finally, the income of women's spouse/partner were lowest in sustained growth (\$49,128) group and greatest in steady decline group (\$140,868). A following post-hoc test showed that steady decline women's spouse income was significantly higher than the other four women's spouse income.

Discussion

Our study sought to classify college-educated women's mid-career patterns using economic attainment, which extends our understanding of women's career development during mid-career this period of life. First of all, nearly three out of four (more than 72%) of the college-educated women in our sample belonged to the sustained growth group, supporting the notion that most women today, especially those who are highly educated, are willing and able to pursue and maintain careers (Hoffnung, 2004). The economic attainment of these women increased, continuously and consistently, from ages 34 to 46. During this period, these women remained in the labor market, received a relatively high income, and did not experience major long-term absences from work.

Our findings contradict earlier classification studies from the late 20th century that portrayed women who were continuously involved in a career as unusual and comprising only a small portion of all women (e.g., Zytowski's [1969] unusual career pattern). This difference is likely a reflection of several social changes that have occurred during the last several decades including the (a) increasing educational

attainment of women (Welch, 2000), (b) increasing availability of service sector jobs that favor female labor (Galor & Weil, 1996), (c) changes of ideology that accept diverse lifestyles for women such as being divorced or remaining single (Barnett & Hyde, 2001) and (d) an elevated sense of domestic gender equality in terms of sharing family responsibilities such as childrearing and household chores with men (Bond, Galinsky, & Swanberg, 1998). The mixture of these changes has led to a dramatic rise in women's participation in the labor market from the 1970s to the present, and has also resulted in an increase in the number of highly-educated women who maintain stable careers. Our findings also support the notion that the chosen time period, 1980s-2000s, represents the first generations of women whose careers progressed in terms of both quality and quantity (Gersick & Kram, 2002).

While not directly studied, it appears that women still experience inequalities in terms of their economic attainment. The economic attainment of sustained growth women, who reported the highest wages in our analysis, was less than that of college-educated men. The mean income of U.S. men between 35-44 years of age was \$61,738 in 2013 (U.S. Census Bureau, 2013), which is slightly higher than the sustained growth women's highest annual income (T7, 11.026 log-constant dollar; \$61,451.28) during the mid-career stage. Although not a precise comparison, the fact that the highest annual income of mid-career college-educated women (in 2015 dollars) was lower than the mean income of mid-career men of all educational levels (in 2013 dollars) strongly suggests the continued presence of gender pay inequalities (e.g., Bosworth et al., 2000).

The remaining 28% of women in our sample experienced sporadic or limited career patterns. This is consistent with earlier studies that have documented interruption and fluctuation in women's career paths. Women experiencing either steady decline-late rebound or early sustained-sharp decline stayed in the labor market—although economic attainment gradually declined—until their early 40s when almost all left. Despite their attempts to return at the very end of the mid-career period, such returns were not at the same level as their highest attainment. These women roughly correspond to Gerson's (1985) *early-vocational-career-orientation-modified* women who discontinued their career as other life-roles grew

more prominent. Women of stagnant growth, on the other hand, showed constant but depressed economic attainment patterns. These women are comparable with Zytowski's (1969) moderate career pattern, which characterized women's patterns as early entry, lengthy span, and low degree of participation. Last, women in the late rebound group started with rather low economic attainment, which decreased even further until age 38. They returned to the labor market in their late mid-careers. These women would, in Hakim's (2000) classification, be considered adaptive women who accommodate both work and family.

The aforementioned similarities between four career patterns of our study and some of the patterns reported in previous studies were explained, in part, by the newly formed family variables. Women in one of these four limited or sporadic career patterns were notably more involved in family responsibilities than sustained growth women. This situation is in line with previous studies that viewed family as a major influence in the career patterns of women. Indeed, women in the sustained growth group were married for the shortest period of time and had the least number of children. It also seems relevant that early-sustained women, who showed the second highest and longest economic attainment patterns, were married for the second shortest periods of time. These results are consistent with the findings of Metz and Tharenou (2001) and Spain and Bianchi (1996) and show that a negative relationship still exists between women's career progress and family responsibilities.

Spouses' income, on the other hand, appeared to negatively impact women's sustaining their careers, especially in their early 40s. In this period, a tendency was revealed—the lower a spouse's average income, the more likely a woman would remain in the labor market or earn higher income. For example, spouses of sustained growth women had the lowest average income whereas steady decline women's had the highest. Although earlier studies (e.g., Grzywacz & Marks, 2000; Hobfoll, 1986) suggested a positive relationship between spousal support and women's handling multiple roles, this seemingly contradictory finding makes sense in two ways. First, earlier studies addressed the relationship between spousal support such as sharing house chores and women's psychological burden such as work-family conflict. However, the story can be largely different if the types of spousal support and women's

job outcomes are economic attainment. Second, the late mid-career stage (around mid-40s) is a period when family expenses expand as children are growing and the size of households increase. It is likely that the restricted availability of economic resources in a household during this period affects women's decisions to remain in or reenter the labor market.

All in all, our findings on college-educated women's economic attainment patterns and newly formed families are in agreement with past findings (e.g., Betz, 1993; Lee, 1994; O'Neil & Bilimoria, 2005) that have addressed the heterogeneity of women's career development and the influences of newly formed families on it. Scholars have asserted that women's career choices in mid-career are more realistic than idealistic, compromising work to accommodate growing family responsibilities or doing the reverse. The specific patterns that women's careers take depend on what decisions they make regarding the pursuit of career achievement or the raising of children and family, resulting in varied career histories and trajectories (Betz & Fitzgerald, 1987; Huang et al., 2007).

Our analyses of the family-of-origin factors, on the other hand, produced results that were incongruent with existing studies. While the majority of previous research emphasized mother's influence on daughters' careers, our findings implied a stronger connection between fathers and daughters. For instance, post-hoc ANOVA tests showed that average prestige scores of mothers' occupations did not significantly differ across classes. Furthermore, for mothers of early sustained women—whose initial economic attainment was the second highest—their educational attainment was the lowest. These findings are rather inconsistent with a number of prior studies (e.g., Gerson, 1985; Hackett et al., 1989) that claimed a positive influence from mothers' educational and occupational achievement on daughters' career development.

On the other hand, we found a consistent tendency of fathers' education and occupations across five classes of daughters' career patterns. Specifically, steady decline women's fathers had significantly higher educational and occupational attainments than other groups. Women in the steady decline group had a moderate level of economic attainment in the beginning and showed continuous decrease

afterwards. This discouraging relationship between fathers' achievements and daughter's careers contradicts most career studies that have examined father-daughter relationships. These mostly reported positive or supportive fathers' influence on daughter's active work involvement, such as closer father-daughter relationships prompting daughters' career maturity or nontraditional career choices (Graef, Wells, Hyland, & Muchinsky, 1985). Future studies that investigate fathers' influence on daughters' career development in terms of psychological and practical/role-model influence ought to be able to further elucidate our finding. It is also interesting to note that steady decline women had the most socioeconomically successful and productive family members (fathers and spouses) both in their family of origin and newly formed family. Given the limited and discontinued career patterns of steady decline women, this result raises the possibility that the presence and productiveness of a major financial supporter in a family may have a negative impact on both women's career development in early ages and long-term continuity.

We note that job satisfaction represented only for those women who were employed when each survey was taken; unemployed women were excluded. Even so, we assumed that the average job satisfaction of a class at a certain time could represent the subjective aspect of that class's career. This was based on our assumption that both employed and unemployed women would be similar, to some degree, in terms of their career experiences as well as affective evaluations of their careers. However, interpretations of results should not be considered definitive or generalized. We did not find any significant difference in the level of job satisfaction across the five groups. This is consistent with Huang et al.'s (2007) study that reported no significant difference in job satisfaction among women of different career patterns. Interestingly, we observed that average job satisfaction trajectories of women with interrupted career patterns (Class 2, 4, 5) fluctuated whereas job satisfaction trajectories of women with stable career patterns (Class 1, 3) were relatively flat. However, for the three interrupted career pattern groups, we found no identifiable similarities in trajectories between economic attainment and job satisfaction. For example, the time at which economic attainment peaked did not match the time at which

job satisfaction peaked for any of the three groups. Also, the overall patterns of fluctuation in economic attainment and job satisfaction were not comparable. This implies that economic attainment may not be a factor that directly affects women's job satisfactions. Instead, it is likely that family factors that were shown to complicate women's economic attainment patterns may also have influenced women's job satisfaction. This would happen by their affecting the way women re-adjusted so as to work around significant life events such as childbirths and maternity leaves (Bernardi, Bollmann, Potârcă, & Rossier, 2017). These intertwining relationships between family, economic attainment (objective aspects of career), and job satisfaction (subjective aspects of career) could be topics for future studies.

Two issues to be considered with the study must be pointed out. First, the psychological aspects of women's mid-career patterns were not thoroughly examined. Diverse psychological dynamics, in addition to job satisfaction, would be involved in women's career choices and attitude toward a chosen career—such as motivations or attractions leading women to choose certain career paths, potential hardships, and their feelings about both the career paths selected and subsequent life styles. Knowing those dynamics would be important to fully understand the identified career paths, thus requiring further study. Second, since the analysis looked only at college-educated women, generalizing our findings to all women is not warranted. College-educated women have demographic, psychological, and occupational characteristics that are distinctive from other women. Thus, additional study is needed to ascertain whether the career patterns we identified are similar for women with different levels of educational attainment or only hold for college-educated women.

To sum up, our findings on career patterns evidently contradict the old notion that women took little part in the labor market. Indeed, our findings show the progress women made during the late 20th and early 21st centuries. At the same time, they support recent studies (e.g., Hakim, 2003; Huang et al., 2007) that have argued that the major type of women's career pattern is now work-centered rather than family-centered. Also, we showed, in a statistical fashion, that newly formed family variables indeed had negative associations with the continuity of women's mid-careers. This finding is not only evidence of the

arduousness required for women to pursue both work and family but it also supports prior classification studies that theoretically or qualitatively asserted such relationships. Next, our findings on family-of-origin factors shed light on a father's influence on daughters' careers, which have not received as much attention as did a mother's influence. However, the direction of the influence of fathers' education and occupation on women was rather negative, which was inconsistent with prior studies. Last, we found that women whose career patterns were unstable had fluctuating job satisfaction patterns but the two patterns did not exactly covary. This implies that economic attainment and job satisfaction may not directly affect each other but underlying factors such as family events may be the source of the change in both patterns.

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CHAPTER 5

CONCLUSIONS

Summary of Findings

The overarching goal of this dissertation has been to explore, through three individual studies, diverse aspects of women's career development. The three studies amount to an investigation of the relationships between social-contextual factors and several selected variables that reflect different phases of women's career development. The first study (Study 1) examined the influence of career-guidance supports provided by schools and families on women's job satisfaction and career adaptability. The second study (Study 2) looked into women's occupational aspirations, which were expected to differ from those of men due to the gender socialization they went through during childhood. The third study (Study 3) analyzed women's career patterns during mid-career and examined the influence of family on the career patterns. Each study used different samples in terms of nationality (U.S. and Korea) and ages (adolescents to middle-aged adults). The paragraphs that follow summarize the findings of each study, focusing on the results that are closely relevant to the goal of this dissertation.

Study 1 analyzed the relationships between Korean work-bound adolescents' job satisfaction, career adaptability, and social supports (school and family) using the techniques of structural equation modeling. A Korean national database, the High School Graduates Occupational Mobility Survey, was used for the analysis. Results showed that social supports that work-bound youth experienced in high school indirectly influenced subsequent job satisfaction by enhancing career adaptability. That is, social supports increased adolescents' readiness to prepare for and adjust to current or future work by facilitating their preparatory activities, which led to higher future job satisfaction. While these relationships among selected variables hold for both men and women, a subsequent gender-specific model analysis revealed that women's job satisfaction was less affected by career adaptability than that of men.

This suggests the possibility that the women's job satisfaction may depend on more diverse factors than the chosen variables in this study—such factors as greater family responsibilities of women, quality of family supports, or the androcentric occupational environments.

Study 2 examined gender differences in occupational aspirations using a newly constructed psychometric instrument, the Subjective Occupational Aspiration Scale. For the analysis, the study used a U.S. college student sample. Results showed that male and female college students were the same in subjective occupational aspirations as well as socioeconomic aspirations. This suggests that gender socialization did not have a significant impact on the formation of participants' occupational aspirations and thus women were not confined within female jobs or low aspirations. Instead, many women tended to aspire to high-status jobs or high occupational achievements regardless of gender-stereotypical notions associated with jobs. It seems that they did not particularly want female jobs just to conform to social norms imposed on them. Interestingly, the study also found that women who aspired to traditionally female jobs possessed lower subjective occupational aspirations than women who aspired to traditionally male jobs. This result implies that female jobs are associated not only with low socioeconomic indicators, such as low wage and prestige, in the labor market, but also with little aspirations and expectations toward achievement in careers in people's perceptions.

Study 3 explored college-educated women's career patterns during mid-career using their income as an indicator of career attainment. For the longitudinal latent class analysis, this study used a U.S. national database, the National Longitudinal Survey of Youth 1979. The analysis identified five distinctive patterns of women's economic attainment—sustained growth, steady decline-late rebound, low entry-stagnant growth, early sustained-sharp decline, and low entry-minimal attainment-late rebound. A majority of women belonged to the sustained growth group in which women's economic attainment increased continuously and consistently. Women in the other four groups had either limited or unstable economic attainment patterns. Family characteristics of each career pattern were then examined. Newly formed family variables, including statuses of marriage, spouse, and children, differed across the five

groups. Noticeably less engaged in newly formed family-related responsibilities were sustained growth women. The study also found that fathers had a significant influence on daughters' mid-career patterns. Women who had fathers with high educational attainment and occupational statuses were likely to have limited and discontinuous career patterns.

Overall, the findings of the three studies support our claim in Chapter 1 that in the literature on women's career development there have prevailed two different outlooks—one that views “gender as a complicating factor” and one that focuses “on the narrowing gender gap.” Gender appeared to complicate women's careers especially with regard to continuity. In Study 3, it appeared to complicate mid-career college-educated women's careers as women's family responsibilities grew. Moreover, women who had a rather stable career pattern seemed to have compromised their domestic lives as indicated by the short marriage durations and fewer children. Other results showed that men and women were similar or equal in certain aspects of career development, suggesting a narrowing of the gender gap. Women in Study 1 experienced, during the school-to-work transition, a career development process that was similar to the process that men experienced. Also, in Study 2, women's level of occupational aspirations did not significantly differ from those of men.

These findings show the stream of progress women have made in the work domain during the last several decades. In the mid-twentieth century, working women were portrayed as unusual (Zytowski, 1969) and women's career orientation—whether women wanted to pursue careers or settle down at home—was the center of topics in the literature on women's careers (Fitzgerald, Fassinger, & Betz, 1995). Study 3, which investigated the women of baby boomer generation, contradicted this old perspective, showing that women considered having both a career and a family to be nothing unusual. Indeed, having both appeared to be a common life style choice of women of that generation. Even so, one-fourth of women in the sample had interrupted or limited career patterns; women with stable patterns, moreover, were less involved in family responsibilities. Given that the sample consisted of rather highly educated women, the interruption and limitation are likely to be more distinct for women in general.

These mixed results indicate two things: One, there has been great improvement in women's participation in the labor market and achievement in work and, two, family duties still present obstacles and hindrances for women to a much greater degree than for men.

Some previous studies in the late-twentieth century asserted that men and women's occupational aspirations and choices were restricted within their own gender boundaries (e.g., Gottfredson, 2005). Studies 1 and 2, which looked at more contemporary women than Study 3 did, imply further advancement of women, particularly in psychological aspects. The two studies showed that adolescent men and women possessed an equal level of occupational aspirations and experienced the same developmental process of career adaptability and job satisfaction. Moreover, no gender-conforming tendency in adolescent women's career goals was found. They appeared to neither make career decisions based on their gender and gender-related social norms or limit themselves to traditionally female-dominated fields. These results suggest that gender hardly plays, at least in the early psychological developmental stage, a significant role anymore and also that men and women now begin their careers having similar achievement aspirations and expectations.

Future Directions

Several suggestions and implications for future efforts to investigate and assist women's career development are noted. First, this dissertation confirmed the outdated nature of the dichotomous approach of previous studies that focused on two career orientations for women—i.e., working women versus homemaking women. Thus, future research and interventions need to focus more on and delve deeper into specific phenomena where women still suffer limitations or discriminations despite their strong orientations and aspirations toward work. Such phenomena would include gender segregation in certain fields and industries, the different impacts childbirth and childrearing have on men and women's careers, the still prevailing gender difference in wage and promotions, the glass ceiling phenomenon, and so forth (Albrecht, Edin, Sundström, & Vroman, 1999; Hegewisch, Liepmann, Hayes, & Hartmann, 2010).

Second, future research should investigate career trajectories of more contemporary women, as this would possibly uncover more evidence of a tendency toward a narrowed gender gap. Study 3 represented the baby boomer generation while Study 1 and Study 2 represented contemporary women. Thus, it is possible that there may be a greater portion of current women than older women who have stable and uninterrupted career trajectories or women who pursue careers without comprising domestic lives. This speculation is based on the fact that women's occupational aspirations have been increasing since the 1950s in accordance with several social changes in the education system and labor market that facilitated women's careers (Shu & Marini, 2008). Future research that could show this could give rise to a major shift in the paradigm in the literature on women's careers. If such research shows otherwise—current women still experiencing the same interruptions as older women—further efforts would need to focus on the factors that hinder the progression of women with such elevated aspirations.

Third, despite the advancement of women evidenced through both psychological and objective indicators of careers, a negative relation between women's career progress and other responsibilities women assume, especially those regarding family, appeared to still exist. This means that even women who seem to have “desirable” careers are likely to experience inner conflicts and/or make compromises throughout their career paths whereas men with similar careers may be free of such agitation. For a fuller understanding of such women's career development, future research should scrutinize the psychological and/or emotional aspects of those women, such as satisfaction with jobs and lives, compromises women make in pursuit of their careers, and their feelings and thoughts regarding their choices. Such an investigation could shed more light on the nature of women's careers in association with the multiple roles women take on.

Last, this study did not address social-contextual supports from nations or employers. Such supports can be important topics for future research and other relevant entities. Interruptions stemming from growing family responsibilities are inevitable. However, it can be problematic and unhealthy if the interruptions are imposed only on women since individuals' perceptions of equality are related to their

beliefs in several core values in society such as people's belief in social justice or fair opportunities (Dalbert, Fisch, & Montada, 1992). In modern society, for both men and women to make informed and satisfying career decisions when they encounter interruptions, social-contextual supports from bigger-than-individual-level, such as nations or employers, that can facilitate such decisions are vital. Concerning their governments, the U.S. and Korea employ different approaches regarding their roles in childcare. The U.S. circumscribes for itself a minimal role, allowing the market to handle childcare needs; Korea provides more extensive government support for childcare (Hong, 2006). Even so, policymakers in both countries may consider broad, national-level interventions such as elevating the sense of gender-equity in childcare to the nation level or creating environments that encourage fathers' greater involvement in childcare. Accordingly, employers can help by offering more flexible maternity and fraternity leaves or benefits.

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