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Career Preparation: A Longitudinal, Process-Oriented Examination

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Abstract

Preparing for an adult career through careful planning, choosing a career, and gaining confidence to achieve career goals is a primary task during adolescence and early adulthood. The current study bridged identity process literature and career construction theory (Savickas, 2005) by examining the commitment component of career adaptability, career preparation (i.e., career planning, career decision-making, and career confidence), from an identity process perspective (Luyckx, Goossens, & Soenens, 2006). Research has suggested that career preparation dimensions are interrelated during adolescence and early adulthood; however, what remains to be known is how each dimension changes over time and the interrelationships among the dimensions during the transition from high school. Drawing parallels between career preparation and identity development dimensions, the current study addressed these questions by examining the patterns of change in each career preparation dimension and parallel process models that tested associations among the slopes and intercepts of the career preparation dimensions. Results showed that the career preparation dimensions were not developing similarly over time, although each dimension was associated cross-sectionally and longitudinally with the other dimensions. Results also suggested that career planning and decision-making precede career confidence. The results of the current study supported career construction theory and showed similarities between the processes of career preparation and identity development.

Keywords

Career decision-making; career construction; career planning; career confidence; career adaptability

Introduction

During the transition from adolescence to early adulthood, youth are developing their identities in a number of different domains, including career, world views, and relationships (Arnett, 2000; Erikson, 1968). According to Erikson, forming an identity is the primary developmental task of this time period. Career identity is defined as the sense of self derived

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from one's development of an occupational career and is an important component of one's overall identity. Erikson posited that without satisfying work, or a positive career identity, adjustment may be negatively affected. Much identity research has focused on exploration and commitment processes (e.g., Kunnen, Sappa, van Geert, & Bonica, 2008; Luyckx, Goossens, & Soenens, 2006; Luyckx, Goossens, Soenens, & Beyers, 2006; Luyckx, Goossens, Soenens, Beyers, & Vansteenkiste, 2005) however, we know very little about how the commitment processes of career identity develop during the transition from high school to one's occupational career. This period of time is important because it is when youth are making decisions that affect their immediate and future career opportunities.

Extant literature suggests that career preparation may be a mechanism through which career identity develops because it represents a process by which career commitments develop (Skorikov, 2007b). Career preparation consists of three dimensions: career decision-making (making a decision about which career to pursue), career planning (using active strategies for achieving career goals), and career confidence (belief in achieving one's career goals) (Skorikov). The aims of the current study were to assess the formation of career identity in terms of preparation for an adult career by examining how each dimension of career preparation develops over time and the interrelations among dimensions of career preparation from 12th grade in high school to 4.5 years post-high school using latent growth curve modeling.

Career Preparation

The theory of career construction (Savickas, 2005) served as the primary theoretical framework for the current study. Career construction theory asserts that successful career construction, or development of the self within the career domain and the context, is driven by career adaptability. Career adaptability is essentially readiness to cope with real world constraints on career goals and consists of planning, decision-making, problem solving/ confidence, and exploration. Exploration represents a less focused dimension and involves exploring possible career choices without necessarily making commitments. Planning, decision-making, and confidence represent more focused efforts indicative of career identity commitment; Skorikov (2007b) defined these three commitment-focused dimensions of career adaptability as career preparation.

Examination of the process of career construction has primarily focused on the cross-sectional associations between career decision-making and planning and their predictors and outcomes (e.g., (Creed, Patton, & Prideaux, 2006; Creed, Prideaux, & Patton, 2005; Hirschi & Läge, 2008; Patton & Creed, 2001), including their associations with family processes, such as parental support and family functioning (see Alliman-Brissett, Turner, & Skovholt, 2004; Berrios-Allison, 2005; Constantine, Wallace, & Kindaichi, 2005; Leal-Muniz & Constantine, 2005). Very few studies, however, have assessed career preparation longitudinally, and only one study (Skorikov, 2007b) has examined all three dimensions of career preparation.

Skorikov's (2007b) study focused on all three career preparation dimensions over time (11th grade to six months after high school, every six months for a total of five time points). Career preparation was assessed as a latent variable (i.e., career decision-making, planning, and confidence as indicators of career preparation) and was found to predict adjustment at six months after high school, controlling for previous adjustment. However, this study did not assess each dimension's trajectory over time. This is important because each dimension may not have the same pattern of change over time but may be interrelated, for cross-sectional and longitudinal studies during high school and college have shown moderate to high correlations among preparation dimensions (Creed et al., 2006; Hirschi & Läge, 2008; Skorikov, 2007b). In addition, (Skorikov) found that, on average, from 11th grade to six

months after high school, career confidence showed approximately equal increment increases every six months. This suggests that career confidence would continue to increase linearly as individuals continue to pursue their career goals. Career indecision showed larger decreases from 11th grade to 12th grade than 12th grade to six months post-high school. Thus, it was expected that career indecision would continue to decrease and stabilize as individuals chose their adult careers. Career planning, however, showed a slight increase, followed by a slight decrease after 12th grade to six months post-high school. This finding suggests that planning may continue to decrease; however, given the developmental period, it may be that career planning increases during the years before a transition and then decreases once individuals make the transition. Building on these findings, we hypothesized that career planning would show an initial decrease, followed by a linear increase. This prediction was made for two reasons. First, we followed youth until 4.5 years post-high school graduation, which is a time when youth are participating in many different combinations of school and work; young adults likely still are planning at this stage in development, probably because they are not established in their careers by age 22. Second, (Skorikov) found a slight decrease in planning from 12th grade to six months after high school completion. This decrease may occur because youth are engaging in intensive career planning that centers on the kind of college major and/or job they should focus on after high school; immediately after high school, they may reduce their planning efforts as they enter college or their first jobs. As youth begin to work toward college completion and need to determine the next steps in their career paths, career planning may increase. Empirical work has not established patterns of career decision-making, planning, and confidence from age 17 to 22. Therefore, it is important to assess the growth and change in each dimension of career preparation from six months after high school and beyond.

Only a few studies have investigated one or more career preparation dimensions in high school and college student samples (see Skorikov, 2007a; Skorikov & Vondracek, 2007), but even fewer studies have examined career preparation longitudinally during the time when it is most salient for youth. To the author's knowledge, only three published studies since the 1990's have examined any of the dimensions of career preparation longitudinally, and these studies found evidence that career indecision decreased over time during high school (Creed et al., 2006; Skorikov, 2007b; Vondracek, Hostetler, Schulenberg, & Shimizu, 1990). These studies, however, mainly focused on high school-aged youth and did not follow youth into their early twenties, when career decisions become especially salient (Mortimer, Zimmerman-Gemback, Holmes, & Shanahan, 2002). In addition, a cross-sectional cohort study of career decision-making suggested that career decidedness increases (i.e., career indecision decreases) as individuals progress through secondary grade levels (Patton & Creed, 2001). No published studies have examined these dimensions over time and their longitudinal associations with each other.

Because of the lack of research that has examined career preparation dimensions' development and associations over time and the similarities between career construction theory and conceptions of identity development as a process, literature addressing the process of identity formation (Luyckx, Goossens, & Soenens, 2006; Luyckx, Goossens, Soenens, et al., 2006) informed the hypotheses of the current study. The process-oriented extension (Luyckx, Goossens, & Soenens; Luyckx, Goossens, Soenens, et al.) of psychosocial development theory (Erikson, 1968) posits that identity development across all domains, including career identity, consists of multiple levels of exploration and commitment. Specifically, Luyckx, Goosens, Soenens, et al. (2006) identified two dimensions of exploration: (a) exploration in breadth and (b) exploration in depth, and two dimensions of commitment: (a) commitment making, and (b) identification with commitment. Exploration in breadth is information seeking among a wide array of options, whereas exploration in depth is a focused exploration of a chosen option. Commitment

making is choosing an option, perhaps tentatively, or making an initial decision about a salient identity issue (e.g., career path); and identification with commitment involves increased decidedness about that initial choice through internalization of the commitment into one's sense of self. Commitment making, exploration in depth, and identification with commitment represent the more focused, decision-oriented dimensions of career identity development and can be linked conceptually to the three career preparation dimensions. Commitment making is much like career decision-making, both indicative of making a decision; exploration in depth is much like career planning, both indicative of seeking information about one's choice; and identification with commitment is much like career confidence, both indicative of a sense of sureness in one's career decisions.

Luyckx, Goosens, Soenens, et al. (2006) examined “student” identity development in a sample of first year college students. Over the course of four time points in two years, changes in decision-making, exploration in depth, and identification with the student role were associated positively. Directional effects also were found. Initial levels of commitment making and initial levels of exploration in depth were negatively correlated with the slope of identification with commitment. The negative correlation may be explained by the fact that the youth in the sample were going to be transitioning out of their college student roles, and as a result, their identification with being a student may have been decreasing if they had already made student identity commitments during their first year. However, these findings informed the predictions of the current study, which occurs over the course of 4.5 years, rather than two years after high school. Because the dimensions of identity development are similar to dimensions of career preparation, these findings suggest that career planning and career decision-making may precede career confidence in the process of career preparation, and career decision-making and career planning may be co-occurring. Another shortcoming of the (Luyckx, Goossens, & Soenens) study is that it only focused on college students and did not include the career domain. College is thought of as a time of an institutionalized moratorium when youth are engaging in exploration in a number of domains and delaying decision-making (Côté & Levine, 1988; Danielson, Lorem, & Kroger, 2000). Therefore, the findings of the (Luyckx, Goossens, Soenens, et al.) study may be representative only of college students in their first two years. The current study addresses these short-comings by including youth with diverse educational pathways over the course of 4.5 years post-high school and focusing on the career domain (unlike the student domain), which is developing beyond when youth are in school.

Rationale and Hypotheses

Career identity development is assumed to be a lifelong process that goes through developmental transformations (Super, 1980); one such transformation occurs during the transition from school to work, post-secondary education, or both when making career commitments. Therefore, career preparation (i.e., making career commitments by choosing and planning for a career and becoming confident about achieving career goals) becomes critical. In order to successfully navigate the transition from high school to employment and/or post-secondary education, career preparation should increase over time during this transition. Given that we do not know the functional form of each career preparation dimension over time or the associative patterns of career preparation dimensions over time, the current study aimed to fill this gap by examining career preparation dimensions from senior year in high school to 4.5 years after high school graduation in a sample of youth who took diverse paths after high school. Career indecision was expected to show quadratic growth, decreasing, then stabilizing after individuals made initial career decisions while working and/or in college, and confidence was expected to show linear increasing growth. Given the findings of Skorikov (2007b) career planning was expected to show an initial

decrease, followed by a linear increase as individuals continue planning for the next phase of their career development, career establishment.

To the author's knowledge, only two studies (Hirschi, 2009; Skorikov, 2007b) have addressed the tenets of the theory of career construction (Savickas, 2005), which asserts that career preparation consists of three interrelated processes that co-occur before career establishment. However, these studies have not provided information about the directional relationships among these dimensions. Previous research has demonstrated that career identity commitment is multi-faceted and does not simply consist of making a decision about one's career. It also is indicated by making plans and having confidence to carry out those plans (Savickas; Skorikov). Given the findings that suggested commitment making and exploration in depth predict identification with commitment (Luyckx, Goossens, & Soenens, 2006), it was anticipated that initial levels of career indecision and career planning would predict career confidence. Also examined was how career preparation changes after high school and what the nature of the association is between the three career preparation dimensions during the time that young adults are in post-secondary education and/or employed. Therefore, the current study tested the following hypotheses:

1. Career confidence would show an increasing, linear pattern (1a); career planning would show an initial decrease, followed by a linear increase (1b); career indecision would show an increasing quadratic pattern (1c).
2. Career planning and career confidence would associate positively over time (2a); career planning and career confidence would associate negatively with career indecision over time (2b).
3. Career planning and career indecision would predict growth in career confidence (3a), and career planning and career indecision would not predict growth in each other (3b).

Method

Sample and Procedure

To achieve the goals of the current study, data from a longitudinal study of adolescent and young adult development (NIH Sub-Grant GM08073) collected in six high schools in Hawaii for a larger study previously reported in (Skorikov, 2007b). Data were collected every six months from the middle of 11^{th} grade through the end of 12^{th} grade. Six months after 12^{th} grade, participants completed assessments yearly for four years. The current study used data from Time 2 (beginning of 12^{th} grade) and Times 4 (6 months after high school graduation) through 8 (4.5 years after high school graduation). These times were selected because a significant number of participants were added to the study at Time 2, and Time 3 was collected six months after Time 2. Time points for the current study were separated by approximately one year (total time span is five years). Time points used for this study will herein be referred to as Times 1 (beginning of senior year in high school) through 6 (4.5 years post-high school graduation).

The current study employed an initial sample of 454 young adults who were in the 12^{th} grade, and the average age was 17.2 years. At Time 1, the sample was 40.1% male and 59.9% female. The sample was very diverse in their parents' educational background (fathers: 40.1% high school diploma, 17.4% community college/vocational school, 18.7% college degree, 5.7% Master's degree, 4.6% Ph.D.; mothers: 38.5% high school diploma, 21.4% community college/vocational school, 24.2% college degree, 7.7% Master's degree, 0.9% Ph.D.), occupational rank (fathers: 34% lower level jobs, 41.3% mid-level jobs, 10.3% high level jobs; mothers: 39.2% lower level jobs, 57.2% mid-level jobs, 5.1% high level

jobs), and ethnicity (26.4% Asian, 14.8% Caucasian, 15.9% Hawaiian and Pacific Islander, 6.8% Filipino, 0.2% American Indian, 2.0% Portuguese, 0.9% African, 2.6% Hispanic, and 29.1% Multi-ethnic). Of the sample at Time 2, 18.3% were not students; 7.9% were enrolled part-time in school; 1.1% were full-time in vocational school; 9.3% were full-time in a two-year school; 42.7% were full-time in a four-year school; 20.3% did not report school status. At Time 2, 37.7% were not working; 18.5% were working less than half-time; 19.8% were working half-time; 10.6% were working thirty hours per week; 7.3% were working full-time; 6.2% did not report employment status.

Measures

Career preparation dimensions were assessed using measures of career indecision, career confidence, and career planning. Career indecision was assessed using the Career Decision Scale (CDS; Osipow, Carney, & Barak, 1976)), which measures certainty of career choice. Items that are asked in a positive direction are traditionally reverse scored to indicate uncertainty. In their review of career decision-making measures, Kelly and Lee (2005) concluded that “the CDS is unique in reflecting the identity problems that impede career exploration and decision-making (p. 323).” An example item from the CDS is as follows: “I can't make a career choice right now because I don't know what my abilities are.” The CDS is a 16-item measure. Items are rated on a 4-point Likert-type scale and are rated from 1 (not at all like me) to 4 (exactly like me), in which higher scores indicate greater career indecision. Internal consistency has been good (.89; Patton & Creed, 2001)), and test-retest reliability ranged from .82 to .90 for two college samples (Osipow et al., 1976). Construct validity has been established in studies that showed the CDS was correlated positively with vocational identity (Osipow et al.). Career confidence and career planning were assessed using a measure developed for the course of the Skorikov NIH study (Skorikov, 2007a). The career planning subscale assesses the degree to which one has strategies for securing a desired occupation and reaching career goals, and the career confidence subscale assesses the extent to which one is sure that he or she will achieve his or her career goals. The career confidence subscale and career planning subscale items were rated on a 7-point Likert-type scale ranging from “completely agree” to “completely disagree”; higher scores indicate greater career confidence and planning. The career planning scale consisted of five items (e.g., “I have a plan for where I want to be in my career ten years from now”), and the career confidence scale consisted of eight items (e.g., “I feel that my occupational plans may be impossible to accomplish”). Using the same sample, Skorikov (2007b) found that the internal consistency was good (.85 for career planning and .82 for confidence), and construct validity was demonstrated by showing that career confidence and planning were correlated negatively with career indecision and that career planning and career confidence were associated positively with identity achievement and associated negatively with identity diffusion. Each of these three subscales represented three separate composite scores.

Data Management and Analysis

Power analysis—There are never more than 18 measured variables in this study, power calculations were based on Stevens (1996), who suggests 15 cases per measured variable Using the 15 case rule 180 cases were needed in this study. The total sample size for the current study is 454. A post-hoc power analysis was conducted using G*Power 3.0.1 (Faul, 1992–2008). Given that the maximum degrees of freedom were 33, the power to detect an effect size of .30 at $p < .05$ was .97 in a sample of 454.

Missing data—From Time 1 to Time 6, 123 youth dropped out of the study. At Time 6, 35.9% of the sample was male. Males dropped out more than females; however, the ethnic makeup of the sample remained consistent. At Time 8, 383 (84%) of the sample were retained at Time 6 (includes those missing one or more waves of data), and 331 (73%) had

complete data for all time points. Twenty-three percent of participants had missing data for at least one time point. Participants with missing data did not differ on demographic variables (i.e., parents' occupational rank and educational attainment, age, and ethnicity), except that males had more missing data than females did. Therefore, sex was controlled in the initial models tested, predicting the slope and intercept of each dimension of career preparation. However, sex was not a significant predictor in the models tested and, therefore, was not included in the final models.

Data that were missing at random for the independent variables were managed using Full Information Maximum Likelihood (FIML; Muthén & Muthén, 1998–2009). FIML is a powerful tool that creates a pattern matrix showing every pattern of missing data. It calculates the model for every pattern using the data that are available, and it then combines the multiple solutions into a single maximum likelihood solution with robust standard errors. A concern about using missing data is that standard errors may be underestimated. FIML does not impute values for missing data; it estimates the model with those who are missing data using all available data and estimates of standard errors using the observed information matrix.

Analytic procedure—The study's hypotheses were examined using latent growth curve analysis (LGCA) in a structural equation modeling framework with Mplus 5.21 (Muthén & Muthén, 1998–2009). LGCA is a powerful method for longitudinal analysis that reduces error by estimating growth parameters and their effects all at once in one model rather than first estimating the slopes and intercepts for each individual and then using the estimates as predictors in a regression model (Willet & Bub, 2005). Latent growth modeling is especially pertinent to the study's goals given its ability to model change over time and build models that examine associations among intercepts and slopes. For the current study, six observations nested within individuals were observed indicators of two latent constructs, an intercept (the average starting point for the sample) and a slope (the rate of change across the 6 waves). Growth models of developmental change use true time scores as loadings for the latent slope to capture the gradual changes in development. Slope factor loadings were set appropriate for the functional forms of the career preparation dimensions (e.g., 0, 1, 2, 3, 4, 5 for linear, 0, 1, 4, 9, 16, 25 for quadratic).

For the current study, a piecewise growth model was used given the hypothesis (1b) predicting a reduction in career planning, followed by linear growth. Piecewise growth modeling allows for the estimation of “pieces,” or parts of a slope when there appears to be more than one type of change over time or different developmental stages within a period of time and is particularly useful when examining transitions (Chou, Yang, Pentz, & Hser, 2004). For a piecewise growth model, time is specified in “pieces” while each indicator of the intercept remains specified at “1”. For example, a decrease for two time points, followed by an increase for three time points would be specified as “0, 1, 1, 1, 1” for the first “piece” or “slope”, and time would be specified as “0, 0, 1, 2, 3” for the second “piece” or “slope” (Muthén & Muthén, 1998–2009). It is important to note that when piecewise models were tested where one piece contained two time-points, the model could not be identified because a slope, by definition, contains at least three time points of measurement. A commonly used solution is to set the covariance between the intercept and the change from Time 1 to Time 2 to zero (Muthén, 2010). This method was used for the current study because it was not expected that there would be significant variance around the mean in the correlation between the intercept and the change from Time 1 and Time 2 because the change from Time 1 to Time 2 contains the intercept.

Goodness of fit was examined using indices of model fit: chi-square statistic (Satorra & Bentler, 1994), root mean square error of approximation (RMSEA), comparative fit index

(CFI), and Tucker-Lewis Index (TLI). The chi-square tests that the null hypothesis that the model does not fit the data is true, and it should not be significant (Tabachnick & Fidell, 2001). The RMSEA estimates the lack of fit in the model compared to a saturated model (i.e., all possible parameters are freely estimated). An RMSEA < .08 indicates an acceptable fit; good fit is indicated by an RMSEA < .05 (Byrne, 2001).The CFI compares the model fit to the independence model (i.e., the worst fitting model in which all variables are uncorrelated) (Bentler, 1990). For the CFI, values between .90 and .95 reflect acceptable fit, and values greater than .95 reflect good fit (Bentler). The TLI is a relative fit index that compares the hypothesized model to a null model, or the independence model (i.e., there are no relationships between the variables in the model). It is computed by using the ratios of the hypothesized model chi-square, the null model chi-square, and the degrees of freedom (Bollen, 1980). Bollen (1980) showed that the TLI is relatively unaffected by sample size, unlike the chi-square statistic.

Results

Preliminary Analysis

Preliminary analyses were conducted to examine the distribution of the data, the means and standard deviations, and bivariate correlations. The data for each career preparation dimension at each time point were symmetric. Means (see Table 1) indicated that levels of career confidence were moderate overall, but an increasing pattern was seen from Times 1 to 6. Career planning was moderately high overall, with an initial decrease in career planning from Time 1 to Time 2, followed by small, non-significant annual increases (though not significant) at each subsequent observation. The means for career indecision suggested that, in general, career indecision was decreasing over time, however, there was a larger decrease from Time 1 to Time 2 than from Times 2 through 6. Bivariate correlations showed that, as expected, all measurements of each career preparation dimension at each time point were associated.

Functional Forms of the Career Preparation Dimensions

The functional form of each career preparation dimension was first examined. An unconditional means model verified that the intercept was significant for each career preparation dimension. Next, unconditional linear growth models were fit for each dimension. The error term for each observed variable was associated with the previous time point of that variable (e.g., the error of career planning at Time 2 was associated with the error of career planning at Time 1). Residual correlations were specified because it was expected that the error in measurement of career confidence, for example, at one time would be associated with the error in measurement of career confidence one year later.

Career confidence (see Figure 1)—Examination of the means and prototypical plots indicated that career confidence was linear. The unconditional linear growth model was fitted, represented by the following equation: $Y_{ij} = \gamma_{00} + \gamma_{10}$ (Time) + ζ_{1i} (Time) + $\zeta_{0i} + \varepsilon_{ij}$ where y_{00} is the intercept; y_{10} is the slope, which is multiplied by time, and ζ_{1i} and ζ_{0i} represent the “deviations of the growth parameters from their population averages” (Singer & Willett, 2003), p. 62); ε_{ij} represents unexplained variance for an individual's amount of the outcome unexplained at each time point (Singer & Willett). The indicators of the intercept were set to one, and the specification for time for the linear slope was 0, 1, 2, 3, 4, 5, to represent one year between each observation. The linear model fit the data well. The chi-square was not significant (p = .18), and all relative fit indices indicated that the model fit the data well (see Table 2). Career confidence was increasing linearly over time, which supported hypothesis 1a.

Career planning (see Figure 1)—A linear model was fitted for career planning; as expected, it did not fit the data well because the means for career planning at each time point indicated that career planning had a slight decrease from Time 1 to Time 2, followed by a linear increase from Times 2 through 6 (in contrast to hypothesis 1a). Therefore, a piecewise growth model was fitted. The following equation represents this model: $Y_{ij} = \gamma_{00} + \gamma_{10}$ (Time) + γ_{20} (Time) + ζ_{1i} (Time) + ζ_{2i} (Time) + $\zeta_{0i} + \varepsilon_{ij}$ where y_{00} is the intercept; γ_{10} is the "first slope," which is multiplied by time (T1–T2); g_{20} is the second slope, which is multiplied by time (T2–T6), and $\zeta_{1i} + \zeta_{2i} + \zeta_{0i} + \varepsilon_{ij}$ represent unexplained, or residual variance. The indicators for the intercept were set to one, and the time specification for the "first slope" from Time 1 to Time 2 was 0, 1, 1, 1, 1, 1, to construct a change parameter using only Times 1 and 2. It should be noted that the "first slope" (T1–T2) is not technically a slope because it contains two time points. The specification for time for the second slope was 0, 0, 1, 2, 3, 4, to fit a linear slope from Times 2 through 6, ignoring the first time point. The chi-square was nonsignificant ($p = .55$). This model fit the data well (see Table 2) and showed that the change in career planning between Times 1 and 2 was non-significant; however the slope between Times 2 and 6 was significant and increasing linearly. The slope from Time 2 to Time 6 will be herein referred to as the second slope. Overall, career planning showed stability from 12^{th} grade to six months post-high school (in contrast to the hypothesized decrease (1b)), followed by a linear increase (in support of hypothesis 1b).

Career indecision (see Figure 1)—As expected, the unconditional linear growth model for career indecision did not fit the data well because means indicated an initial drop in career indecision from Times 1 to 2, followed by a less steep decrease from Times 2 through 6. A quadratic model was tested; however, this model did not fit the data well either. Therefore, a piecewise model was fitted. Means showed an initial drop in career indecision The following equation represents the functional form of career indecision: $Y_{ij} = \gamma_{00} + \gamma_{10}$ (Time) + γ_{20} (Time) + ζ_{1i} (Time) + ζ_{2i} (Time) + $\zeta_{0i} + \varepsilon_{ij}$ where y_{00} is the intercept; γ_{10} is the "first slope," which is multiplied by time; γ_{20} is the second slope, which is multiplied by time, and $\zeta_{1i} + \zeta_{2i} + \zeta_{0i} + \varepsilon_{ij}$ represent unexplained, or residual variance. The indicators of the intercept were set to one, and the time specification for the "from Time 1 to Time 2" was 0, 1, 1, 1, 1, 1. The time specification for the second slope was 0, 0, 1, 2, 3, 4. The chi-square was nonsignificant ($p = .29$). This model fit the data well (see Table 2) and showed that the career indecision was decreasing more rapidly between Times 1 and 2 than it was between Times 2 and 6. This finding somewhat supports the hypothesis (1c) that career indecision would decrease and then stabilize in that career indecision decreased rapidly from Time 1 to Time 2 and then showed a less steep decline from Times 2 through 6.

Parallel Process Modeling

The current study's main goal was to test a model in which the three career preparation dimension trajectories were associated with each other over time. In other words, all slopes and intercepts were associated. This model could not be identified. In structural equation modeling, a model is unidentified when there are less known parameter values than unknown parameter values. Identification did not occur because the first piece of the career planning and career indecision piecewise models (i.e., career planning from Time 1 to Time 2; career indecision from Time 1 to Time 2) did not allow for identification of the usual slope growth parameters (three or more time points are required to estimate a true slope). In other words, parameters could not be estimated for associations involving the first pieces of career indecision and career planning. The solution was to set the variance of the first piece (from Time 1 to Time 2) growth factor to zero, which did not allow for the first pieces of career indecision and career planning to be associated with other parameters (Muthén, 2010). In order to examine the Time 1 to Time 2 change's association with other parameters in the models, three parallel process models with two career preparation dimensions at a

time (rather than three) were tested. Three separate models were fitted (i.e., career confidence with career planning; career confidence with career indecision; and career planning with career indecision). It is important to note that for each model, an associative model was fit, in which the paths that were not significant in the directional models were correlated. None of these models showed additional significant correlations; therefore, the directional models were retained.

Career confidence and career planning (Model A; see Figure 2)—A model was fitted in which the intercepts and slopes of career confidence and career planning were associated with each other. The chi-square was nonsignificant ($p = .55$), and the model fit the data well (see Table 3). The change in career planning from Time 1 to Time 2 was not associated with the intercepts or slopes in the model and, therefore, is not shown in Figure 2. Results showed that the intercepts of career planning and career confidence were associated positively (higher career planning was associated with higher career confidence). The slope of career confidence was associated positively with the second slope (T2–T6) of career planning, which indicates that increases in career confidence were associated with increases in career planning (T2–T6) and supports hypothesis 2a. The intercepts of career confidence and career planning were associated negatively with their corresponding slopes (second slope only for career planning), which indicates that low levels of career planning and career confidence were associated with more positive growth in career planning and career confidence over time, respectively. The intercept of career planning was associated positively with the slope of career confidence. Therefore, greater career planning at Time 1 was predictive of greater increases in career confidence over time. Model A supported the hypothesis (3a) that initial levels of career planning would predict growth in career confidence.

Career confidence and career indecision (Model B; see Figure 3)—A model was fitted in which the intercepts and slopes of career confidence and career indecision were associated. The chi-square was nonsignificant ($p = .25$), and the model fit the data well (see Table 3). The initial change (T1–T2) in career indecision was not associated with the intercepts or slopes in the model and, therefore, is not shown in Figure 3. Results showed that the intercepts of career indecision and career confidence were associated negatively (i.e., higher indecision was associated with lower confidence). The slope of career confidence was associated negatively with the second slope (T2–T6) of career indecision, which indicated that greater increases in career confidence were associated with greater decreases in career indecision (supported hypothesis 2b). The intercept of career confidence was associated negatively with its slope, and the intercept of career indecision was associated negatively with its slope (T2–T6). This means that high career confidence at Time 1 was associated with smaller increases in career confidence over time, and high initial levels of career indecision were associated with greater declines in career indecision over time. The intercept of career indecision was associated negatively with the slope of career confidence. Therefore, lower levels of career indecision at Time 1 were predictive of greater increases in career confidence. This model supported the current study's hypothesis (3a) that career indecision would predict career confidence.

Career indecision and career planning (Model C; see Figure 4)—Finally, a model was fitted in which the intercepts and slopes of career indecision and career planning were associated with each other. The chi-square was nonsignificant ($p = .079$), and the relative fit indices indicated that the model fit the data well (see Table 3). The intercepts of career indecision and planning were marginally ($p = .06$) associated negatively (i.e., greater indecision was associated with less planning). The second slopes (T2–T6) of career indecision and career planning were associated negatively. This means that greater increases

in career planning were associated with greater decreases in career indecision, which supported hypothesis 2b, Figure 1 for a plot of this relationship).The intercepts of career planning and career indecision were associated negatively with their corresponding second slopes. This indicates that greater career planning at Time 1 was associated with slower increases in career planning from Times 2 through 6, and greater career indecision at Time 1 was associated with greater declines in career indecision from Times 2 through 6. The career planning intercept was associated negatively with the initial change in career indecision (T1–T2), which indicates that high initial levels of career planning were associated with faster declines in career indecision from Time 1 to Time 2. The intercept of career indecision negatively predicted the initial change (T1–T2) in career planning, showing that high initial levels of career indecision were predictive of smaller increases in career planning from Times 1 to 2. Model C partially supported the hypothesis (3b) that career planning and career indecision co-occur, rather than career indecision predicting career planning and vice versa. This can be concluded because the regression of the change from Time 1 to Time 2 on the initial statuses mirrored each other for career planning and career indecision. The initial status of career planning was associated with the second slope of career planning and the change from Time 1 to Time 2 of career indecision. The initial status of career indecision was associated with the second slope of career indecision and the change from Time 1 to Time 2 of career planning.

Discussion

As hypothesized, the results of the current study suggested that the career preparation dimensions are interrelated processes. However, during the transition from high school to employment and/or post-secondary education, the career preparation dimensions did not show similar changes over time.

Overall, results showed that career confidence was increasing linearly over time, which is consistent with Super's (1957) and Savickas' (2005) developmental theories. Young adults are engaging in career exploration prior to career establishment and are gaining confidence in their career choices as they learn how to become adaptable in their career identities (i.e., fit their career expectations within real world constraints). The stability in career planning from 12th grade to six months after high school and linear growth from six months to 4.5 years after high school suggests that career planning is not changing during the actual transition point from high school to work and/or post-secondary education. It may be that youth are not sure of their career paths and not planning, or they have chosen them and have slowed their planning until they assume the paths and gain new experiences in different contexts (e.g., college and work). The latter explanation is in line with Super's notion of the cycles of career development. The time in which career planning is increasing is after youth graduate from high school. It may be that much of the career planning for immediate career plans after high school is done prior to high school graduation, and much of the career planning for one's long-term adult career happens after high school graduation. Therefore, there is a stable period during the last part of high school to six months after high school. Skorikov's (2007b) results using the same sample during 11th grade to six months post-high school showed slight nonsignificant increases in career planning from grades 11 to 12 and a slight drop (nonsignificant) in career planning from 12th grade to six months after high school. In comparison with (and extending) Skorikov's results, the current study suggests that career planning primarily increases during the late teens and early twenties.

The findings of the current study also showed that career indecision was decreasing rapidly during the transition from 12th grade to six months after high school and then decreasing, but less rapidly, from six months after high school to 4.5 years post-high school. This also is in line with Super's (1957) and Savickas' (2005) theories, in that young adults are making

decisions about their careers over time. The initial rapid decrease is most likely due to youth facing pressure to make initial decisions about their careers before graduating high school (e.g., whether they will go to college, initial college majors, and initial employment). This conclusion is supported by and expands Skorikov's (2007b) findings with the same sample during 11th and 12th grades (data collected every six months). Skorikov found evidence to suggest that career indecision was decreasing more quickly from the fall of 12th grade to six months post-high school than it was from spring of 11th grade to fall of 12th grade. Youth quickly decide on their careers from 12th grade to six months post-high school but then may enter a period of time when their growth in decidedness slows because they have not entered their adult careers yet.

In summary, young adults are simultaneously making career decisions, developing career plans, and becoming more confident in their career decisions. The results of the current study support the increasing nature of career confidence and career planning and the decreasing nature of career indecision as youth make the transition into college or work.

The associations found among the intercepts and slopes of the career preparation dimensions support the theory of career construction (Savickas, 2005). Overall, the intercepts and slopes, respectively, of career planning and confidence were associated positively with one another, and the intercept and slope of career indecision were associated negatively with the respective intercepts and slopes of career planning and confidence. There was some variability in the associations between the slopes in that the changes in career indecision and planning from Time 1 to Time 2 were not associated with any of the other slopes, and this may be because the initial changes in career planning and career indecision from 12th grade to six months post-high school do not affect changes in career planning and career indecision after six months post-high school. During the last year of high school youth are required to plan for and make decisions about their careers because they are developmentally moving from a compulsory educational setting to optional education and/or employment. The associations found among the second slopes (T2–T6) of career indecision and planning and the slope (T1–T6) of career confidence support study hypotheses and extant literature that has found cross-sectional and short-term longitudinal associations among two or more of the career preparation dimensions (Creed et al., 2006; Hirschi & Läge, 2008; Skorikov, 2007b). These findings also support theory which asserts that the career preparation dimensions are interrelated processes over time (Savickas).

The use of the identity process literature to make predictions about the directional effects of career preparation dimensions was warranted. Luyckx, Goossens, Soenens, et al. (2006) found that initial levels of commitment making and exploration in depth were associated negatively with the slope of identification with commitment in the student domain. This result can be explained by the fact that the participants in the (Luyckx, Goossens, Soenens, et al.) study were leaving their student roles and, therefore, were most likely identifying less with being students. However, what was taken from the (Luyckx, Goossens, Soenens, et al.) study to inform the current research was that their results suggested that initial decisions and plans were predictive of confidence in career decisions. Results of the current study supported the findings of Luyckx, Goossens, Soenens, et al. (2006) by not only demonstrating that career confidence (which is similar to identification with commitment) was associated with changes in the career planning (similar to exploration in depth) and career indecision (similar to commitment making), but also that career confidence is a result of career planning and career decision-making. More specifically, initial levels of career planning and career indecision in the 12th grade predicted growth in career confidence from 12th grade to six months post-high school. Career confidence, however, was not a predictor of career planning or career indecision, and the intercepts of career planning and career indecision showed the same associations with each other's growth from Time 1 to Time 2

but no association with the Time 2 through 6 slopes. These results suggest that in order to increase career confidence, it is first necessary to increase career planning and decrease career indecision and that career planning and career indecision are simultaneous processes in time. Furthermore, career planning and decision-making appear to have a bidirectional relationship.

Limitations and Future Directions

The current study had some limitations which included the exclusion of those who did not graduate from high school (i.e., those who dropped out of high school), the representativeness of the sample, sample size, and the limitation of the analytic technique used to examine the three dimensions of career preparation. The current study did not include high school dropouts, which limits the representativeness of the sample in reflecting the population of youth who are ages 17–23. However, the current study does represent a diverse group of youth who graduated from high school in Hawaii. Although this sample is very diverse, it is not representative of the African American or Latino populations, which are a large part of the American population. With that said, this study did include many Asian Americans, which are often understudied in American career development literature.

Sample size was a limitation of the current study because there were not enough youth in the sample in order to pick out distinct education and employment pathways over the course of 4.5 years post-high school. Youth take many different career pathways after high school. They often combine school and work for some periods of time, and then only go to school or only work for other periods of time (Skorikov & Uratani, 2008). This makes it difficult to assess distinct educational and employment pathways, which may have an effect on the development of career preparation. For example, youth who transition in and out of school and from job to job do not have a lot of direction in terms of what career they would like to pursue (Mortimer et al., 2002).These youth may show different developmental trajectories of career indecision, planning, and confidence, and therefore, different associations among the trajectories over time. It will be important for future research to examine the impact of work and school decisions on the development of and associations among career preparation dimensions.

The analytic technique used in the current study did not allow the authors to test all three career preparation dimensions in the same model, which did not allow for the examination of the effect of one dimension on another dimension, controlling for a third dimension (e.g., career indecision on planning, controlling for career confidence). This occurred because the model would not identify without setting the variance of the change in career planning and career indecision from Time 1 to Time 2 to zero (a current limitation of the Mplus program; (Muthén, 2010). Setting the variance of the change from Time 1 to Time 2 to zero meant that the change from Time 1 to Time 2 could not covary with any of the other parameters in the model. Therefore, three models were tested examining two dimensions simultaneously (career indecision and career planning; career planning and career confidence, and career indecision and career confidence). Using this method, we were able test associations with the change in career indecision and career planning from Time 1 to Time 2. And, it was found that the change from Time 1 to Time 2 of these dimensions was predicted by their counterpart's intercept (i.e., the career indecision intercept predicted the change from Time 1 to Time 2 of career planning and the career planning intercept predicted the change from Time 1 to Time 2 in career indecision). It will be important for other techniques using alternative programs to be examined in order to identify whether it is possible to test these associations in a model that contains all three dimensions of career preparation.

Despite its limitations, the current study contributed to extant literature by using a diverse sample that included individuals whose ethnicities were Hawaiian, multi-ethnic, or Asian,

who took diverse educational and employment pathways. LGCA was used, which reduced error that is made when using regression and repeated measures techniques. The current findings contribute to our understanding of developmental processes underlying youths' preparation for adult occupational careers and suggest that although these processes are related, they are not following the same developmental trajectory. However, findings do indicate that young adults are becoming more committed to their career choices over time, which suggests that young adults are doing career identity work and most likely approaching their career development with an information-oriented approach that is common in youth of this age (Arnett, 2000). However, one study suggests that as young adults settle into their careers and become solely working adults (average age 29 years), they lose their information-oriented approach (i.e., high commitment-making, identification with commitment, and exploration in depth) and become more foreclosed (i.e., moderate commitment-making and identification with commitment and low exploration in depth) (Luyckx, Duriez, Klimstra, & De Witte, 2010), therefore, indicating that career decidedness, planning, and confidence may stabilize or show decreases as youth leave college and become more established in their adult careers. Future research should examine whether career decision-making, planning, and confidence show patterns similar to commitment-making, identification with commitment, and exploration in depth in samples of adults in the establishment stage of their careers. In addition, the current study adds to career construction theory (Savickas, 2005) by elaborating how the dimensions of career adaptability interact over time. It also will be important for future work to assess the contribution of the development of career planning, decision-making, and confidence to important outcomes, such as job satisfaction and life adjustment.

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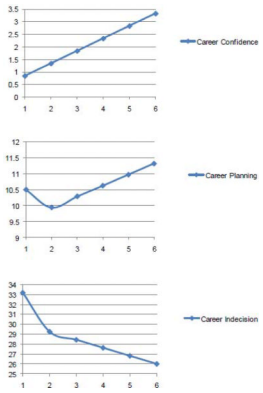

Figure 1.
Unconditional growth models

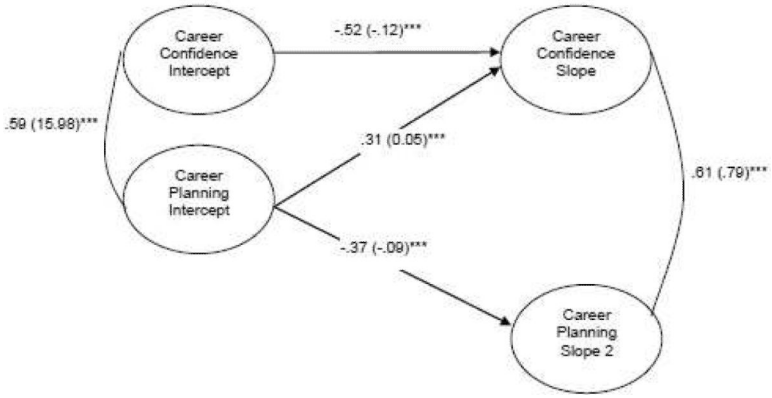

Figure 2.
Standardized (unstandardized) estimates for Model A
*$p < .05$, **$p < .01$, ***$p < .001$.

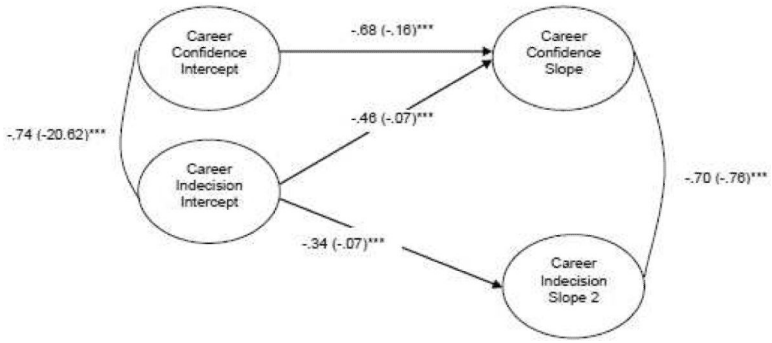

Figure 3.
Standardized (unstandardized) estimates for Model B
*$p < .05$, **$p < .01$, ***$p < .001$.

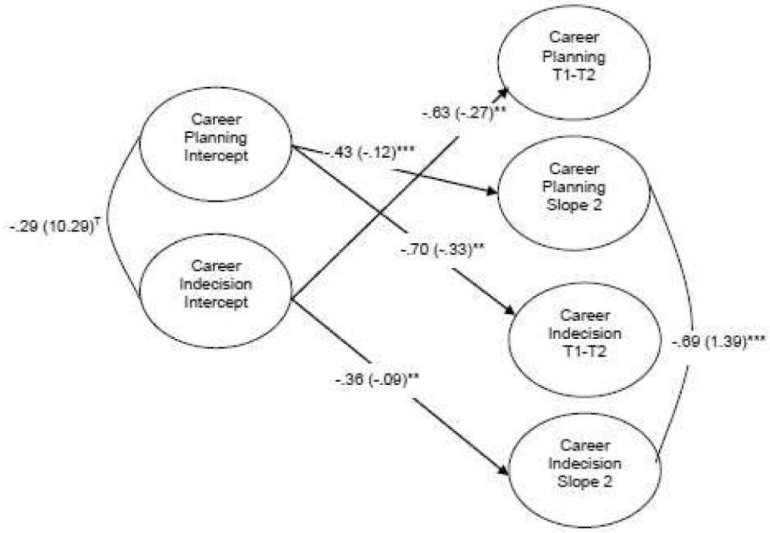

Figure 4.
Standardized (unstandardized) estimates for Model C.
†$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 1

Means and Standard Deviations

Variable	Mean (*SD*)	Min	Max
Career Indecision (T1)	33.18 (8.71)	16.00	59.00
Career Indecision (T2)[a]	29.13 (8.50)	16.00	56.00
Career Indecision (T3)[a]	28.60 (8.50)	16.00	53.00
Career Indecision (T4)[ab]	27.71 (8.57)	16.00	59.00
Career Indecision (T5)[abcd]	26.38 (8.22)	16.00	53.00
Career Indecision (T6)[abcd]	25.95 (8.04)	16.00	55.00
Career Planning (T1)	10.49 (8.22)	−11.00	24.00
Career Planning (T2)	9.90 (8.40)	−15.00	24.00
Career Planning (T3)	10.33 (8.63)	−21.00	24.00
Career Planning (T4)	10.61 (8.28)	−13.00	24.00
Career Planning (T5)	10.97 (8.50)	−17.00	24.00
Career Planning (T6)[b]	11.41 (8.32)	−16.00	24.00
Career Confidence (T1)	0.75 (5.79)	−15.00	15.00
Career Confidence (T2)[a]	1.58 (6.38)	−15.00	15.00
Career Confidence (T3)[a]	1.68 (6.28)	−15.00	15.00
Career Confidence (T4)[a]	2.22 (6.24)	−14.00	15.00
Career Confidence (T5)[abc]	3.08 (6.21)	−13.00	15.00
Career Confidence (T6)[abc]	3.20 (6.21)	−12.00	15.00

[a] a significantly different from T1 of variable

[b] significantly different from T2 of variable

[c] significantly different from T3 of variable

[d] significantly different from T4 of variable

[e] significantly different from T5 of variable.

[f] All significance values are $p < .01$ using one sample t-tests.

Table 2

Career Preparation Unconditional Growth Models (Unstandardized)

	Param.	Confidence	Planning	Indecision
Fixed Effects				
Initial Status	γ00	0.832*** (0.255)	10.503*** (0.386)	33.180*** (0.409)
Rate of Change	γ10	0.500*** (0.066)	−0.561 (0.338)	−3.920*** (0.362)
Rate of Change	γ20		0.334** (0.113)	−0.811*** (0.106)
Goodness of Fit				
x^2		14.968	6.884	9.710
Df		11	8	8
CFI		0.996	1.000	0.999
TLI		0.994	1.000	0.997
RMSEA		0.028	0.000	0.022

* $p < .05$

** $p < .01$

*** $p < .001$.

Table 3

Fit Statistics for Parallel Process Models

Fit Index	Model A	Model B	Model C
x^2 (df)	33.229 (33)	39.204 (33)	41.48 (29)
CFI	1.000	0.998	0.996
TLI	1.000	0.996	0.990
RMSEA	0.000	0.018	0.031