CAREER INDECISION LEVELS OF STUDENTS ENROLLED IN A COLLEGE OF AGRICULTURE AND LIFE SCIENCES

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Abstract

The purpose of this study was to determine the level of career indecision of students enrolled in the College of Agriculture and Life Sciences at Iowa State University. A primary goal of this research was to explore the construct of career indecision using the three factor structure identified by Kelly and Lee (2002). The factors of interest in this study included: Identity Diffusion, Positive Choice Conflict, and Tentative Decision. A MANOVA indicated significant main effects for grade level for Tentative Decision. A significant interaction was also observed between gender and grade level for Positive Choice Conflict. Overall, students in this study indicated moderate levels of career indecision across the three factors. Given the levels of career indecision observed in this study, a need may exist to emphasize the integration of various career development activities across courses offered in the college. Implications for future research are discussed.

Introduction

There is no question that the nature of work and the task of finding the right job are becoming more complex (Scofield, 1994). Ever-evolving technology, changes in the job market, and the transition to a global economy are some of the primary reasons of the increasing complexity of making career decisions (Smith & Gast, 1998). Also, with the growing rate of change in the world of work comes an increase in the number of career transitions individuals make during their lifetime (Gati, Krausz, & Osipow, 1996). Clearly, the quality of the career decisions made during these transitions is significant for both the individual and society.

In addition to the issues related to making a career transition in a constantly changing workforce, the number and variety of career opportunities available to most individuals are now much larger and broader than those existing 100 years ago (Sharf, 2002). However, this expanded choice of options is a challenge, even a burden for most people. Frequently, the occupation individuals choose has significant long-range implications on their lifestyle, the friends with whom they socialize, the avocational activities in which they engage, and hence their quality of life (Gati & Asher, 2001). Therefore, it is no wonder that many individuals may experience considerable anxiety when making career-related decisions.

It is widely known that a large proportion of students in higher education institutions are enrolled to improve their career prospects (Herr, Cramer, & Niles, 2004). At the same time, many colleges and universities have also become more focused on helping facilitate students' career development. For example, the assistance to students making career plans in higher education has moved from an informal process between a professor and his or her advisees to a more comprehensive and professional process (Herr et al.). Another commonly used career intervention are career courses which have been found to result in more positive career planning thoughts and increased career decidedness, vocational identity, internal locus-of-control, and career maturity (Folsom, Reardon, & Lee, 2001). Reasons for the increased need of career development services appear to be multifaceted (Reese & Miller, 2006). On

the surface, students appear to be entering school undecided on a major (ACT, 2002), and at least half of all students who decide on a major change their mind at some point in their academic career (Tinto, 1993). Yet, despite this renewed interest being placed on career development, for some students, making a career decision is quite a cumbersome task (Lancaster, Rudolph, Perkins, & Patten, 1999). In fact, not only do many individuals lack the essential elements necessary to make the right career decision, higher education is replete with students who have career problems (Herr et al.).

Conceptual Framework

The term "career decision-making" has become prevalent in recent years (Gati & Asher, 2001). Career decision-making is the process by which individuals make career and educational decisions (Swanson & D'Achiardi, 2005). Career decision-making examines how people make decisions (decision-making style) as well as an individual's beliefs that he/she can successfully accomplish behaviors that will lead to desired outcomes (decision-making self-efficacy). However, a third area, career indecision, has been a major focus of vocational research over the last few decades (Guay, Senecal, Gauthier, & Fernet, 2003; Osipow, 1999). Career indecision has been used to refer to the problems individuals may have in making their career decision (Slaney, 1988) as well as the precursors that may influence or impede career choice (Swanson & D'Achiardi).

There have been several measures of career decision-making developed to help psychologists and researchers better understand career indecision (Hackett & Watkins, 1995). However, the Career Decision Scale (CDS) (Osipow, 1987) is not only the oldest of the decision scales, but it is also the most widely used and has stimulated a large body of research (Osipow, 1991). The CDS is designed to identify barriers that prevent individuals from making career decisions (Osipow & Fitzgerald, 1996). It is based on the rationale that a finite number of relatively discrete circumstances are responsible for problems people have in reaching appropriate closure in implementing career decisions.

Although the CDS has been used for years, the factor structure of the CDS has been the subject of debate. In particular, some researchers have questioned whether or not the CDS should be considered a multidimensional or a unidimensional measure of career indecision. For example, Shimizu, Vondracek, and Schulenberg (1994) and Shimizu, Vondracek, Schulenberg, and Hostetler (1988) conducted factor analyses and confirmed a four-factor solution of the CDS which included: Indecision, Decidedness, Approach-Approach Conflict, and Barriers. Yet, Martin and colleagues (Laplante, Coallier, Sabourin, & Martin, 1994; Martin, Sabourin, Laplante & Coallier, 1991) contend that the CDS is unidimensional and that the use of four subscales is not appropriate.

Adding to this debate more recently were Kelly and Lee (2002), who investigated the factor structure of several assessment instruments that measured the construct of career indecision including the CDS, Career Factors Inventory, and Career Decision Making Difficulties Questionnaire. Their purpose was to clarify the different domains of career indecision as well as to identify the internal structure of career indecision. Seven unique factors emerged from their analysis. However, in particular, the researchers discovered that the CDS was comprised of three factors: Identity Diffusion, which is the inability to adequately crystallize one's career relevant characteristics or to see how one's personal characteristics can be implemented in careers; Positive Choice Conflict, which represents the indecision of choosing one career from a number of attractive alternatives; and Tentative Decision, which indicates that a career decision has been made and that there are questions about how to implement the decision.

Historically, research on career indecision has focused on the differences between decided and undecided students in order to understand factors that might explain a student's inability to choose a major or occupation (Callanan & Greenhaus,

1992). However, several studies indicate that this dichotomous grouping of "decided-undecided" is too simplistic and leaves out other areas of concern (Brooks, 1984; Fuqua & Hartman, 1983).

To date, only one study has investigated the construct of career indecision in agricultural education. Kotrlik (1990) sought to determine the career indecision level of senior agriscience students and to investigate factors related to career indecision. In his study, Kotrlik used the CDS as a unidimensional measure. Results of this study indicated that the CDS scores were 'fairly high' when compared with data from other high school seniors in the CDS manual. Kotrlik also found that the CDS score had low to moderate correlations with 11 variables (e.g., age, high school grade point average, race, gender, father's education level, and FFA membership). In addition, six of 11 variables were found to explain 24% of the variance in the CDS score.

Due to the lack of research on career indecision in agricultural education, a primary goal of this study was to move beyond a general description of career indecision. Specifically, this study represents an exploratory approach to identify the level of career indecision of students enrolled in the College of Agriculture and Life Sciences at Iowa State University using the most recent factor solution of the CDS developed by Kelly and Lee (2002).

Purpose/Objectives

The purpose of this descriptive exploratory study was to determine the level of career indecision of students enrolled in the College of Agriculture and Life Sciences at Iowa State University. The following objectives guided this study:

1. Describe the demographic characteristics of students.
2. Describe the level of career indecision of students.
3. Describe the differences in the level of career indecision of students.

Methods/Procedures

The target population for this study consisted of all freshmen and seniors (N = 1,284) enrolled in the College of Agriculture and Life Sciences at Iowa State University. A purposive sample of freshmen students enrolled in freshmen orientation courses and seniors enrolled in senior capstone/seminar courses from eight of 15 academic departments of the college were used in the study. Students were selected from these two grade levels because of the researcher's interest in understanding developmental differences among undergraduate students. Hence, selected departments were targeted from those that offered either a freshmen orientation and/or senior capstone courses. Further, because the college of agriculture in the study had recently expanded to include disciplines non-traditional to the field of agriculture (e.g., biochemistry, biophysics, and molecular biology, genetics, development and cell biology), the researcher chose to survey students in departments that are common to most colleges of agriculture (e.g., animal science, horticulture, etc.). The final sample (n = 310) consisted of freshmen (n = 130) and senior (n = 180) students from the following departments: agricultural education, agricultural biosystems engineering, agricultural economics, agronomy, animal science, entomology, horticulture, and natural resources, ecology, & management. Because of sampling methods used in this study, results are not generalizable to any larger population.

The instrument used to collect data for the study consisted of the CDS (Osipow, 1987) and items requesting demographic information such as grade point average, race, home residence, and academic department currently enrolled. The CDS is a widely used instrument to assess career indecision. The instrument contains 19 items, two that measure career certainty and 16 measuring career indecision and one free response item which allows respondents to list other barriers not reported in the scale items. Responses are recorded on a 4-point Likert-type scale ranging from 1 = "not at all like me" to 4 = "exactly like me." Scores on the Certainty Scale can range from 2 to 8

with higher scores indicating greater certainty. Scores on the Indecision Scale can range from 16 to 64 with higher scores indicating greater indecision. Osipow, Carney, Winer, Yanico, and Koschier (1976) reported test-retest reliabilities of .90 and .82 for the Indecision Scale using two separate samples of college students. The Career Decision Scale has also been employed in a large number of studies which have examined its validity and have found it to be a valid instrument (Osipow, 1987). There is also a substantial body of evidence supporting its reliability and validity (Slaney, 1988; Hackett & Watkins, 1995).

It is widely accepted that career indecision is a complex, multidimensional construct (Hartman, Fuqua, & Jenkins, 1986). For this reason, this study was focused on interpreting the results using the three factor solution identified by Kelly and Lee (2002). The first factor, Identity Diffusion, is composed of six of the original CDS items and is defined as the inability to adequately crystallize one's career relevant characteristics or to see how one's personal characteristics can be implemented in careers. The second factor, Positive Choice Conflict, is composed of two items and represents the indecision of choosing one career from a number of attractive alternatives. The third factor, Tentative Decision, is composed of three items and indicates that a career decision has been made and that there are questions on how to implement the decision. Scores using the three factor solution can range from 6 to 24 on Identity Diffusion, 2 to 8 on Positive Choice Conflict, and 3 to 12 on Tentative Decision with higher scores indicating greater indecision on each factor. Kelly and Lee reported internal consistency reliabilities of .82 (Identity Diffusion), .57 (Positive Choice Conflict), and .63 (Tentative Decision). For this study, post-hoc reliability analysis produced internal consistency reliabilities of .82 (freshmen) and .83 (seniors) for Identity Diffusion; .50 (freshmen) and .70 (seniors) for Positive Choice Conflict; and .60 (freshmen) and .70 (seniors) for Tentative Decision. There are limitations when considering the low internal consistency found among freshmen for the Positive Choice Conflict and Tentative Decision factors. Similarly, Kelly and Lee reported internal consistency reliabilities of .57 for Positive Choice Conflict and .63 for Tentative Decision. Kelly and Lee noted that the internal consistency for Positive Choice Conflict was probably due to the fact that this factor only consisted of two items. However, due to the exploratory nature of this study along with the recently developed factor solution, reliabilities of .50 or .60 may be acceptable (Nunnally, 1978).

Data were coded and analyzed using the Statistical Package for the Social Sciences version 16.0. Descriptive statistics including frequencies, percentages, means, and standard deviations were used to address objectives one and two. In order to address objective three, a factorial multivariate analysis of variance (MANOVA) was used to describe differences in the level of career indecision by gender and grade level. The use of inferential statistics was based on the assumption that students included in this study were a time and place sample, representative of past, present, and future undergraduate students of similar characteristics entering a college of agriculture (Oliver & Hinkle, 1981). Effect sizes (partial eta squared) were interpreted using Cohen's (1988) criteria.

Results/Findings

Objective 1: Describe the demographic characteristics of students.

Fifty-seven percent of the students in the study were seniors while 43% were freshmen. The majority of students (64%) were male. A majority (97%) of the students were Caucasian. The majority of the students (57%) grew up on a farm or in a rural community, while 27% were from towns or cities with populations of 10,000 or more people. Over half (51%) of the senior students indicated that they had a grade point average of 3.00 or higher (on a 4 point scale) while 35% reported a grade point average between 2.00 – 2.99. Because data for this study were collected during the fall semester, freshmen students had not yet established grade point averages. Students represented each of the eight academic departments. Eighteen percent of the

students in the study were enrolled in the departments of agricultural economics and natural resource, ecology, and management followed by agricultural biosystems engineering and animal science with 15%. Fourteen percent of the students were enrolled in the department of horticulture, and 10% of the students indicated that their majors were in the departments of agricultural education and agronomy.

Objective 2: Describe the level of career indecision of students.

The second objective was to describe the level of career indecision of students in the college of agriculture. Table 1 summarizes the results of the level of career indecision for males and females as well as for freshmen and senior students. Overall, males (M = 10.01, SD = 3.65) scored higher than females (M = 9.77, SD = 3.49) on the Identity Diffusion factor indicating a slightly higher level of indecision on this factor. Results also indicated that freshmen (M = 10.43, SD = 3.77) scored higher than seniors (M = 9.56, SD = 3.42) on Identity Diffusion.

Further, results show that females (M = 4.81, SD = 1.85) scored slightly higher than males (M = 4.77, SD = 1.56) on Positive Choice Conflict. Similarly, across grade level, freshmen (M = 4.80, SD = 1.52) scored slightly higher than seniors on this factor (M = 4.77, SD = 1.78). Finally, similar patterns were identified for males (M = 5.43, SD = 2.05) and females (M = 5.45, SD = 2.05) in their scores on Tentative Decision. However, Tentative Decision scores across grade level yielded more interesting results. As shown in Table 1, freshmen (M = 6.06, SD = 2.06) scored much higher than seniors (M = 4.99, SD = 1.92) on the Tentative Decision factor.

Table 1
Means and Standard Deviations for Identity Diffusion, Positive Choice Conflict, and Tentative Decision Factors (n = 310)

Identity Diffusion

	Freshmen			Senior			Total		
Gender	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Male	93	10.56	3.83	107	9.53	3.42	200	10.01	3.65
Female	37	10.11	3.61	73	9.60	3.45	110	9.77	3.49
Total	130	10.43	3.77	180	9.56	3.42	310	9.93	3.59

Positive Choice Conflict

	Freshmen			Senior			Total		
Gender	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Male	93	4.60	1.41	107	4.92	1.68	200	4.77	1.56
Female	37	5.30	1.68	73	4.56	1.90	110	4.81	1.85
Total	130	4.80	1.52	180	4.77	1.78	310	4.78	1.67

Tentative Decision

	Freshmen			Senior			Total		
Gender	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Male	93	5.90	2.11	107	5.02	1.92	200	5.43	2.05
Female	37	6.46	1.91	73	4.95	1.94	110	5.45	2.05
Total	130	6.06	2.06	180	4.99	1.92	310	5.44	2.05

Note. Scores on the Indecision Scale using Kelly and Lee's (2002) three factor solution can range from 6 to 24 on Identify Diffusion, 2 to 8 on Positive Choice Conflict, and 3 to 12 on Tentative decision with higher scores indicating greater indecision on each factor. Scale: 1 = Not At All Like Me; 2 = Only Slightly Like Me; 3 = Very Much Like Me; 4 = Exactly Like Me.

Table 2 presents correlations among gender, grade level, Identity Diffusion, Positive Choice Conflict, and Tentative Decision for the sample. The following scale was used to describe the strength of the relationships: .01-.09 = negligible; .10-.29 = low; .30-.49 = moderate; .50-.69 = substantial; and .70 or higher = very strong (Davis, 1971). Relationships between gender, grade level, Identity Diffusion, Positive Choice Conflict, and Tentative Decision ranged from negligible positive to substantial positive.

Table 2
Intercorrelations Among Career Indecision Factors, Gender, and Grade Level (n = 310)

Variables	1	2	3	4
1. Gender	--			
2. Grade level	.12	--		
3. Identity Diffusion	-.03	-.12*	--	
4. Positive Choice Conflict	.01	-.02	.34**	--
5. Tentative Decision	.01	-.26**	.62**	.29**

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

Objective 3: Describe the differences in the level of career indecision of students.

To determine the effect of gender and grade level on the three factors of the Career Decision Scale, a factorial multivariate analysis of variance (MANOVA) was performed. The dependent variables were Identity Diffusion, Positive Choice Conflict, and Tentative Decision, and the independent variables were gender (two levels: male and female) and grade level (two levels: freshmen and seniors). All eta-squared ($\square^2$) results that are reported use the partial eta-squared formula (SSeffect/(SSeffect + SSerror)). Tabachnik and Fidell (1989) suggested that partial $\square^2$ is an appropriate alternate computation of $\square^2$.)

Significant multivariate results were identified for the main effects of grade level $F(3, 304) = 8.852$, $p < .001$, $\square^2 = .08$ (Table 3). There was also a significant multivariate interaction effect of gender and grade level $F(3, 304) = 4.028$, $p < .05$, $\square^2 = .04$. Nonsignificant main effects were observed for gender. None of the partial $\square^2$ values for the MANOVA analyses approached Cohen's criteria for small effect size ($d = .20$). At the univariate level, significant main effects for grade level were observed for Tentative Decision, $F(1, 306) = 24.103$, $p < .001$, $\square^2 = .07$ (Table 4). Results indicated that freshmen ($M = 6.06$, $SD = 2.60$) scored significantly higher than seniors ($M = 4.99$, $SD = 1.92$; $t = 4.644$, $p < .001$) indicating greater indecision on this factor. Furthermore, there was a significant univariate interaction effect of gender and grade level for Positive Choice Conflict, $F(3, 306) = 6.578$, $p < .05$, $\square^2 = .02$. None of the partial $\square^2$ values for the MANOVA analyses approached Cohen's criteria for small effect size ($d = .20$). This finding indicates that the effect of gender on the level of career indecision (i.e., Positive Choice Conflict) differs depending upon the student's grade level. Results show that freshman females ($M = 5.30$, $SD = 1.68$; $t = -2.496$, $p < .05$) scored significantly higher than freshman males ($M = 4.60$, $SD = 1.41$) on the Positive Choice Conflict factor. In addition, senior males ($M = 4.92$, $SD = 1.68$) scored higher than senior females ($M = 4.56$, $SD = 1.90$), however, this difference was not significant ($t = 1.381$, $p > .05$).

Table 3
Summary Data of MANOVA Results for Gender, Grade Level, and Gender x Grade Level Interaction (n = 310)

Variables	*df*	*Wilk's Lambda*	*F*	*Partial Eta*^{2}
Gender	3	.989	1.148	.011
Grade level	3	.920	8.852**	.080
Gender x Grade level	3	.962	4.028*	.038

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

Table 4
Summary Data of Univariate Results for Grade Level and Gender x Grade Level Interaction (n = 310)

Independent Variables	Dependent Variable	*df*	*MS*	*F*	*Partial Eta*^{2}
Grade level	Tentative Decision	1	94.604	24.103**	.073
Gender x Grade level	Positive Choice Conflict	1	18.105	6.578*	.021

Note. There were no significant univariate main effects for gender across any of the Career Decision factors; *$p < .05$ ** $p < .001$

Conclusions and Discussion

Undergraduate students in this study were a traditional group of agriculture students with more than half of the senior students having above average grade point averages. Additionally, students were in a variety of majors representing departments found in most colleges of agriculture.

Both males and females indicated a moderate level of career indecision on the Identity Diffusion factor. Similar observations were also true for freshmen and senior undergraduate students. Kelly and Lee (2002) defined Identity Diffusion as the inability to adequately crystallize one's career relevant characteristics or to see how one's personal characteristics can be implemented in careers. Identity Diffusion involves a problem in the implementation of a career decision occurring prior to the career decision-making process. Based on student scores on this factor, their level of indecision indicates that students may be experiencing uncertainty about their career direction or may even reflect problems or delays in identity development (Kelly & Lee).

For the Positive Choice Conflict factor, females indicated slightly higher scores than males, while similar results were found across grade level, with freshman scoring slightly higher than seniors. Overall, scores obtained on this factor indicate that students experience a relatively greater degree of career indecision. Positive Choice Conflict represents the indecision of choosing one career from a number of attractive alternatives (Kelly & Lee, 2002). It is widely known that hundreds of career opportunities exist for students to pursue in the agricultural sciences. Hence, scores on this factor could be an indication that the level of career indecision students are experiencing may be a result of the number of opportunities available in agriculture, thus making it more difficult to choose a specific career path.

Tentative Decision indicates that a career decision has been made and that there are questions on how to implement the decision (Kelly & Lee, 2002). Females in this study indicated slightly higher indecision scores than males on this factor. Interestingly, when scores on this factor were compared across grade level, freshmen scored much higher than seniors. Scores on

this factor seem to indicate that freshmen, and to a lesser extent males, have questions on how to implement the decisions they have made regarding a career. Although Tentative Decision does not describe a specific career decision problem (Kelly & Lee), it does indicate a difficulty occurring at the endpoint of the career decision-making process.

Finally, significant main effects for grade level as well as interaction effects of gender and grade level were observed. For the Tentative Decision factor, freshmen scored significantly higher than seniors indicating a higher level of indecision on this factor. A significant interaction was also observed between gender and grade level for Positive Choice Conflict. Findings indicated that freshmen females scored significantly higher than freshman males on positive choice conflict. Additionally, senior males scored higher than senior females although these scores were not significantly different. Overall, students in this study indicated moderate levels of career indecision representing career decision problems across all three factors of the CDS.

Recommendations and Implications

Given that students indicated moderate to high levels of career indecision, a need may exist to emphasize the integration of various career development activities across courses offered in the College of Agriculture and Life Sciences at Iowa State. This idea is especially important considering that students indicated career problems such as the inability to see how their personal characteristics can be utilized in career decision-making as well as their inability to choose a career from a number of attractive alternatives. For example, offering more intensive career exploration experiences will allow students to learn about themselves and the world of work, and enable them to make some initial decisions about education and career direction (such as entering the labor force versus pursuing further education) (Swanson & D'Achiardi, 2005). Additional career interventions could also include infusing academic subject matter systematically with information pertinent to career development as well as providing courses for academic credit that focus on career development (Herr, 1989). Hardesty (1991) noted that career interventions such as career courses have also been found to be effective in increasing career decidedness (i.e., lower career indecision) among undergraduate students. Additionally, Hughes and Karp (2004) and Reese and Miller (2006) concluded that students benefit both vocationally and academically from participation in career courses with increased gains in knowledge of careers as well as their ability to make career-related decisions.

Students indicated career indecision resulted from having questions on how to implement this decision. This finding is particularly noteworthy, because this may suggest that students are not seeking the assistance of their academic advisors, specialists in their field of study, or more importantly, career guidance. Also, the finding that students in this study indicated moderate levels of career indecision could have implications for improved instructional approaches at the high school level. Because career indecision is an issue for high school students (Patton & Creed, 2001), it may be useful for agriculture teachers to integrate lessons on career decision-making into their curricula. For example, Savickas (1990) found that high school students who took a career decision-making course had less career-related indecision at the end of the course than did a comparison group of students who were not enrolled in a career course.

As with most research, the findings of this study suggest some areas to consider for future research. For example, because of the low internal consistency for Positive Choice Conflict, future research should identify additional items that can more reliably measure this factor. Also, future research should examine the level of career indecision using the Kelly and Lee (2002) factor solution with students from a more ethnically diverse population and across other grade levels.

In summary, because career indecision is a pervasive problem (Kelly & Lee, 2002), increased effort should be put forth providing students with opportunities to: 1)

increase career self-awareness, 2) develop decision-making skills, 3) acquire knowledge of current and emerging occupational options, and 4) develop job search skills (Griff, 1987). Doing so will better enable students to deal effectively with issues such as career indecision that negatively impact their career development.

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