

INFLUENCE OF CAREER EXPLORATION PROCESS BEHAVIORS ON AGRICULTURE STUDENTS' LEVEL OF CAREER CERTAINTY

Levon T. Esters, Assistant Professor
Iowa State University

Abstract

The purpose of this study was to determine the extent to which career exploration process behaviors influence the level of career certainty of agriculture students. Data were gathered from 181 freshmen and 131 senior students enrolled in the College of Agriculture and Life Sciences at Iowa State University. Career certainty was assessed using items from the Career Decision Scale (Osipow, 1987). Career exploration was assessed using selected career exploration process behavior scales from the Career Exploration Survey (Stumpf, Colarelli, & Hartmann, 1983). Findings indicated that students were relatively certain in having made a decision about a career but only moderately engaged in various career exploratory process behaviors. Stepwise regression analysis revealed that two career exploration process behaviors explained 35% of the variance in the level of career certainty for freshmen, whereas one career exploration process behavior explained 40% of the variance in the level of career certainty for seniors. Thus, to increase students' level of career certainty, a major focus should be on the extent of career exploration involving self-assessment and retrospection (i.e., Self-Exploration) as well as occupational preferences (i.e., Focus). Implications and recommendations for future research are discussed.

Introduction/Conceptual Framework

Career exploration is a major construct in career development (London & Stumpf, 1982) and plays a central role in most career-choice and development theories (Gore, Bobek, Robbins, & Shayne, 2006). Career exploration refers to all of the activities that individuals engage in for the purpose of promoting career development, choice, or adjustment. The purpose of career exploration is to collect and analyze career-related information in order to enhance an individual's career management process. Participation in exploratory activities promotes an understanding of self and the environment that enables people to develop realistic career goals and plans (Sugalski & Greenhaus, 1986). Although exploration occurs at all ages and stages of development, it is considered to be most prominent during the late adolescence/early adulthood period (Sharf, 2006).

Stumpf et al. (1983) developed a model of career exploration that involves three primary components: exploration process

(e.g., where and how one explores), reactions to exploratory behaviors (e.g., affect and stress), and exploration beliefs (e.g., instrumentality and preference). This model suggests that these three categories interact in a reciprocal manner, resulting in unique exploration experiences for each individual (Bartley & Robitschek, 2000).

Many aspects of the Stumpf et al. (1983) model have been tested; however, the process behaviors of career exploration have received the greatest attention in the literature. Specifically, the exploration process is concerned with where an individual explores (i.e. environment and self), how one explores (intended-systematic), how much one explores (i.e., frequency and amount of information), and directedness (i.e., focus and number of occupations considered). Behaviors such as where one explores, how one explores, how much one explores, and what topics one explores define the process of exploration (Stumpf, 1992).

Career certainty is another construct involved in the career development process.

The term career certainty is not tantamount with career choice. Career choice refers to the intention to enter a particular occupation (Crites, 1969), whereas career certainty refers to the degree to which individuals feel confident about their vocational plans (Hartung, 1995). In terms of measuring career certainty, many career assessment instruments that focus on a related construct, career indecision, typically include a measure of career certainty by using one or two items that in part comprise a larger inventory that surveys career choice status (Hartung).

Many aspects of the Stumpf et al. (1983) model of career exploration have been tested with college and university students (Bartley & Robitschek, 2000). Research has tested how career exploration relates to goal-directedness (Blustein, 1989b); motivational processes (Blustein, 1988); job search intensity and job search effectiveness (Werbel, 2000); career decision-making self-efficacy (Blustein, 1989a; Brown, Darden, Shelton, & Dipoto, 1999); and work-role salience (Stumpf & Lockhart, 1987). In terms of socially-based contextual factors (Blustein, 1990), studies have also suggested that race/ethnicity (Constantine & Flores, 2006; Rojewski, 1994), gender (Blustein, 1988; Blustein & Phillips, 1988; Rojewski), socioeconomic conditions (Brown et al.), and education (Afonso & Taveira, 2001) are related to career certainty and career exploratory behaviors.

To date, no studies have focused specifically on the influence of career exploration process behaviors on the level of career certainty. However, in one study, Mako (1990) examined the relations among career exploration, career indecision, narcissism, and egocentrism. One of the central findings was that career certainty correlated positively with Environmental Exploration ($r = .18$), Self-Exploration ($r = .17$), and Internal Search Instrumentality ($r = .15$). Mako concluded that as the amount of certainty about a major or career decision increased, the amount of self and environmental exploration and beliefs in the value of self-examination and reflection also increased.

For the most part, research on career development of agriculture students has focused on a relatively narrow range of career development topics. The focus of most studies can be categorized primarily into the areas of career choice (e.g., Esters & Bowen, 2005; Jones & Larke, 2001; Scofield, 1994), career perceptions (e.g., Hoover & Houser, 1991; Thompson & Russell, 1993; White, Stewart, & Linhardt, 1991), career decision-making (e.g., Kotrlik & Harrison, 1987, 1989), and college choice (e.g., Conrad, Joerger, & Leske, 2004; Washburn, Garton, & Vaughn, 2002). To date, there has been no research focused on antecedents of career choice, such as career exploration, despite the importance of this construct throughout the career development process (Blustein & Phillips, 1988; Phillips, 1982; Sugalski & Greenhaus, 1986). Moreover, because career decision is defined as the degree of certainty about individuals' career choice (Osipow, Carney, Winer, Yanico, & Koschier, 1976), it would seem logical that an investigation into the level of career certainty would be necessary to better understand the career choice process. Given that there has been no research conducted on the career exploratory behaviors and career certainty of agriculture students, the present study was conducted to address this void by exploring these constructs with a group of postsecondary agriculture students.

Purpose/Objectives

The purpose of this study was to determine the extent to which career exploration process behaviors influence the level of career certainty of postsecondary agriculture students; objectives were to:

1. Identify the level of career certainty and career exploration process behaviors of postsecondary agriculture students.
2. Describe relationships between career exploration process behaviors and career certainty.
3. Determine if selected variables explain a significant proportion of the variance in level of career certainty.

Methods/Procedures

This study is part of a larger study examining the career decision-making process of postsecondary agriculture students. 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 ($n = 131$) enrolled in freshmen orientation courses and senior students ($n = 181$) enrolled in senior capstone/seminar courses from 8 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. Moreover, individuals making important academic or career decisions gather information about occupations, academic programs, schools or workforce trends, to varying degrees (Gore et al., 2006).

The instruments used to collect data for the study consisted of the certainty scale items of the Career Decision Scale (CDS) (Osipow, 1987) and the Career Exploration Survey (CES; Stumpf et al., 1983) as well as items requesting demographic information. The first two items of the CDS, which comprise the Certainty Scale, provide a measure concerning the degree of certainty an individual feels in having made a decision about a career. Responses are recorded on a 4-point, Likert-type scale ranging from 1 (*not at all like me*) to 4 (*exactly like me*). The certainty items included: "I have decided on a career and feel comfortable with it. I also know how to go about implementing my choice" and "I have decided on a major and feel comfortable with it. I also know how to go about implementing my choice." Scores on the Certainty Scale can range from 2 to 8; higher scores indicate greater certainty. Osipow et al. (1976) reported test-retest reliabilities of .90 and .82 for the CDS using two separate samples of college students. There is a substantial body of evidence supporting its reliability and validity (see

Hackett & Watkins, 1995; Slaney, 1988). Internal consistency reliability for the current study was .81.

Level of career exploration was assessed using selected scales from the CES (Stumpf et al., 1983). Using selected measures to assess career exploratory behaviors is consistent with previous research (see Blustein, 1988; Stumpf & Lockhart, 1987). Specifically, scales corresponding to the CES career exploration process behaviors were used in this study. These scales included the original five-item Self-Exploration (SE) scale and the six-item Environmental Exploration-Revised (EE-R; Blustein, 1989b) scale adapted from the original CES Environmental Exploration measure as well as the Intended-Systematic Exploration, Amount of Information, and Focus scales.

The Self-Exploration scale measures the extent of career exploration involving self-assessment and retrospection within the previous 3 months. The five self-exploration items used Likert-type scales with a 5-point response format ranging from 1 (*little*) to 5 (*a great deal*). Environmental Exploration assessed the extent of career exploration regarding occupations, jobs, and organizations within the previous 3 months. The six Environmental Exploration items used Likert-type scales with a 5-point response format ranging from 1 (*little*) to 5 (*a great deal*). Intended-Systematic Exploration measured the extent to which one acquires information on oneself and the environment in an intended or systematic manner (e.g., experimented with different career activities). The three Intended-Systematic Exploration items also used Likert-type scales with a 5-point response format ranging from 1 (*little*) to 5 (*a great deal*). The Amount of Information scale measured the amount of information acquired on occupations, jobs, organizations, and oneself. The three Amount of Information items used Likert-type scales with a 5-point response format ranging from 1 (*little*) to 5 (*a great deal*). Focus assessed how sure one feels in his/her preference for a particular occupation, job, and organization. The three focus items used Likert-type scales with a 5-point response format, 1 (*not too sure*) to 5 (*very sure*).

Possible scores for Environmental Exploration could range from 6 to 30, and possible scores for Self-Exploration and Focus could range from 5 to 25. Possible scores for Intended-Systematic exploration and Amount of Information could range from 3 to 15.

Blustein (1989b) reported internal consistency of .89 for the EE-R scale and a test-retest reliability coefficient of .85. Stumpf et al. (1983) reported internal consistencies for the Self-Exploration, Intended-Systematic Exploration, and Amount of Information, and Focus scales used in this study ranged from .74 to .83. For the present study, post-hoc reliabilities were .83 (Self-Exploration), .89 (Environmental Exploration-Revised), .75 (Intended-Systematic Exploration), .93 (Focus), and .49 (Amount of Information). Overall, results indicate acceptable levels of internal consistency. However, the internal consistency of the Amount of Information scale had a low reliability, which may be due to differences between the sample of students for which the scale was developed and the sample of students used in this study. According to Blustein (1988), evidence of the construct validity of the CES scales can be inferred from a factor structure consistent with theoretical expectations and relationships between CES scores and predicted outcomes.

Data were coded and analyzed using the Statistical Package for Social Sciences (SPSS v. 16.0). Descriptive statistics used included frequencies, percentages, means, and standard deviations. Mean scores and standard deviations were computed to address Objective 1. Pearson and point biserial correlations were used to address Objective 2. Relationships were described using Davis's (1971) conventions. Objective 3 was addressed using forward stepwise multiple regression. Data were analyzed separately for freshmen and senior students allowing for grade level comparisons as well as to assess for different patterns of relationships. Effect sizes were interpreted using Cohen's (1988) criteria.

Results

Because of the sampling methods used in this study, results are not generalizable to any larger population. Three hundred twelve students participated in the study. Over half the students were classified as seniors. Ninety-seven percent of the students were Caucasian. Sixty-four percent of the students in the study were male, and 36% were female. Seventy-four percent of the students were from rural areas, and 26% were from urban areas.

The first objective of this study was to identify the level of career certainty and career exploration process behaviors of postsecondary agriculture students. Level of career certainty was measured using the two career certainty items of the CDS (Osipow, 1987). Table 1 provides grade level comparisons of the career certainty scores. The mean career certainty score for freshmen was 3.02 ($SD = .59$). The mean certainty score for seniors was 3.20 ($SD = .70$). Both groups' mean scores indicated a greater level of certainty in having made a decision about a career.

Level of career exploration was assessed using selected scales from the CES (Stumpf et al., 1983). Table 1 shows the grade level comparisons of the career exploratory behavior scores. The mean Environmental Exploration scores indicated that freshmen and seniors moderately engaged in career exploration activities regarding occupations, jobs, and organizations within the previous three months. Similarly, the mean Amount of Information scores indicated that both groups have only acquired a moderate amount of information on occupations, jobs, organizations, and oneself within the previous three months. Additionally, the mean Focus scores indicated that both groups were moderately sure about their preference for a particular occupation, job, and organization. The mean Self-Exploration score for freshmen indicated that freshmen moderately engaged in career exploration activities involving self-assessment and retrospection within the

previous three months. However, the mean Self-Exploration score for seniors indicated that seniors engaged in a substantial amount of career exploration activities involving self-assessment and retrospection within the previous three months. Finally, the mean Intended-Systematic Exploration score for freshmen indicated that freshmen acquired little information on oneself and the environment in an intended or systematic manner (e.g., experimented with different career activities) within the previous three months and that seniors acquired only a moderate amount of information on oneself and the environment in an intended or systematic manner (e.g., experimented with different career activities) within the previous three months.

The second objective of this study was to describe relationships between career exploration process behaviors and career certainty. Pearson and point biserial correlation coefficients were used to describe the relationships (Table 2). 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). For freshmen, there was a low negative relationship found between career certainty and gender ($r_b = -.11$). A negligible and positive relationship was found between career certainty and Environmental Exploration ($r = .07$). The relationship between career certainty and Self-Exploration was negligible and negative ($r = -.01$). Low positive relationships were found between career certainty and Intended-Systematic Exploration ($r = .13$) and Amount of Information ($r = .24$). The relationship between career certainty and Focus was substantial and positive ($r = .56$). For seniors, the relationship between career certainty and gender was negligible and positive ($r_b = .04$). Low positive relationships were found between career certainty and Environmental Exploration ($r = .20$), Self-Exploration ($r = .11$), Intended-Systematic Exploration ($r = .16$), and Amount of Information ($r = .18$). Additionally, there was a substantial and positive relationship between career certainty and Focus ($r = .63$).

Table 1
Means and Standard Deviations for Career Certainty and Career Exploration Process Behaviors ($n = 312$)

Variable	Freshmen ($n = 131$)		Seniors ($n = 181$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Career certainty ^a	3.02	.59	3.20	.70
Environmental exploration ^b	2.68	.46	3.04	.96
Self-exploration ^b	3.18	.73	3.50	.77
Amount of information ^b	2.66	.82	3.25	1.40
Intended-systematic ^c	2.25	.77	2.51	.88
Focus ^d	2.87	1.08	3.01	1.13

^a1 = Not At All Like Me; 2 = Only Slightly Like Me; 3 = Very Much Like Me; 4 = Exactly Like Me.

^b1 = Little; 2 = Somewhat; 3 = A Moderate Amount; 4 = A Substantial Amount; 5 = A Great Deal.

^c1 = Little; 2 = Some; 3 = A Moderate Amount Of; 4 = A Substantial Amount Of; 5 = A Great Deal Of.

^d1 = No Too Sure; 2 = Somewhat Sure; 3 = Moderately Sure; 4 = Sure; 5 = Very Sure.

Table 2
Intercorrelations Among Career Certainty, Gender, and Career Exploration Process Behaviors
 (n = 312)

Variable	1	2	3	4	5	6	7
1. Certainty	---	.04	.20*	.11	.16*	.18*	.63*
2. Gender ^a	-.11	---	.03	-.04	.04	-.06	-.03
3. Environmental exploration	.07	-.06	---	.41*	.57*	.40*	.14*
4. Self-exploration	-.01	.09	.38*	---	.37*	.34*	.23*
5. Intended-systematic	.13	.09	.49*	.39*	---	.24*	.14*
6. Amount of information	.24*	-.06	.62*	.31*	.46*	---	.19*
7. Focus	.56*	-.14*	.26*	.32*	.18*	.41*	---

Note. Correlations below the diagonal are for 131 freshmen. Those above are for 181 seniors.

^a 0=Male; 1=Female.

*p < .05.

The third objective of this study was to determine if selected variables explain a significant proportion of the variance in the level of career certainty. The dependent variable was career certainty which was measured by a composite score of the certainty items of the CDS (Osipow, 1987). Independent variables included gender, Environmental Exploration, Self-Exploration, Intended-Systematic Exploration, Amount of Information, and Focus. Variables were entered using forward

stepwise multiple regression. The analysis revealed that two career exploration process behavior variables explained 35% of the variance in the level of career certainty for freshmen which is a medium effect size (Cohen, 1988). The variables included in the final model were Self-Exploration and Focus (Table 3). Additionally, the regression model for seniors revealed that one career exploration process behavior, Focus, explained 40% of the variance in the level of career certainty.

Table 3
Regression Analyses for the Prediction of Career Certainty for Freshmen (n = 131) and Senior (n=181) Students

Variable	B	SE B	β
Freshmen (n = 131)^a			
Step 1			
Constant	2.15	.12	
Focus	.31	.04	.56***
Step 2			
Constant	2.57	.20	
Focus	.35	.04	.62***
Self-exploration	-.17	.06	-.20**
Seniors (n = 181)^b			
Step 1			
Constant	2.02	.12	
Focus	.39	.04	.63***

^a $R^2 = .31$ for Step 1; $R^2 = .04$ for Step 2 ($p < .05$). ** $p < .01$, *** $p < .001$

^b Note. $R^2 = .40$ for Step 1 ($p < .05$). *** $p < .001$

Discussion, Recommendations, and Implications

The primary goal of this study was to explore the constructs of career exploration and career certainty among postsecondary agriculture students. Three hundred twelve students participated in the study of which a majority were senior, Caucasian, male students from rural areas.

Students were relatively certain in having made a decision about a career. Additionally, students only moderately engaged in various career exploratory process behaviors. These findings are interesting. On one hand, students indicated that they are relatively confident about their career plans, yet findings indicate that participating in various career exploratory activities don't seem to occur regularly. Considering the decline in the number of students choosing to pursue careers in agriculture (Goecker, Gilmore, Smith, & Smith, 2005), perhaps facilitating students' career exploratory behaviors should become

a priority. For example, the facilitation of the career exploration process could be addressed through the development of a career development course or through the inclusion of career development activities in undergraduate courses. The material for these courses could include elements of the National Career Development Guidelines (NCDG), which describe the competencies adults need to manage their careers effectively. The focus on facilitating career exploration is especially important considering that prior to an individual's first job; career exploration provides information on organizations and jobs to facilitate making a meaningful career choice (Stumpf, 1992).

Relationships among career certainty and Environmental Exploration, Self-Exploration, Intended Systematic Exploration, Amount of Information, and Focus for freshmen ranged from negligible negative to substantial positive, and ranged from low to substantial positive for seniors. For freshmen, there was a significant low

positive relationship between the career certainty and Amount of Information. Thus, as amount of exploration regarding self-assessment and retrospection increased, amount of certainty about a career decision increased. Additionally, there was a significant substantial and positive relationship between career certainty and Focus. Therefore, an increase in how certain one feels in his/her preference for a particular occupation, job, and organization resulted in an increase in the amount of certainty about a career decision. Likewise for seniors, there was a significant low positive relationship between career certainty, Intended-Systematic Exploration, Amount of Information, and Focus. The relationship between career certainty and Focus indicates that an increase in how certain one feels in his/her preference for a particular occupation, job, and organization resulted in an increase in the amount of certainty about a career decision. Despite the lack of research examining the constructs of career exploration and career certainty, the findings of this study support Mako (1990), who found a positive relationship between career exploration and career certainty.

Although findings of this study suggest that career certainty is related to Self-Exploration, Amount of Information, and Focus, this does not prove a causal relationship. However, instructors of career courses in colleges of agriculture should be encouraged to focus on career exploratory behaviors such as students' self-assessment and retrospection as well as the amount of information acquired on occupations, jobs, organizations, and oneself. For example, because academic majors and corresponding careers are often selected without adequate information about one's skills and interests and the world of work (Robinson, 1994), the exploratory stage of career development (Super, 1957) can be facilitated by building this type of information into the educational curriculum. Also, the finding that Focus was related to career certainty seems logical. Career certainty refers to the degree to which individuals feel confident about their career plans (Hartung, 1995), whereas Focus refers to how certain one feels in his/her preference for a particular occupation, job, and organization (Stumpf et al., 1983). Thus,

it stands to reason that if a student is "certain" about his/her preference for an occupation, job, or organization, then he/she would also be fairly "certain" about his/her career plans.

This study was exploratory in nature. Results indicated that career certainty could be predicted from two career exploration process behaviors for freshmen and one career exploration process behavior for seniors. Although there may not be a direct causal relationship, it appears from this analysis that there should be a focus on the extent of career exploration involving self-assessment and retrospection (i.e., self-exploration) as well as occupational preferences (i.e., focus). For example, self-exploration could be facilitated through the use of career assessments instruments that focus on identifying students' skills, interests, values, and/or personality characteristics. Students could also clarify their occupational preferences through the use of various occupational classification systems such as the Standard Occupational Classification system and World of Work Map; sources of occupational information including the Occupational Information Network, *Occupational Outlook Handbook*; or computer assisted guidance systems such as SIGI Plus or DISCOVER (Hitch & Gore, 2005).

It should also be noted that the zero-order correlation between career certainty and self-exploration ($r = -.01$) for freshmen students was not significant, yet self-exploration explained an additional 4% of the variance in career certainty in the multivariate analysis. The researcher believes that this was due to the shared prediction power between the independent variables, Focus and self-exploration. As noted previously, career certainty refers to the degree of certainty an individual feels in having made a decision about a career. Further, self-exploration refers to the extent of career exploration involving self-assessment and retrospection while focus refers to how sure one feels in his/her preference for a particular occupation, job, and organization. Thus, results of the multivariate analysis for the prediction of career certainty seem to indicate that the combined effect of engaging in self-

assessment and retrospection along with the belief of being sure of one's preference for a particular job or occupation mutually contribute to being certain in having made a decision about a career. This finding also makes sense conceptually because the result of greater levels of self-exploratory behaviors (i.e., self-assessment and retrospection) would more likely result in an individual being more confident (i.e., sure) of their occupational preferences.

Finally, while this study yields significant results, one limitation should be noted. First, the internal consistency of the Amount of Information scale had a low reliability. Stumpf et al. (1983) originally developed the CES with undergraduate and graduate business students. Additionally, several of the studies cited involved students who were psychology majors. Thus, it is conceivable that because of the makeup of the sample in this study (i.e., agriculture students), these students had formed different perceptions regarding future career opportunities in agriculture as well as their outlook on the world of work within the agricultural sector, which may explain the low reliability of this scale. However, despite this limitation, this investigation has provided a starting point for understanding the relationship between career certainty and career exploratory process behaviors which had not previously been examined in the career development research of agriculture students.

Recommendations for Future Research

Because of the homogenous sample of this study, future research should examine the relationship between career certainty and career exploratory behaviors with students from more ethnically diverse backgrounds. In addition, because career development research involving agriculture students has not examined the constructs of career certainty and career exploration, future research should replicate this study to determine whether the findings are valid for students enrolled in other colleges of agriculture. Future studies should also examine other components of Stumpf et al.'s (1983) model of career exploration to determine whether additional career

exploratory variables influence students' level of career certainty. Finally, because this study was limited to freshmen and senior undergraduate students, future studies should expand the sample to include upper level undergraduate students.

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LEVON T. ESTERS is an Assistant Professor in the Department of Agricultural Education and Studies at Iowa State University, 217A Curtiss Hall, Ames, IA 50010. E-mail: lte@iastate.edu.