

College Student Career Barriers: Brief O*NET Exposure Changes CBI-R Scores

Kortney B. Merrell, Jared F. Edwards, Morgan N. Swisher, and Yong Jhao Chu

Southwestern Oklahoma State University

Introduction

As educators we want our students to succeed, and our administrators want our students to persist in their education. Increasing student retention is a frequently stated goal of educators and administrators for both academic and economic reasons. Social Cognitive Career Theory (SCCT; Lent, Brown, & Hackett, 1994, 2002) provides variables that both facilitate and hinder persistence in goal directed behavior. Among the variables that SCCT identifies, career barriers are one potential hindrance for goal selection, goal setting, and persistence.

Based on Lent et al.'s (1994, 2002) conceptualization, we began this study in the hope of identifying an effective way to reduce perceived career barriers of college students. It is our belief that finding affordable and accessible career interventions is a valuable contribution to the college landscape. In addition to the benefit to the student, departments, colleges, and universities could benefit from improved retention and persistence. Multiple authors (e.g.: Kirk, 2018; Tudor, 2018; Vespia, Fries, & Arrowood, 2018) have recommended increased attention to career development as a path to increased retention.

Kirk (2018) provides a qualitative study of early childhood education majors that identified reasons that some students do not complete their educational path. Among other issues, lack of career certainty was cited as a source of academic problems. Kirk

recommends interventions that reaffirm career choice as one potential way to reduce academic attrition.

Vespia et al. (2018) also describe a student need for career advising as a part of the academic advising process. Even working within psychology, however, the authors identify lack of training and understanding of career development as a challenge for many academic advisors. Vespia et al. (2018) encourage faculty members engaged in advising to actively seek out resources to help provide career guidance to their students.

Similarly, Tudor (2018) argues even more broadly that academic advising at the college level needs to be more thoroughly integrated with career development and guidance while pointing out potential advantages to the institutions (retention and persistence) and the students (better academic and career preparation). However, not every advisor, instructor, and mentor on a college campus is trained in career development theory or career counseling. We provide support for a practical intervention with identifiable benefits that can be implemented by anyone in the college community.

Our conceptualization of career barriers and of approaches to addressing them is rooted in SCCT. SCCT is a modification and extrapolation of Bandura's (1986) Social Cognitive Theory that was formalized by Lent et al. (1994). SCCT assumes a path model of cognitive and environmental influences on behavior which includes career development, career choice, and career performance.

Social Cognitive Career Theory

SCCT (Lent et al., 1994, 2002) assumes that people are active in their own development. It also integrates three central constructs from SCT (Bandura, 1986): self-efficacy, outcome expectations, and personal goals. Self-efficacy addresses people's

beliefs about their capabilities. Outcome expectations are one's own beliefs or expectations about consequences of performing specific behaviors. Goals are defined by a person's desires or wishes about specific activities or outcomes (Lent et al., 2002). Lent et al. (1994) found that these three variables influence career choice goals and behaviors and that certain factors (gender, race, opportunities, etc.) influence the three constructs (Creed, Patton, & Bartrum, 2004; McWhirter, 1997).

In SCCT (Lent et al., 1994), self-efficacy and outcome expectations directly affect career interests, career goals, and goal directed behaviors, including persistence. They increase interest in a task when people believe they can successfully complete a certain task with desired outcomes. However, if people do not believe they can successfully complete a task or activity or if they do not expect desirable outcomes, then they will not develop interest in that task. With interest comes goals which lead to goal directed behavior.

Lent et al. (1994) provide three direct points of intervention for those wanting to influence or facilitate career development. The first is self-efficacy. Increasing self-efficacy (or decreasing irrationally high self-efficacy) can lead to a shift in interests and predict higher persistence (Lent et al., 2002). Similarly, adjusting outcome expectations may lead to career options becoming more or less appealing. Finally, addressing career barriers allows for a third option to increase career directed behavior and persistence.

SCCT (Lent et al., 1994) identifies barriers as an influencing factor in goal selection and movement toward those goals. The connection from expectations to behavior is moderated and mediated by barriers (Lent et al., 2002). For example, a woman who believes she could succeed as an engineer (high self-efficacy) but who expects to be rejected in a male dominated field (barrier based on gender

discrimination) is less likely to choose engineering than her self-efficacy alone implies. Similarly, a man who expects fulfillment from construction (an outcome expectation) but perceives (accurately or inaccurately) a downturn in the construction industry (a job market constraint) may choose to pursue work as an automotive mechanic instead.

Career barriers may interfere with career development at multiple points in the process (Lent et al., 2002). Barriers may decrease the likelihood of interests translating into goals. Barriers sometimes stop goals from leading to action. Perception of barriers can decrease the amount of effort committed to goal directed behavior. And, finally, perception of barriers can decrease the persistence toward goals.

This concept of career barriers is of specific importance for college students and student service professionals because career goal directed behavior includes enrollment, persistence, retention, and graduation. In line with SCCT, research with the CBI-R has shown how barriers can affect navigation through career development and/or outcomes (Swanson et al., 1996; Lent et al., 1994; Kenny, Blustein, Chaves, Grossman, & Gallagher, 2003; Gibbons & Shoffner, 2004).

Career Barriers and the CBI-R

Career barriers are factors that interfere with career processes or development (Swanson, Daniels, & Tokar, 1996). Barriers that college students perceive include racial/ethnic discrimination, gender discrimination, inability to perform, and inadequate educational opportunities (Luzzo, 1993; Swanson et al., 1996). A perceived career barrier is a factor that influences the long-term trajectory of a person's career before they ever reach the workplace (Watts, Frame, Moffett, Van Hein, & Hein, 2015).

Due to the likelihood of perceptions interfering with the career development process, it is important to help decrease inaccurate perceptions of barriers for college

students' successful navigation of career (and academic) development while providing tools to address accurately perceived barriers. Barriers have been identified as a concern for college students in general and for specific groups of college students in numerous studies (Gnikla & Novakovic, 2017; Kelly & Hatcher, 2013; Mejia-Smith & Gushue, 2017; Novakovic & Gnikla, 2015; Raque-Bogdan, Klingaman, Martin, & Lucas, 2013; Urbanaviciute, Pociute, Kairys, & Liniauskaite, 2016).

The Career Barriers Inventory (CBI) was originally designed to assess college students' career barriers (Swanson & D'Achiardi, 2005). Swanson et al., (1996) altered the original CBI to create the revised version (CBI-R). The CBI-R has been shown to be a reliable measure of people's perceived individual barriers for their career decision process (Swanson et al., 1996; Bressman, Neely, & Edwards, 2016).

The CBI-R measures perceptions of internal (characteristics of the individual) and external (products of the environment) barriers, and those barriers can make a career path difficult but not completely impossible. The CBI-R measures perceptions of 13 types of barriers: (1) Sex Discrimination, (2) Lack of Confidence, (3) Multiple-Role Conflict, (4) Conflict between Children and Career Demands, (5) Racial Discrimination, (6) Inadequate Preparation, (7) Disapproval by Significant Other, (8) Decision-Making Difficulties, (9) Dissatisfaction with Career, (10) Discouraged from Choosing Nontraditional Careers, (11) Disability or Health Concerns, (12) Job Market Constraints, and (13) Difficulties with Networking or Socialization (Swanson et al., 1996).

Because the CBI-R (Swanson et al., 1996) does not differentiate between accurately perceived and inaccurately perceived barriers, one way to address barriers that may be influencing career development is through the presentation of accurate career information. Accurate career information may be one avenue to changing the

cognitive processes that lead to barriers influencing the developmental process that is described in SCCT (Lent et al., 1994, 2002). One vast source of accurate occupational information available to college students is the U.S. Bureau of Labor Statistics' (2017) O*NET.

O*NET

The O*NET is a database of occupation-specific descriptors (National Center for O*NET Development, 2017; U.S. Bureau of Labor Statistics, 2017). The website contains many different resources to explore and find occupational information. People can search for their fields of interest through broad career clusters related to topics they are interested in, and they can search occupations through specific skills, tools, and technologies. Once a career title has been chosen, information specific to that career is provided. The O*NET lists tasks, tools and technologies, knowledge, skills, abilities, work activities, work contexts, job zones, education, credentials, interests, work styles, work values, related occupations, wages, employment trends, job openings, and additional sources of information. Exploring the O*NET provides individuals with realistic expectations for educational requirements, work tasks, and the job market.

Intervention and Hypotheses

Within the framework of SCCT, we hypothesized that exposing college students to career information would lead to changes in scores for the CBI-R's full scale and specific subscales: (1) Lack of Confidence, (2) Inadequate Preparation, (3) Decision-Making Difficulties, (4) Discouraged from Choosing Nontraditional Careers, (5) Job Market Constraints, and (6) Difficulties with Networking or Socialization. Hypotheses are non-directional because correcting inaccurate assumptions could cause an increase or decrease in perception of barriers. We did not predict or analyze changes in the other

seven subscales. The full scale is included to estimate overall attitudes related to career barriers.

We chose the scales that seemed most likely to be impacted by direct exposure to career information. Accurate information about education and training requirements was expected to influence Lack of Confidence and Inadequate Preparation. Increased understanding of the job market was expected to influence Job Market Constraints while decreasing concerns about Difficulties with Networking or Socialization and Discouraged from Choosing Nontraditional Careers. Finally, access to career information in general should have an impact on the full scale.

Methods

IRB Approval and Ethical Considerations

This study has been approved by the IRB at our institution under protocol number HS16022. Participants were provided with verbal and written informed consent, and they were informed of their right to withdraw from participation at any time. Data were separated from identifying information, and both completed instruments and signed consent forms are stored in a double-locked location. Finally, as part of their debriefing information, participants were provided with information related to campus resources related to career development, contact information for career services, and contact information for counseling services.

Participants

Participants were 71 college students enrolled in an introductory psychology course at a small Midwestern university. Students received research credit for participation. Our sample included 57 women (80%) and 14 men. The participants were undergraduate students, ranging in age from 18 to 38 with a mean age of 19.55

(SD=3.64). In a highly skewed sample, the median and modal age of 18 represented 51% of the sample. Participants were mostly European American/White (78%) with no other racial or ethnic group as more than 7% of the sample. In addition, our sample was 82% first year-students, 27% first generation college students, and 66% from a rural area.

First year students, women and European American/White Students were overrepresented in our sample compared to the university population at large (first year students=32.11%; women=59%; EA/White=65.33%) at the time when data collection was occurring. Also, the percentage of 18 year olds alone in our sample exceeds the university-wide report for percentage of students in the 18-20 year old range (45%).

Procedures

We used a pre-post design with the CBI-R and the O*NET. Computers were utilized for the O*NET and the CBI-R. After providing informed consent, participants filled out a demographic questionnaire. Next, the participants completed the CBI-R pretest. Then the participants spent 20 minutes on the O*NET website. Participants were given simple instructions: *Please use the next 20 minutes to explore careers that you are curious about or are interested in on this website.* No further instructions were provided. Participants explored the O*Net based on their own interests and curiosity. Finally, participants completed the CBI-R a second time. Each completion of the CBI-R took between 15 and 20 minutes.

Materials

CBI-R. The CBI-R, (Swanson et al., 1996) was used to assess career barriers. It contains 70 items with 13 subscales. The CBI-R is a refined version of the CBI (Swanson & Tokar, 1991a; Swanson & Tokar, 1991b) that is shorter and provides more narrow and more understandable subscales (Swanson et al., 1996). The subscales address barriers

that a college student might experience. Each item presents a specific potential barrier that respondents rate on a 7 point Likert-scale: 1 “would not hinder,” 4 “would hinder some,” and 7 “would completely hinder.” The CBI-R has been used in assessing barriers with various groups (Swanson et al., 1996; Luzzo, 1993; Kelly, & Hatcher, 2013) and has been shown to assist in career counseling (Cochran et al., 2013; Swanson & D'Achiardi, 2005).

Each subscale (Swanson et al., 1996) measures a different possible type of barrier. Some barriers are internal (due to characteristics of the person) while other barriers are external (due to the environment). All barriers may be real or perceived. While participants completed the entire CBI-R with all 13 subscales and the full scale, we only analyzed 6 subscales and the full scale as planned in our hypotheses.

- 1) Lack of Confidence (4 items) measures confidence and self-esteem related to ability on the job.
- 2) Inadequate Preparation (5 items) includes personal attitudes about skills required for jobs.
- 3) Decision-Making Difficulties (8 items) is about difficulty choosing or changing career paths.
- 4) Discouraged from Choosing Nontraditional Careers (5 items) measures how much discouragement is expected for choices that violate social role stereotypes.
- 5) Job Market Constraints (4 items) focuses on concerns related to tight job markets or geographic restrictions.
- 6) Difficulties with Networking or Socialization (5 items) addresses issues related to social connection (Swanson et al., 1996).

We administered the CBI-R using Excel. Bressman et al. (2016) found scores to be consistent between the original CBI-R format and the Excel version. Results indicated no significant differences between the two versions (Bressman, et al., 2016) with full scale alternate form reliability at a very high level (.95) and subscale correlations ranging from .75 to .899, although Excel administered scores were higher across all subscales.

Results

Seven individual t-tests were conducted to test our hypotheses with all 71 participants being included in all analyses. The experiment-wise alpha level was set to .05. The means of the scales ranged from 3.38 (Discouraged from Choosing Nontraditional Careers) to 4.6 (Inadequate Preparation). Means, standard deviations, correlations, t-values, p-values, and effect sizes (Cohen's *d*) for all analyzed scales are presented in Table 1.

Difficulties with Networking or Socialization showed a significant decrease ($t(70) = 2.07(p=.04)$) with a small effect size (Cohen's $d=.25$). The full scale score showed a small sized decrease (Cohen's $d=.29$) that was significant ($t(70) = 2.41(p=.02)$). No other t-tests were significant (see Table 1).

Table 1. Pretest/Posttest Correlations, Means, and Effect Sized for CBI-R Scales

Scale	Pretest Mean (SD)	Posttest Mean (SD)	Correlation ($p<.001$)	<i>t</i> -value ($df=70$)	<i>p</i> -value	Effect Size (Cohen's <i>d</i>)
1	4.21 (1.36)	4.08 (1.62)	.79	1.09	.28	.13
2	4.63 (1.26)	4.60 (1.58)	.65	.19	.85	.02
3	4.43 (1.22)	4.27 (1.36)	.69	1.32	.19	.16
4	3.38 (1.41)	3.35 (1.59)	.72	.24	.81	.03
5	4.37 (1.45)	4.22 (1.51)	.65	1.01	.32	.12
6	4.01 (.95)	3.79 (1.22)	.68	2.07	.04	.25
7	4.35 (.90)	4.14 (1.15)	.78	2.41	.02	.29

Notes: Scales 1=Lack of Confidence, 2=Inadequate Preparation, 3=Decision-Making Difficulties, 4=Discouraged from Choosing Nontraditional Careers, 5= Job Market Constraints, 6= Difficulties with

Networking or Socialization, 7= total scale.

Discussion

When weighing the cost vs. benefits of an intervention, our study suggests that the O*NET is a cost effective way to reduce college student's perceptions of barriers due to a small to moderate effect size, no per user cost, and no requirement for expert involvement. If instructors, advisors, and mentors are aware of O*NET's utility, implementation of part of Kirk's (2018), Tudor's (2018), and Vespia et al.'s (2018) recommendations for an increased focus on career choice and the expansion of advising and career related resources becomes much more attainable. According to SCCT (Lent et al., 1994, 2002), removing barriers will strengthen the link from interests to goals to actions while decreasing discouragement of making goals and enacting them. Even with small to moderate effects, the O*NET as an intervention has advantages in practical significance.

We anticipated that exposure to the O*NET would predict a change in perceived career barriers. We did see significant decreases in the Difficulties in Networking and Socialization subscale and the overall CBI-R scale. Because the path model of SCCT (Lent et al., 1994, 2002) suggests that a decrease in perceived barriers should lead to an increase in goal directed behavior and persistence, our results suggest that future research should be executed within this domain to help utilize resources to decrease perceived career barriers for college students.

We prioritized six subscales for analysis leaving the relationship between O*Net exposure and the other seven subscales unanalyzed. Future research should examine those other seven subscales explicitly due to possibility of valuable impacts on subscales

that we excluded. It is also possible that the change in each of the subscales that we did examine was minor but cumulatively important. While this would make the impact more complicated, it does not necessarily make it less valuable. Future studies with more participants could more clearly identify any small changes across the various subscales.

Because of our results, we believe that the O*NET includes effective information for the career development of college students. With the significant change of the overall scale, it appears that being exposed to the O*NET can predict a desirable change in a student's career outlook, career barriers, and occupational knowledge.

There are limitations to this study that could be addressed in future research. Half of the participants were first year college students, and the rest were close in age range. Also, our sample had limited racial and ethnic diversity. These factors limited our generalizability. Also, our intervention (20 minutes of O*Net exploration) was both brief and non-directive.

Future research should expand the diversity of both participants and setting. A range of ages with increased cultural diversity would improve generalizability. Work in community settings such as schools and training centers outside of the college setting will increase applicability. Adding gender-based career barrier assessment to future research would be potentially interesting as gender identity may have important interactions with career barriers.

Future research could also include longer periods of time spent on the O*NET with more specific instructions for the students' exploration. While we valued this as a non-directive intervention, focused interventions do have their place, and more focused interventions could lead to a larger observed effect size. For example, students could be

encouraged to explore careers specifically related to their major.

Earlier exposure to the O*NET could be tested in a longitudinal research design with high school students. This could potentially predict a larger effect size than a single session with college students. Finally, the seven remaining CBI-R scales should be examined.

Additionally, the same methodology applied to Career Decision Self-Efficacy (CDSE; Betz et al., 2005) and its occupational information component could be valuable. This is especially likely due to CDSE including career information (as Occupational Information) as one of the theory's five constructs. While the CBI-R examines broad categories of barriers, the CDSE has five subscales all directly related to the career decision process.

- 1) Self-Appraisal (Am I confident in my self-awareness related to careers?)
- 2) Occupational Information (Am I confident in my knowledge of career options and my ability to gather that information?)
- 3) Goal Selection (Am I confident that I can choose an appropriate career path for myself?)
- 4) Planning (Am I confident that I can plan the steps to reach my goal?)
- 5) Problem Solving (Am I confident that I will be able to deal with challenges as I work toward my goal?)

The CDSE scales should be able to identify specific areas impacted by exposure to the O*NET by examining in more detail the components represented in the CBI-R's Decision-Making Difficulties scale. Any additional understanding of career development interventions has the potential to help us help students more effectively.

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