The Influence of a Career Pathways Model and Career Counseling on Students' Career and Academic Self-Efficacy

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This qualitative study examines the effects of career pathways programming and targeted career counseling services on 71 high school seniors across seven schools engaged in school reforms funded through South Carolina's Education and Economic Development Act (EEDA). EEDA is a statewide, multipronged effort to improve academic achievement, graduation rates, and students' chances at success in both careers and college. One component of EEDA is the requirement that all students complete an individual graduation plan, and in order to build capacity to execute this new requirement, additional counselors and/or counselor aides were added to every high school in the state. We found that the combination of a career pathways model along with targeted career counseling services enhanced students' sense of career and academic self-efficacy by increasing their motivation to complete school, willingness and interest to take more challenging courses, and sense of preparedness for college and work. We examine these themes through the social cognitive career theory's triadic model of causality (Bandura, 1997) connecting study findings with the central constructs of self-efficacy beliefs, outcome expectations, and personal goal development.

In recent years there has been an emergence of career pathways programs in high schools across the United States (Stone, 2004). Career pathways programs provide students with both academic and occupational knowledge and skills, serve as a link between high school and college (two-year or four-year), and are situated to prepare students for employment. Career pathways programs provide students with a broad introduction into various careers with a blending of academic and career-based curricula. The call for quality career pathways programs was highlighted in the Harvard Graduate School of Education's *Pathways to Prosperity* report (Symonds, Schwartz, & Ferguson, 2011). The report outlined the need for career-focused educational programs that span high school and include at least one year of postsecondary education or training. Symonds et al. stated that students need a viable means for preparing for both college and work, explaining that "we have treated preparing for college versus preparing for a career as mutually exclusive

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options" (p. 24)—when, in reality, the two go hand in hand. With high-quality career pathways programs, students are, in theory, prepared for both college and work, providing them with opportunities for coherent, articulated, and rigorous academic and career-related courses (Benson, Gardner, Hess, & Livings-Eassa, 2008). The blending of academic and career-related courses is the hallmark of career pathways programs, with the goal of preparing students to be college and career ready and to engage them in the process of thinking about careers and their academic goals.

South Carolina's Education and Economic Development Act (EEDA), initiated in 2005, is one such reform. EEDA aligns with Symonds et al.'s call for quality career pathways programming. EEDA mandates that South Carolina schools provide high academic standards and locally relevant career pathways for all students. Among other provisions, EEDA includes a requirement for enhanced career counseling and guidance services. This includes a focus on career awareness, career exploration, and career planning, starting in elementary school and continuing throughout high school. EEDA also mandates the development of an individual graduation plan (IGP) by each student, in consultation with the student's family and school counseling staff. In order to guarantee these enhanced services to all students, EEDA includes funding for additional school counseling-related services at all of the high schools in the state.

In this study we explore the educational and career experiences of high school seniors attending seven South Carolina high schools. The students interviewed for this study have participated in programming secured through EEDA's legislated reforms since their eighth-grade year. As part of their experiences with EEDA, these students either declared a career major or took courses that aligned with a specific career pathway. Further, these students engaged in a number of career exploration activities, such as learning about career pathways, completing career assessments, engaging in work-based learning experiences, and meeting annually with their school counselor to create or revise their IGP to engage in academic planning and discuss career and postsecondary goals. Additionally, the IGP process includes parents/guardians in the students' career and post-secondary planning process.

CAREER-FOCUSED EDUCATION AND CAREER COUNSELING

One area of interest to researchers and practitioners has been the effect of career pathways and other career-focused educational programs (e.g., CTE, STEM, Career Academies, etc.) on student engagement and self-efficacy. Studies on student engagement have been conducted by examining graduation rates, course-taking experiences, and attendance. Although the number of studies is limited, researchers have established a link between such programs and positive student outcomes. Plank, DeLuca, and Estacion (2008) found that traditional-aged high school students who took one career and technical education (CTE) course for every two academic courses had an increased probability of graduating from high school. Researchers from the National Research Center for Career and Technical Education (NRCCTE) analyzed data from the Education Longitudinal Study of 2002 and found that students who earned three or more credits in CTE were more likely to graduate from high school than students who earned fewer than three credits in CTE (Stone & Lewis, 2012). Career academies have been found to improve graduation rates among students who are at high risk for dropping out of high school and have been found to increase the likelihood that low-risk students will graduate on time (Kemple & Snipes, 2000).

Course-taking patterns and attendance have been linked to positive outcomes for students enrolled in career-focused education. Kemple and Snipes (2000) reported that students enrolled in career academies took more academic and vocational/career courses. Further, they found that enrollment in career academies improved attendance rates among high-risk students. Similarly, Stone (2004) found that students identified as CTE concentrators (consisting of students committed to a CTE track) took more math courses and more higher level math courses than general concentrators (students neither committed to a CTE nor an academic track).

Career counseling services provide specific benefits to students as well. Researchers have found that students who received career counseling are better prepared to enter postsecondary educational settings, have higher levels of academic achievement, are more engaged in their education, and have more clearly developed career goals (e.g., Kenny, Blustein, Haase, Jackson, & Perry, 2006; Lapan, Gysbers, Hughey, & Ami, 1993; Lapan, Gysbers, & Sun, 1997; McWhirter, Rasheed, & Crothers, 2000).

Conversely, poor or inconsistent career counseling services have been linked to underachievement and less career success (Symonds et al., 2011). Employing a career pathways model with high-quality, career-focused educational programming is one way that schools are attempting to improve students' college and career readiness. More specifically, schools that provide students with well-developed programs of study based on this model are situated to offer students both rigorous academics and career-based experiences. Due to the career-intensive focus of these programs, career counseling and career development services are necessary to ensure that students are making informed decisions and are engaging in appropriate planning to ensure that they will be career (or college) ready.

THEORETICAL FRAMEWORK: SOCIAL COGNITIVE CAREER THEORY

Employing a theoretical framework for understanding the effects of engaging in career pathways programs can be useful in conceptualizing students' career decision-making and development and the effects of career pathways programs on students' self-beliefs. Social cognitive career theory (SCCT) is a widely used theory for understanding career choices and career development and provides a useful framework for career pathways programs. Niles and Harris-Bowlsbey (2013) contend that SCCT explains how individuals develop "career interests, make occupational choices, and achieve career success and stability" (p. 96). SCCT consists of a triadic model, which includes (a) self-efficacy beliefs, (b) outcome expectations, and (c) personal goals. These three constructs act together to influence a person's career development and career decision-making. Further, SCCT is a good fit for the career pathways model, because students engage in both academic and career experiences, providing them with firsthand knowledge of how well their interests and skills align with the challenges of their desired career.

Self-efficacy beliefs are a central component of the SCCT's triadic model. Chang and Edwards (2015) describe self-efficacy as "a central concept describing an individual's beliefs about his or her capacity to achieve …" (p. 36). Therefore, if individuals do not possess strong self-efficacy beliefs in their chosen career field, they will not build positive outcome expectations and their performance will be negatively impacted. In general, people seek careers that either align with their known skills or with the skills they believe they can develop (Niles & Harris-Bowlsbey, 2013). Because career pathways programs provide students with opportunities to engage in career-focused

courses, which include exposure to specific career tasks and skill building, they are given the opportunity to increase their sense of self-efficacy in their chosen field. Conversely, this model provides them with an opportunity to test out their interests and determine if their chosen career pathway is not the right fit for them.

Outcome expectations serve as the second construct in SCCT's triadic model of causality. Outcome expectations are defined as an anticipated consequence to a specific action (Feldt &Woelfel, 2009), and individuals tend to choose a career path that offers the most positive outcome expectations. Thus, if an individual sees the value of training for a certain career, but does not think he is capable of performing the tasks required by the career, he/she is less likely to enroll in further training. Outcome expectations are a way for counselors to "evaluate the degree of match between what individuals value and what they expect as outcomes of a career choice …" (Feldt & Woelfel, 2009, p. 435). Within the career pathways model, students are provided with opportunities to test their interests as well as their skills and determine if the career meets their expectations.

The final aspect of SCCT's triadic model of causality focuses on an individual's personal goals, especially ones that concern careers and activities (Niles & Harris-Bowlsbey, 2013). Personal goals are directly influenced by one's sense of efficacy and beliefs about outcome expectations (Lent & Brown, 1996). Consequently, individuals will be more driven to perform the tasks required of them on a career path if their personal goals align with their self-efficacy beliefs and outcome expectations. Career pathways programs provide an opportunity for students to create goals based on their experiences and provide a framework for counselors to aid students in the development of career plans.

SCCT serves to provide a framework for understanding the interactive effects of enrollment in a career pathway or engaging in a career major on students' beliefs and future career-related behaviors. For example, in a study of 800 middle school youth, Nugent et al. (2015) found that "learning was impacted by perceived self-efficacy in performing related tasks" (p. 1080) and that interests influenced self-efficacy and career expectations. Given these interactive effects, we contend that selecting a career pathway or a career major that immerses students in career information and real-world challenges influences students' effort and their choices.

The current study serves to enhance our understanding of the impact of both career pathways programs and career counseling services on students' career self-efficacy. By employing a phenomenological qualitative research design, we examine the beliefs and experiences of students who were engaged in career pathways programs and received career counseling services.

METHOD

Study Overview

This study is part of a larger study titled *Programs of Study as a State Policy Mandate: A Longitudinal Study of the South Carolina Personal Pathways to Success Initiative* (POS-SPM, Hammond et al., 2013). The POS-SPM, a five-year longitudinal study funded by the National Research Center on Career and Technical Education (NRCCTE), examined:

> … the extent to which a statewide reform mandate like the EEDA facilitates the creation of quality
> programs of study (POS) (as defined in Perkins IV) in various high school contexts and whether these

POS influence students' engagement, achievement, and transition to post-graduation education and/or employment in eight sample high schools. (Hammond et al., 2013, p. xx)

Detailed information about the full project methodology and school selection process can be found in Hammond et al. (2013).

This article explores the findings from focus group interviews that were conducted with a sample of high school seniors who had been exposed to a career major or career emphasis through their involvement in a POS, beginning in their eighth-grade year. The interviews explored a number of topics, including students' experiences with the development of their individual graduation plans (IGPs), the effects of having a career major on college and career preparedness, and the effects of having a career major on their career development and school interests. The central research questions for this paper include:

1. What was the impact of having a career major on students' perceptions of their academic experiences?
2. What was the impact of having a career major on students' career and college goals?
3. What role did the individual graduation planning process have on students' career and academic decisions?

Participants and Sampling Method

The participants included 71 high school seniors who attended one of the seven schools that participated in the POS-SPM study.[1]

Participants were selected using a stratified random sampling scheme in which students were chosen from specific majors. Students with a CTE career major (e.g., automotive technology, culinary arts, engineering, etc.) were categorized as "CTE concentrators," and those who majored in non-CTE areas (e.g., accounting, legal, science, etc.) were categorized as non-CTE concentrators. Thirty-four of the participants were male, and 37 were female. The participants reported a variety of majors, with the majority of participants reporting a health science major ($n = 21$) or an engineering major ($n = 15$) (see the appendix).

The schools were selected from specific economic regions of South Carolina, representing both low and high poverty districts from across the state. Four schools were identified as low poverty, with a mean poverty index of 45, and three schools were identified as high poverty, with a mean poverty index of 80 (poverty rates were identified from school report cards and based on the number of students who received free and reduced-price lunch or who qualified for Medicaid). The schools were located in town, suburban, and rural settings. The students from the sites represented a diversity of races—55.53% of the students were black or African American, 32.65% white, 0.75% American Indian or Alaskan Native, 1.07% Asian, 1.85% Hispanic or Latino, 0.32% Native Hawaiian or Other Pacific Islander, and 7.84% multiracial.

The interviews were conducted in a focus-group format and were facilitated and moderated by members of the POS-SPM research team, with two to three research team members interviewing

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[1] A total of eight schools participated in the POS-SPM study; however, audio recordings of the focus group interviews at one school were not available due to technical difficulties.

three to four students during each session. The interviews were between 30 and 50 min in length and were recorded and transcribed. A total of 22 interviews were analyzed for this study.

The Interview Protocol

The interview protocol was developed from observations, field notes, interviews, and survey data that were collected during a series of visits to the sample schools conducted by the POS-SPM study team. During these visits, meetings and interviews were held with school administrators, CTE teachers, and school counselors. Further, observations were made of CTE programs and courses. Using the information gathered during these site visits, the POS-SPM study team developed a semistructured interview protocol that included 25 items. The items on the interview protocol asked a range of questions about students' experiences in their CTE program, including their experiences in creating their individual graduation plans, their engagement with counselors in course and career planning, the role of their parents in their course and career planning, their satisfaction with their career major, the influence of their major and courses within their major on their academic success, and the influence of their career major and courses within their major on their career and college planning.

Data Analysis and Trustworthiness

A phenomenological perspective was employed in the conceptualization and analysis of the data for this study. Phenomenological research aims to create a "composite description" of the commonalities of those who have had similar experiences of a phenomenon (Creswell, 2013, p. 58). With this study, students' experiences in having a career major and receiving career counseling services (developed IGPs) and how these experiences impacted their academic and career self-efficacy comprised the central phenomena.

In an effort to identify and define the shared experiences of the students in this study, interview transcripts were analyzed using Miles, Huberman, and Saldana's (2014) matrix display method. This approach included the process of data condensation, data display, conclusion drawing, and verification. During the data condensation process, transcripts for each of the seven sites were individually analyzed and coded. The first step in the data condensation process included reviewing and organizing interview questions by central themes. Participant responses for each of these central themes were then analyzed and coded. The coded responses were categorized and clustered into major and minor themes. The major and minor themes were then organized and condensed into 14 initial themes and assembled in a matrix display. A cross-case causal network analysis was conducted in which the interview data were analyzed for variables that were found to be the most influential in accounting for the identified themes. This analysis resulted in the identification of four major themes and multiple subthemes. Conclusion drawing and verification, which is a continuous process in qualitative data analysis, was conducted by reevaluating the data, repeatedly reviewing and reanalyzing themes, and verifying themes with members of the interview team.

Trustworthiness was established in several ways. First, the POS-SPM researchers instituted a sound study design, including the employment of stratified sampling to identify participants for the interviews. Second, investigator triangulation was established by having members engage in ongoing discussions about each of the interviews and the major themes, including comparing field notes and post-interview discussions among investigators, which had been recorded and

transcribed. We reviewed these transcribed sessions during our analysis to clarify issues and verify themes. Third, we adopted Patton's (2014) approach of triangulating with multiple analysts. A member of the research team conducted an initial, abbreviated analysis of the interviews. We then conducted an in-depth analysis of each of the transcripts and compared our findings with those of the earlier, abbreviated analysis and found consistencies between the two.

FINDINGS

Influence of Major on Student Effort

One of the central findings from the analyses of the interviews was that having a career major influenced students' effort in their courses and their desire to be challenged academically. Students reported that having a career major influenced their effort in school overall, but especially in courses related to their major. Further, the effect of having a career major also influenced some students' attendance, in that they reported that they felt more motivated to come to school.

Several participants reported that having a career major influenced their effort in school by helping them to see the connection between the knowledge and skills gained in high school and their later influence on their career. As Malcolm,[2] an automotive technology major explained, "It gave me a lot to look forward to, and it gave me a reason to work harder in school," further explaining that the courses provided him with job options after high school. This sentiment was echoed by Brandon, another automotive technology major, who explained that having a career major "kind of pushes you, it helps you to keep yourself in that direction [toward a career]. It gives you direction in life once you do graduate." Derrick, a science major, echoed these sentiments stating, "It gives you the motivation to do well. And, it also gives you the tools." Marcy, a legal studies major, provided a strong example of the role that a career major can play in changing students' grades and motivation. Prior to taking the courses in her major she was doing poorly, but this changed when she shifted her focus to legal studies: "Once I moved to taking CP (college preparatory) courses and the law classes, I did pretty good. I turned it completely around." She explained that the change in her courses, "made me more motivated … it gave me, I guess, like a plan as to what I need to do." Generally, students commented on having a sense of motivation to attend school and to do well, because they thought that their courses and course-related experiences were interesting and gave them a sense of direction.

Meeting Academic Challenges

Another influence of having a career major was the noticeable change in effort that students reported in their courses and their willingness to meet academic challenges. Amanda, a health sciences major, explained that her courses motivated her to do better in math and science, stating, "I hate science … but to be a nurse you have to take math and science, so I've had to pay more attention." Denise, an accounting major, echoed this sentiment, stating that the courses she took for her major motivated her to be a stronger math student. This sentiment was repeated several times by students across the sample schools and majors. An automotive technology student

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[2] All student names are pseudonyms.

explained that before taking courses in his major he did not think learning science was important, but once he began taking courses, he understood how science was relevant to his major. In addition, several students discussed that having a career major and taking courses specific to their major motivated them to finish school. Danika, a human services major, explained:

> My classes made me want to come to school more, because I fell in love with sociology. Once I had [taken] sociology and classes that were leaning towards it, it gave me motivation to go to that class, and it gave me more motivation to stay in school.

Taylor, another human services major, reported that although she felt that math was a weak subject area for her, she pushed herself to take more difficult math courses, stating "I just wanted to, like, push myself to do more and kind of excel a little bit more." These examples demonstrate the connection students made between their career major and academic challenges. They reported pushing themselves to meet the academic challenges due to their long-range career goals.

Taking More Challenging Courses for College Preparation

An additional trend among several students was their interest in taking more challenging courses in order to prepare themselves for college. This was especially evident for students who reported a STEM major. For example, one engineering major reported taking a physics course his senior year, even though he had fulfilled his science requirements. Noah, also an engineering major, explained that having a major helped him to choose the right courses, even if they were more difficult, stating, "It helped me to pick the right math courses, the advanced math, and not just take an easy way out … It kind of just showed you, this is what you should take if you really want to stick to it." Zak, a science major, explained his rationale for taking more challenging courses: "I've started to take things that definitely are going to help in college for the major I pick. And, I think it's definitely pushing me in the right direction for what I want to do." Overall, there was a consensus that having a major provided motivation for students to attend school, work harder, strive for better grades, and take more challenging courses.

Preparedness

Students were asked how their experiences in their pathways program influenced their level of preparedness for college and/or work. An analysis of responses indicated that IGP development and course-related experiences played a central role in developing students' sense of preparedness. For example, Angela, a health sciences major, indicated that her experience in IGP development had a strong impact on her sense of readiness:

> If they hadn't of, like, sat down with us earlier and talked to us about where we could go and showed us where we had chances to go, and all the opportunities we had, I might, I might not be in this program. I'd be doing something else.

This sentiment was echoed by Heather, another health sciences major, who explained that working with the counselor to develop her IGP helped her decision-making, stating that with-

out the experience she would "probably be like confused as to what I wanted to do. I probably wouldn't have my mind made up by now." Overall, students indicated that the development of their IGPs was helpful in planning and decision-making.

Course-related experiences and instructors also had an impact on students' sense of preparedness. This was especially evident when students spoke of the courses that related to their major or pathway. Liz, a health sciences major, stated:

> … our teachers are RNs, and so they've worked in the hospital and stuff. So, being able to talk to them about like real-life experience and how it really is has kind of made me ready just to get out there and do it.

Bethany shared her perspective about her courses: "I feel like there's a lot of opportunities here to be as prepared as you can. I don't know that I've taken all of them. But, there are a lot of opportunities to prepare yourself for college." The consensus among participants was that the career-related courses provided a greater level of context and knowledge about their career majors, helping them to gain a deeper understanding of the careers and providing a sense of preparedness to move forward toward college and work.

DISCUSSION

The central purpose of this study was to examine how a career pathways program, choice of a career major, and career counseling services focusing on academic and career self-efficacy had an effect on students. The study was conducted as a result of South Carolina implementing their EEDA reform package.

We wanted to know how engaging in these experiences affected students' academic and career beliefs and sense of efficacy. Based on their experiences, the 71 students in this study reported an increased level of effort in their courses, an increased willingness to take more challenging courses, and an enhanced sense of preparedness for college and/or work. These findings support the SCCT constructs of self-efficacy beliefs, outcome expectations, and personal goals.

Self-efficacy beliefs, a central component to the SCCT model, demonstrate an individual's capacity to achieve and serve as a gauge to judge "one's capabilities and execute courses of action to attain designated types of educational performances" (Zimmerman, 1995, p. 203). We found that the engagement in career pathways and having a career major influenced students' beliefs and behaviors. After participating in career pathways and/or choosing a career major, students reported working harder in school and that they had a desire to take more challenging courses. In addition, students reported higher levels of motivation and that they overcame challenges, due to a newfound belief in their ability to meet academic challenges. These findings align with other research in which students' level of confidence or their judgment of their confidence served as a predictor of their academic performance in areas such as language arts, math, and writing (Pajares, 1996; Pajares & Miller, 1994; Schunk & Swartz, 1993; Zimmerman & Bandura, 1994).

Bandura (1997) describes outcome expectations as "a judgment of the likely consequences" of performances (p. 21). These expectations were evident in our findings, with students reporting that they took more challenging courses and engaged in courses that they did not necessarily enjoy

and probably would not have taken without the reforms, and they believed that these actions would aid them in attaining their goals, such as attending college.

Bandura (1997) proposed that self-efficacy influences effort, persistence, and choice—thus affecting not only beliefs and perceptions, but also behaviors and goal setting. Students in this study indicated that their experiences in a career pathways program, which included course-related experiences and career counseling, positively influenced their motivation, behavior, and goals. Examples included seeking out and completing additional courses, attending school more regularly, working harder in classes, and having a greater sense of motivation toward school completion. Also, having a career major and an IPG clearly helped students to gain a better understanding of their future careers, thus providing them with a greater sense of direction.

LIMITATIONS

There are inherent limitations with regard to the generalization of qualitative studies (Corbin & Strauss, 2008). The findings presented here should not be regarded as automatically transferable to all schools that employ a career pathways model and/or that provide individualized career planning services. Further, the study lacked a comparison group.

Although the sample was somewhat stratified by students' major or chosen career pathway, there was not equal representation among the various majors and pathways. Health science majors and engineering majors made up the majority of the sample, and our findings may have been different had there been a greater representation of other majors/pathways in our sample. An additional limitation is that students were not asked about any potential difficulties they encountered due to being enrolled in career pathways programs. It would be helpful to identify any potential negative impacts of such programs on students' academic and career development.

CONCLUSIONS AND IMPLICATIONS

The results of this study provide evidence that the South Carolina EEDA reforms produce desirable outcomes. Our analyses indicate that career-focused educational programs and career counseling enhance students' sense of preparedness for college and/or work and encourages students to put forth more effort in school, meet academic challenges, and take more challenging courses.

An ever-increasing focus on college and career readiness provides educators and researchers with opportunities to research the effectiveness of career-enriching educational programming, such as career pathways programs and career counseling services, on student outcomes.

This study adds to this important work, but many questions remain. Do these programs have a lasting effect? Do students continue to pursue these career pathways through college or into the world of work? Identifying possible answers to these questions requires further longitudinal study.

AUTHOR BIOS

Dr. Natalie Stipanovic is a faculty member at the University of Northern Colorado where she teaches in the Counselor Education and Supervision program. She has conducted research on the

role of counseling in programs of study and CTE and the career development of immigrant and refugee populations.

Sam Stringfield passed away July 31, 2016. Before he passed, he was a professor and the director of the School of Education at the University of Cincinnati. He authored more than 150 articles focusing on teacher, school, and system effects and is the founding editor of the *Journal of Education for Students Placed at Risk*. As a Kellogg fellow, he studied the politics and economics of school improvement in the United States, Asia, Africa, and Europe. Sam is very much missed by his colleagues and students.

Eric Witherell is a second-year doctoral student at the University of Cincinnati studying Counselor Education and Supervision. As a recent graduate of the School Counseling program at UC, Mr. Witherell has spent time working in schools around the greater Cincinnati area in various school counseling roles, specifically collaborating with practicing school counselors to implement evidence-based interventions. Throughout his time in the doctoral program, Mr. Witherell participated as a teacher's aide in the Counseling Children and Adolescents Master's Internship and completed Multicultural Counseling, Assessment in Counseling, and the Intro to Professional School Counseling courses. In research activities, Mr. Witherell focuses on parental involvement in first-generation-student families and assessment use for school counselors.

FUNDING

REFERENCES

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W. H. Freeman & Co.

Benson, G., Gardner, M., Hess, S., & Livings-Eassa, L. (2008, October). *Programs of study roundtable* [Audio podcast]. Retrieved from http://www.nrccte.org/resources/videos/programs-study-roundtable

Chang, Y., & Edwards, J. K. (2015). Examining the relationships among self-efficacy, coping, and job satisfaction using social career cognitive theory: An SEM analysis. *Journal of Career Assessment*, *23*(1), 35–47.

Corbin, J., & Strauss, A. (2008). *Basics of qualitative research* (3rd ed.). Thousand Oaks, CA: Sage.

Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches*. Thousand Oaks, CA: Sage.

Feldt, R. C., & Woelfel, C. (2009). Five-factor personality domains, self-efficacy, career outcome expectations, and career indecision. *College Student Journal*, *43*(2), 429–437.

Hammond, C., Drew, S. F., Withington, C., Griffith, C., Swinger, C. M., Mobley, C., … Daughterty, L. (2013). *Programs of study as a state policy mandate: A longitudinal study of the South Carolina personal pathways to success initiative*. Retrieved from http://www.nrccte.org/resources/publications/programs-study-state-policy-mandate-longitudinal-study-south-carolina-0

Kemple, J. J., & Snipes, J. C. (2000). *Career academies: Impacts on students' engagement and performance in high school*. Washington, D.C.: Manpower Demonstration Research Corp. Education Source.

Kenny, M. E., Blustein, D. L., Haase, R. F., Jackson, J., & Perry, J. C. (2006). Setting the stage: Career development and the student engagement process. *Journal of Counseling Psychology*, *53*(2), 272–279.

Lapan, R. T., Gysbers, N., Hughey, K., & Ami, T. J. (1993). Evaluating a guidance and language arts unit for high school juniors. *Journal of Counseling & Development*, *71*(4), 444–451.

Lapan, R. T., Gysbers, N. C., & Sun, Y. (1997). The impact of more fully implemented guidance programs on the school experiences of high school students: A statewide evaluation. *Journal of Counseling & Development*, *75*(4), 292–302.

Lent, R. W., & Brown, S. D. (1996). Social cognitive approach to career development: An overview. *Career Development Quarterly*, *44*(4), 310.

McWhirter, E. H., Rasheed, S., & Crothers, M. (2000). The effects of high school career education on social-cognitive variables. *Journal of Counseling Psychology*, *47*(3), 330–341.

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Thousand Oaks, CA: Sage.

Niles, S., & Harris-Bowlsbey, J. (2013). Understanding and applying recent theories of career development. In Niles, S., & Harris-Bowlsbey, J. (Eds.), *Career development interventions in the 21st century* (4th ed., pp. 96–101). Upper Saddle River, NJ: Pearson Education.

Nugent, G., Barker, B., Welch, G., Grandgenett, N., Wu, C., & Nelson, C. (2015). A model of factors contributing to STEM learning and career orientation. *International Journal of Science Education*, *37*(7), 1067–1088.

Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, *66*(4), 543–578.

Pajares, F., & Miller, M. D. (1994). Role of self-efficacy and self-concept beliefs in mathematical problem solving: A path analysis. *Journal of Educational Psychology*, *86*(2), 193–203.

Patton, M. Q. (2014). *Qualitative research & evaluation methods* (4th ed.). Thousand Oaks, CA: Sage.

Plank, S. B., DeLuca, S., & Estacion, A. (2008). High school dropout and the role of career and technical education: A survival analysis of surviving high school. *Sociology of Education*, *81*(4), 345–370.

Schunk, D. H., & Swartz, C. W. (1993). Goals and progress feedback: Effects on self-efficacy and writing achievement. *Contemporary Educational Psychology*, *18*(3), 337–354.

Stone, J. R. (2004). Math course taking for CTE concentrators: Evidence from three studies of the impact of a decade of education reform. *Journal of Career & Technical Education*, *21*(1), 51–70.

Stone, J. R., & Lewis, M. V. (2012). *College and career ready in the 21st century: Making high school matter*. New York, NY: Teachers College Press.

Symonds, W. C., Schwartz, R. B., & Ferguson, R. (2011). *Pathways to prosperity: Meeting the challenge of preparing young Americans for the 21st century*. Cambridge, MA: Harvard Graduate School of Education.

Zimmerman, B. J. (1995). Self-efficacy and educational development. In A. Bandura (Ed.), *Self-efficacy in changing societies* (pp. 202–231). New York, NY: Cambridge University Press.

Zimmerman, B. J., & Bandura, A. (1994). Impact of self-regulatory influences on writing course attainment. *American Educational Research Journal*, *31*(4), 845–862.

APPENDIX

PARTICIPANTS' MAJOR AND GENDER

Career pathway/major	Number of students	Gender
Horticulture	5	Male = 3 Female = 2
Health sciences	21	Male = 0 Female = 21
Culinary arts	3	Male = 1 Female = 2
Engineering	15	Male = 14 Female = 1
Automotive technology	4	Male = 4 Female = 0
Welding	1	Male = 1 Female = 0
Accounting	4	Male = 2 Female = 2
Business	3	Male = 1 Female = 2
Education	1	Male = 0 Female = 1
Sports management	1	Male = 1 Female = 0
Legal studies	2	Male = 0 Female = 2
Sciences	2	Male = 1 Female = 1
Construction	1	Male = 1 Female = 0
Computers/graphic design	1	Male = 1 Female = 1
Performing arts	1	Male = 1 Female = 0
Human services	1	Male = 0 Female = 1
Military/ROTC	2	Male = 1 Female = 1
Major unknown	2	Male = 1 Female = 1