Career Adapt-Abilities Scale - Dual Career Form - U.S. (CAAS-DC-U.S.): Psychometric Properties and Initial Score Validation in U.S. Collegiate Student-Athletes

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Abstract

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NCAA Division I student-athletes have reported difficulties in balancing their academics and extracurricular activities, including their athletic commitments (NCAA, 2020b, 2022b). Student-athlete time demands may lead to student-athletes prioritizing their athletic commitments and delaying their preparation for their professional career after sport (Brown et al., 2000; Ryba et al., 2017). A concept that can support student-athletes' preparation for their professional career after sport is career adaptability.

This research study examined if career adaptability scores of the Career Adapt-Abilities Scale - Dual Career Form (CAAS-DC; Ryba & Aunola, 2015; Ryba et al., 2017) are reliable and valid for NCAA Division I student-athletes in the United States. Additionally, this study analyzed the relationship between career adaptability and career construction, self-esteem, resilience, and sport burnout with NCAA Division I student-athletes. The relationship between career adaptability and academic performance was also observed.

Acceptable criterion values were observed to determine that there was a good fit of the observed data to the correlated five-factor model of the CAAS-DC-U.S. Overall, significant correlations were found between the scores of the CAAS-DC-U.S. combined scale and career construction, self-esteem, resilience, and sport burnout. A significant correlation was not found between career adaptability and academic performance, and low sport burnout reliability scores

should be considered when assessing the correlation between career adaptability and sport burnout in this study.

The results demonstrate that the CAAS-DC-U.S. may be used by practitioners and researchers to measure career adaptability with NCAA Division I student-athletes in the United States. By having an instrument to measure career adaptability with student-athletes, practitioners and researchers can also work to develop interventions for building student-athletes' career adaptability resources. Increasing student-athletes' career adaptability resources may support them with combining their academic and athletic commitments and better prepare them for their professional career after sport.

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Chapter 1: Introduction

This chapter will introduce the problem that has been identified for this study. There are three sections in this chapter: (a) overview; (b) problem statement; and (c) significance. The sections in this chapter will outline the significance of the problem and provide details surrounding the dimensions of the study.

Overview

There are over 170,000 Division I student-athletes who compete annually in NCAA sports (NCAA, 2021). Opportunities for student-athletes to compete in professional athletics is limited (NCAA, 2024b), and fewer than 2% of NCAA student-athletes who participate in college sports with professional leagues become professional athletes (NCAA, 2024a). Media coverage of college sports events often highlight student-athletes' and program success and can influence people to have misconceptions of what the life of a student-athlete is like.

A student-athlete is "a student whose enrollment was solicited by a member of the athletics staff or other representative of athletics interests with a view toward the student's ultimate participation in the intercollegiate athletics program" (NCAA, 2024c, p. 35). Students may also walk-on to an intercollegiate team. However, the majority of college sports rosters include recruited student-athletes.

Student-athletes experience different challenges than most college students, as they are required to balance time demands for both school and sport. Student-athletes have reported spending an average of 33 hours per week on athletics in-season (NCAA, 2020b), which can be difficult for student-athletes to balance their academics and extracurricular activities, including their athletic commitments (NCAA, 2020b, 2022b). Furthermore, student-athlete time demands may lead to student-athletes prioritizing their athletic commitments and delaying their

preparation for their professional career after sport (Brown et al., 2000; Ryba et al., 2017). Skipping this important developmental task may result in professional difficulties in the future (Savickas, 2002).

A concept that can support student-athletes' preparation for their professional career after sport is career adaptability. Career adaptability is defined as a "psychosocial construct that denotes an individual's readiness and resources for coping with current and imminent vocational development tasks, occupational transitions, and personal traumas" (Savickas, 2005, p. 51). Career adaptability resources may serve as a protective factor when facing unwanted professional conditions and may represent an important resource to effectively cope with career transitions and stressful situations (Maggiori et al., 2017).

While a number of factors have been researched with career adaptability, there has been limited research with student-athletes. In Finland, career adaptability has been studied with talented adolescent student-athletes attempting to sustain their academic commitments with their athletic career (Ryba et al., 2017). Negative correlations were found between career adaptability resources and school and sport burnout, and positive correlations were found between career adaptability resources and self-esteem, "feeling that one is good enough" (Rosenberg, 1965, p. 31), career construction, the conceptual framework of the Student Career Construction Inventory (SCCI; Savickas et al., 2018) that was developed for measuring adapting responses to the primary career construction tasks adolescents and emerging adults encounter (i.e., crystallizing, exploring, deciding, and preparing), and school and sport task values. Additionally, this research demonstrates that career adaptability resources may serve as a resilience factor, "the ability to bounce back or recover from stress" (Smith et al., 2008, p. 194), to support student-athletes with effectively managing their time demands, as well as assist with student-athletes' preparation for

their professional career after sport. In this study, sport burnout is defined as "a psychological syndrome of emotional/physical exhaustion, reduced sense of accomplishment, and sport devaluation" (Raedeke & Smith, 2001, p. 283).

One issue in identifying career adaptability with student-athletes is how to measure it. The Career Adapt-Abilities Scale - Dual Career Form (CAAS-DC; Ryba & Aunola, 2015; Ryba et al., 2017) measures career adaptability resources with adolescent student-athletes and was built on the Career Adapt-Abilities Scale (CAAS; Savickas & Porfeli, 2012), one of the most universally used career adaptability questionnaires (Maggiori et al., 2017). Currently, scores of the CAAS-DC have only been validated with high school student-athletes in Finland, and scores need to be validated with NCAA Division I student-athletes in the United States. By having an instrument that produces reliable and valid career adaptability scores with NCAA Division I student-athletes, practitioners and researchers will be able to better understand this construct in relation to American student-athletes.

This study aimed to validate scores of the CAAS-DC with NCAA Division I student-athletes. Validating scores of the CAAS-DC instrument may assist U.S. practitioners with increasing student-athletes' preparation for their professional career after sport. Additionally, validating scores of the CAAS-DC will allow for practitioners and researchers to have a standardized instrument to assess career adaptability resources with U.S. student-athletes.

Problem Statement

Scores of the CAAS-DC have only been validated with 391 Finnish-speaking adolescent student-athletes from six sport high schools across Finland (Ryba et al., 2017). Therefore, results are limited in their application to other student-athlete populations, and it is necessary to validate scores of the CAAS-DC with NCAA Division I student-athletes in order for U.S. practitioners to

use the CAAS-DC for designing career development programs and interventions to support student-athletes' transition from collegiate athletics to their professional career after sport. This research study explored the following two research questions:

1. Are career adaptability scores of the CAAS-DC reliable and valid for NCAA Division I student-athletes in the United States?
2. What is the degree of relationship between NCAA Division I student-athletes' CAAS-DC scores and scores in the following constructs: (a) career construction; (b) self-esteem; (c) resilience; and (d) sport burnout?

    Are there significant correlations between NCAA Division I student-athletes' CAAS-DC scores and the following constructs: (a) career construction; (b) self-esteem; (c) resilience; and (d) sport burnout?

    a) Is there a significant positive correlation between NCAA Division I student-athletes' CAAS-DC scores and career construction?
    b) Is there a significant positive correlation between NCAA Division I student-athletes' CAAS-DC scores and self-esteem?
    c) Is there a significant positive correlation between NCAA Division I student-athletes' CAAS-DC scores and resilience?
    d) Is there a significant negative correlation between NCAA Division I student-athletes' CAAS-DC scores and sport burnout?

Significance

It is important that career adaptability resources can be measured for research and for career development support services and counseling. The CAAS-DC may serve as a measurement tool of career adaptability with student-athletes (Ryba et al., 2017). Scores of the

CAAS-DC have only been validated with Finnish-speaking adolescent student-athletes and the results are limited in their application to other student-athlete populations.

This study expanded on existing research by validating scores of the CAAS-DC with NCAA Division I student-athletes in the United States. By validating scores of the CAAS-DC with NCAA Division I student-athletes, U.S. practitioners may be able to use the instrument to increase student-athletes' preparation for their professional career after sport. Additionally, U.S. practitioners and researchers will have a standardized way of measuring career adaptability resources for NCAA Division I student-athletes.

This study also analyzed the relationship between U.S. student-athletes' CAAS-DC scores and their scores in the following variables: (a) career construction; (b) self-esteem; (c) resilience; and (d) sport burnout. Given the limited research with the CAAS-DC, this study built on Ryba et al.'s (2017) previous findings that support correlations with career adaptability and career construction, self-esteem, and sport burnout. Additionally, this study explored further the assertion that career adaptabilities may constitute a resilience factor to cope effectively with career transitions and stressful situations (i.e., resilience; Maggiori et al., 2017; Ryba et al., 2017).

Career adaptability is a central component in career construction theory (Savickas, 2005). This study builds on current career construction theory research, as little is known about career adaptability with NCAA Division I student-athletes. Having a better understanding of career adaptability with student-athletes in the U.S. adds to the literature about student-athletes and career adaptability. This study provides an opportunity for cross-cultural research by allowing for the examination of similarities and differences in career adaptability findings between U.S. athletes and athletes in other countries (i.e., Finland), extending career construction theory

research and our knowledge of career adaptability to other countries and types of student-athletes.

Chapter Summary

Student-athletes experience challenges in effectively balancing their time demands. Student-athlete time demands may lead to student-athletes prioritizing their athletic responsibilities and delaying their preparation for their professional career after sport. The delay of this important developmental task may bring on professional difficulties in the future. A concept that can support student-athletes' preparation for their professional career after sport is career adaptability. The CAAS-DC measures career adaptability resources with adolescent student-athletes, but scores have only been validated with adolescent student-athletes in Finland. This study validated scores of the CAAS-DC with NCAA Division I student-athletes in the United States.

Chapter 2: Review of the Literature

This literature review explores existing literature surrounding career adaptability and how it may be measured. In addition to providing a general overview of the literature, it will also review career adaptability research with college students, with a specific focus on collegiate student-athletes. Finally, particular instruments that have been used to measure career adaptability resources with student-athletes are investigated. There are three sections in this chapter: (a) career adaptability; (b) career adaptability research; and (c) methods used to validate scores of a quantitative research instrument.

Career Adaptability

The first section in this chapter reviews the overall dimensions of career adaptability and their organization in career construction theory. Additionally, this section outlines the development of a quantitative measure of the four dimensions of career adaptability. The four dimensions of career adaptability: (a) concern; (b) control; (c) curiosity; and (d) confidence are defined and contextualized as resources individuals may use in navigating their professional and personal life.

Career adaptability is defined as a "psychosocial construct that denotes an individual's readiness and resources for coping with current and imminent vocational development tasks, occupational transitions, and personal traumas" (Savickas, 2005, p. 51). Career construction theory identifies overall dimensions of career adaptability which are organized into three levels: (a) the general adaptive resources and strategies individuals use to manage career tasks, transitions, and traumas; (b) the attitudes, beliefs, and competencies which shape the coping behaviors used to master career tasks, transitions, and traumas; and (c) the coping behaviors that lead to vocational development and construction of careers (Savickas, 2005, 2013).

At the first level reside the four dimensions of career adaptability: concern, control, curiosity, and confidence, each named according to its purpose and listed according to its rank (Savickas, 2005, 2013). These dimensions symbolize resources an individual may use when handling tasks, transitions, and traumas encountered during their professional career.

The Four Dimensions of Career Adaptability

The most important dimension of career adaptability is concern, meaning the extent in which an individual thinks about the future and is aware of how important it is to prepare for their future (Savickas, 2005, 2013). By planning ahead, an individual becomes aware of upcoming tasks and transitions, as well as future choices that may need to be made. An individual's lack of concern may be a result of many reasons, such as their focus being on the here and now (e.g., current athletic season) or finding it too difficult to think about upcoming change because it feels too uncertain or unclear (e.g., senior student-athlete; Del Corso, 2013). An individual with a lack of career concern may become indifferent, which can lead to an individual not planning at all and having a feeling of hopelessness and distrust about the outcome of their future (Savickas, 2005, 2013).

Control is the second most important dimension of career adaptability, which means individuals are aware of their responsibility in building their careers (Savickas, 2005, 2013). Instead of avoiding required vocational tasks (e.g., preparing for a job) or occupational transitions (e.g., changes in job), individuals with high career control engage in these tasks and transitions. A lack of career control can lead to confusion and the inability to make decisions about an individual's future. Many psychological (e.g., self-defeating thoughts), sociological (e.g., influential members in the community), and structural (e.g., societal barriers) influences may negatively impact an individual's career control (Del Corso, 2013).

The third dimension, curiosity, refers to an individual's desire to learn about how they fit in the work world (Savickas, 2005, 2013). When individuals are open to new experiences and to exploring various roles within these experiences, individuals can see themselves differently, discover additional talents or skills they may have, learn about new things that interest them, and identify values that are important to them. Additionally, this inquisitive attitude results in the ability to make better occupational choices in the future. Individuals with low career curiosity will find it difficult to navigate the many changes within the present-day workplace, leading to confusion of how they see themselves fitting into these changes and how to adapt to them (Del Corso, 2013).

Confidence is the fourth and final dimension of career adaptability, indicating how an individual feels concerning their ability to make good academic and career decisions (Savickas, 2005, 2013). An individual gains career confidence through solving problems that they encounter in their everyday life (e.g., academic, athletic, and taking care of their living space). Lack of exposure to a category of experience (e.g., academic subject and leadership role) can lead to a lack of confidence in approaching these experiences. Additionally, a lack of career confidence in an individual can be a result of their response to external barriers such as gender discrimination, racism, and ageism (Del Corso, 2013). Individuals will face many challenges throughout their lifetime, both personally and professionally (e.g., health problems, family concerns, and unexpected employment changes). Individuals with high career confidence are able to navigate these challenges by critically thinking through possible solutions, making difficult decisions, and maintaining their well-being through adversity (e.g., manage anxiety).

The four adaptability dimensions, or the 4Cs for short, support an individual's ability to manage their emotions and behaviors while experiencing career tasks, transitions, and traumas

(Savickas & Porfeli, 2012). The 4Cs are represented as a cumulative construct and serve as an overall indicator of career adaptability. Conceptually, an adaptable individual becomes concerned about their professional career, takes control of shaping their professional career, displays curiosity by exploring possible selves and future plans, and shows the confidence to pursue their goals and aspirations (Savickas, 2019). An individual's ability to respond to career changes and difficulties throughout their lifetime is shaped by the adaptability resources they have developed, and when these resources are not developed individuals are not prepared for the inevitable career tasks, challenges, and traumas that will require them to adapt in order to continue to build their professional career.

Measuring the Four Dimensions of Career Adaptability

While career adaptability was brought into the literature on vocational psychology in 1981 (Super & Knasel, 1981), the development of the Career Adapt-Abilities Scale (CAAS; Savickas & Porfeli, 2012) and validation of CAAS scores with various populations allowed for the phenomenon of career adaptability to be measured in a uniform way (Rudolph et al., 2017). Psychologists from 18 countries came together to operationally define career adapt-abilities, as they did not want to create a measure only in one country that would require adaptation for use in other countries (Savickas & Porfeli, 2012).

The developers of the CAAS aimed to construct a career adapt-ability scale that allowed for results from different countries to be easily comparable (Porfeli & Savickas, 2012). The initial validation of CAAS scores, in 13 of the 18 countries that worked together to develop the instrument (CAAS-International or CAAS 2.0; Savickas & Porfeli, 2012), led to an accelerated expansion in quantitative empirical research using the CAAS instrument to measure career adaptability (Rudolph et al., 2017).

Validation of CAAS Scores

To approximate the calculation of reliability, the coefficient alpha (α; Cronbach, 1951) was reported. The scores of the instrument were considered to be reliable. The reported reliability coefficients of the CAAS subscales were, respectively, 0.83 (concern), 0.74 (control), 0.79 (curiosity), and 0.85 (confidence); and the reported reliability coefficient of the combined adaptability scale was 0.92 (Savickas & Porfeli, 2012).

Content-related validity was demonstrated through a career adaptability research team, composed of an international research team of vocational psychologists from 18 countries that collaborated to define adapt-abilities and develop an instrument to measure this construct (Savickas & Porfeli, 2012). The measure was created in the English language, and then was translated into the respective native language as needed for the psychologists to use in their home countries. Literal translations for a few items were difficult and group discussions, with investigators from multiple countries, were used to resolve these challenges. Additionally, to check their work, investigators in each country used back translation and piloted the newly-translated instrument with small groups of students. Problems with the response set were found in pilot testing, adjustments were made accordingly until the pilot test showed good results.

To demonstrate construct-related validity, exploratory factor analysis was conducted for three pilot studies in the United States, given that no previous research had been conducted with the items in the instrument (Savickas & Porfeli, 2012). Data from 13 countries were combined into one data set to test the psychometric properties of the Career Adapt-Abilities Scale - Research Form (CAAS 1.0) using hierarchical, confirmatory factor analysis. Measurement equivalence and reliability of the CAAS was then analyzed across countries to understand if the CAAS was conceptually understood in the same way across countries and cultures. Comparative

fit index (CFI), root-mean-square error of approximation (RMSEA), and standardized root mean squared residual (SRMR) were the statistics used to determine that the model fit was good.

Findings from this research resulted in the construction of the CAAS, which consists of four scales (i.e., concern, control, curiosity, and confidence), each including four items (Savickas & Porfeli, 2012). While the research included participants from the United States and results concluded that the CAAS has strong potential to be beneficial in career development research, psychosocial constructs (i.e., adaptability) are sensitive to the background and age of the population being measured. Based on the individual's background and environment, an individual's demand for or access to develop adapt-abilities can differ greatly from other individuals with different demands and opportunities. Therefore, when measuring the construct of adaptability, it is important to ensure that scores of the CAAS are analyzed with the specific population being researched.

Section Summary

Career adaptability resources support individuals as they navigate tasks, transitions, and traumas they may face throughout their professional career. The four dimensions of career adaptability are: (a) concern (awareness of the importance to prepare for one's future); (b) control (awareness of an individual's responsibility in building their career); (c) curiosity (an individual's desire to learn about how they fit into the work world); and (d) confidence (how an individual feels regarding their ability to make good academic and professional decisions). The 4Cs support an individual with self-regulation when they experience difficulties (i.e., tasks, transitions, and traumas) in their professional career. These resources shape an individual's ability to respond to the professional changes that they experience throughout their lifetime.

The development of the CAAS, and validation of CAAS scores with various populations, allowed for a uniform way to measure career adaptability resources with individuals and for a universal definition of the career adapt-abilities construct to be created. This development led to an increase in empirical research studies using the quantitative measurement of the CAAS to assess career adaptability. This study validated scores of the CAAS-DC (Ryba et al., 2017) with U.S. Division I student-athletes. Validating scores of the CAAS-DC with student-athletes adds to the existing career adaptability empirical research outlined in this section and allows for the examination of this population in more detail.

Career Adaptability Research

The second section in this chapter reviews existing empirical research about career adaptability. Career adaptability has been shown to be an important resource for individuals in their academic, professional, and personal lives as they navigate multiple tasks, transitions, and traumas (Rudolph et al., 2017). A meta-analysis, with results based on 90 studies, was conducted by Rudolph et al. (2017). Findings from the meta-analysis showed career adaptability to be significantly associated with various outcomes regarding academics, work, and subjective well-being. Specifically, a significant association was found between career adaptability and measures of adaptivity (i.e., self-esteem, future orientation, and hope), adapting responses (i.e., career planning, career exploration, and career decision making self-efficacy), adaptation results (i.e., career identity and career/job/school satisfaction), and particular demographic variables (i.e., age and education).

This section will expand on the aforementioned outcomes and include empirical evidence pertaining directly to career adaptability and collegiate student-athletes. Specifically, this section will review career adaptability research: (a) broadly; (b) with college students; and (c) explicitly

with college student-athletes. Research highlighted in this literature review focus on research findings that used quantitative measures of career adaptability, specifically the following quantitative instruments: Career Adapt-Abilities Scale (CAAS-International; Savickas & Porfeli, 2012) and the Career Adapt-Abilities Scale - Dual Career Form (CAAS-DC; Ryba & Aunola, 2015; Ryba et al., 2017); an overview of the methods used to validate the scores of each instrument is also included in this section.

Career Adaptability Research: General Overview of the Literature

Students encounter many adversities during their academic pursuits (Tian & Fan, 2014). Students' adversity quotients have been found to be positively associated with their degree of career adaptability, which supports individuals in managing setbacks and choosing productive responses that turn difficulties into opportunities. Associations have also been linked between career adaptability and academic achievement over time, specifically career concern predicted positively academic achievement (Negru-Subtirica & Pop, 2016). Individuals with higher levels of career adaptability have shown higher motivation in educational environments (Pouyaud et al., 2012), notice fewer internal and external barriers to continuing their education (Soresi et al., 2012), and have a more expansive range of vocational interests.

Career adaptability has been strongly related to vocational identity and negatively related to self-doubt (Porfeli & Savickas, 2012); higher levels of career adaptability have been found to be associated with looking for and making career choices that carry out one's identity, whereas lower levels of career adaptability resources have been found to be associated with higher levels of anxiety and confusion regarding career planning. Career aspirations, how often an individual engages in career exploration behaviors, and decidedness regarding a chosen career path have been significantly related to career adaptability dimensions (Urbanaviciute et al., 2014).

Additionally, significant relationships with employability skills, specifically teamwork skills, have been connected to the four dimensions of career adaptability (de Guzman & Choi, 2013). These key skills can aid individuals throughout their professional career in navigating the transitions and changes that are presented.

Career adaptability has been demonstrated to be an important resource for not only professional well-being, but for subjective well-being as well (Rudolph et al., 2017). It has been identified that career adaptability predicts well-being over time (Johnston et al., 2016), and individuals with higher career adaptability report a greater quality of life (Soresi et al., 2012). Career adaptability has been found to serve as a resource to increase an individual's personal mental health, and resilience has been found to be a mediator between career adaptability and mental health problems (Xu et al., 2020). Career adaptability resources have been revealed to be positively associated with not only work engagement (Coetzee et al., 2017; Rossier et al., 2012), but also with life satisfaction (Johnston et al., 2016; Konstam et al., 2015; Maggiori et al., 2013). Career adaptability resources have been found to be negatively associated with professional insecurity and job strain (Maggiori et al., 2013), and it has been suggested that career adaptabilities may form a protective factor for individuals to adequately cope with transitions in their career and stressful circumstances that arise (Maggiori et al., 2017). Positive associations have been identified with career adaptability resources and career outcomes such as self-rated career performance (Zacher, 2014), career satisfaction (Chan & Mai, 2015; Tolentino et al., 2013; Zacher, 2014), and promotability (Tolentino et al., 2013), as well as employees' general and professional well-being (Maggiori et al., 2013). Career adaptabilities have also been found to mediate the relationship between orientations to happiness (i.e., flourishing and peak

functioning) and work stress (Johnston et al., 2013), indicating that building career adaptabilities with individuals may support them in flourishing and functioning in their professional life.

Career Adaptability Research: College Students

With college students specifically, there have been significant relationships found between career adaptability dimensions and various constructs. Core self-evaluations, self-esteem, generalized self-efficacy, locus of control, proactive personality, future time perspective, GPA, and neuroticism have been found to have significant relationships with career adaptability (Öncel, 2014).

A theme that has emerged from research with college students and career adaptability is how students commit to and adjust their personal goals when facing adversity. Career adaptability has been shown to be positively associated with tenacious goal pursuit (i.e., pursuing goals through difficulties) and flexible goal adjustment (i.e., positively reframing difficult situations and adapting goals; Tolentino et al., 2013). Additionally, hope and optimism have been found to be strongly correlated with career adaptability (Buyukgoze-Kavas, 2014), suggesting that students with higher levels of career adaptability may think of themselves as more willing and capable of change in their professional careers, believe that they are able to create pathways to achieve future goals, and may be able to more easily handle professional difficulties and changes. Positive relationships with conscientiousness and promotion focus have also been linked to career adaptability with college students (van Vianen et al., 2012). Conscientious individuals can be conceptualized as having self-control, determination, and have a need to reach their goals. Individuals high in promotion focus set goals that are focused on positive future outcomes, such as doing well on a test and finding a job they love.

Another theme that has emerged from career adaptability research with individuals in college is self-esteem, where significant relationships have been demonstrated between self-esteem and career adaptability resources (Öncel, 2014; Rusu et al., 2015). Additionally, career adaptability resources have been reported to be connected to a boundaryless mindset and protean career attitudes (Chan et al., 2015). An individual with a boundaryless mindset is comfortable creating relationships across different organizations and is open to a professional career which includes several employers. Additionally, an individual who has a protean career attitude relies on their own values, versus their employers, and takes ownership of managing their career (Briscoe et al., 2006).

Career adaptability resources have also been investigated specifically with U.S. college students. Research with U.S. college students has found all four dimensions of career adaptability (i.e., concern, control, curiosity, and confidence) moderately correlate with academic satisfaction, and has suggested that students that score higher in the dimensions of concern, control, and confidence may experience higher academic satisfaction due to increased perceptions of control and confidence in making career decisions (Duffy et al., 2015). Students' need for social support (e.g., professors, staff at university, and family members) may decrease as individuals develop the competencies to plan, control, and develop confidence in managing the challenges associated with making decisions for their careers (Ghosh & Fouad, 2017). Higher levels of career adaptability have been found to be connected to higher levels of grit, personal growth initiative (PGI), lower perceptions of professional and academic barriers, and a greater ability to handle professional and educational barriers (Gregor et al., 2021). It has been suggested that increased levels of calling, or feeling that an individuals' professional career is connected to a bigger purpose in life and used to help others, may increase the career adaptability dimensions

of concern, curiosity, and confidence, which then may lead to greater career decision self-efficacy (Douglass & Duffy, 2015).

Career Adaptability Research: College Student-Athletes

While career adaptability has often been utilized to understand the career development for students and adults, it has not been researched as often with college student-athletes (Lu, 2020). Lu's (2020) research with college student-athletes in Taiwan demonstrates empirically that career adaptability is able to be acquired in college student-athletes in a career development context and that career adaptability is a significant mediating factor in the student-athletes' career development; specifically, career adaptability was found to have a mediating effect between the traits of an individual and career-related behaviors. Chen & Lu's (2023) research with college student-athletes in Taiwan also found that career adaptability has a mediating effect on the relationship between focus on opportunities and career planning. Both studies (Lu, 2020; Chen & Lu, 2023) utilize the Career Adapt-Abilities Scale-Short Form (CAAS-SF; Maggiori et al., 2017), which is a brief 12-item version of the international form of the Career Adapt-Abilities Scale (CAAS-International; Savickas & Porfeli, 2012) that has been used in the other research outlined in this literature review to measure career adaptability.

Letawsky Shultz (2017) conducted a study to explore how career adaptability is related to athletic identity, academic motivation, and role conflict for Division I student-athletes in the United States. The results of this study found that student-athletes' private (intrinsic) athletic identity, academic motivation, and role balance were positively connected to student-athletes' career adaptability. Individuals with higher levels of career adaptability derived personal satisfaction from their sport participation, showed higher levels of academic motivation, and demonstrated a greater ability to manage both their academic and athletic demands.

The career adaptability dimensions of control and confidence were negatively associated with public athletic identity, suggesting that student-athletes that regard highly the rewards and recognition from others may take less responsibility in planning their professional career and have less confidence in themselves to handle future career obstacles (Letawsky Shultz, 2017). Additionally, planning to play professional sports were positively associated with overall career adaptability and each of the four dimensions. A limitation of Letawsky Shultz's study is that one item from the original instrument used to measure career adaptability (CAAS-USA Form; Porfeli & Savickas, 2012) was accidently left off the instrument that was included in the print version of the survey, potentially changing the psychometrics and construct validity of the original instrument.

Tyrance (2010) explored career planning attitudes among Division I college student-athletes (i.e., career optimism, career adaptability, and career knowledge) utilizing the Career Futures Inventory (CFI; Rottinghaus et al., 2005), a different measure than the international form of the CAAS (Savickas & Porfeli, 2012) and the CAAS-SF (Maggiori et al., 2017). Results from Tyrance's (2010) study showed that a student-athletes' career adaptability could not be predicted by their level of athletic identity, expectation to play professional sports, or their respective demographic characteristics (i.e., race, gender, and sport). A significant inverse relationship, however, was found between a student-athletes' career adaptability and their athletic identity. Student-athletes that highly valued their athlete self-identity in the study felt less confident in navigating changes in their future professional plans.

Career Adaptability Research: Measuring Career Adaptability with Student-Athletes in Finland

The Career Adapt-Abilities Scale - Dual Career Form (CAAS-DC; Ryba & Aunola, 2015; Ryba et al., 2017) is identified as a way to distinctively measure career adaptability with student-athletes. Pursuing academics along the side of an athletic career presents difficulties and challenges, such as lower vocational readiness and adapting to life upon completion of sport (Ryba et al., 2017). Given these challenges, a better understanding of the unique competencies for successfully balancing these two domains is essential.

The term "dual careers" is used to describe societal expectations that are placed on athletes for a successful athletic career alongside pursuing their education and professional aspirations after sport, while at the same time resolving other developmental tasks associated with their life stage development (i.e., identity formation; Ryba et al., 2017). Due to the challenges athletes face in their dual career pursuit, Ryba et al. (2017) emphasize the importance of exploring the specific competencies that mobilize dual career design and management, as well as better understanding the potential for career adaptabilities to serve as psychological resources for athletes through life transitions to help their health and well-being throughout all stages of their development. Ryba et al. (2017) validated scores from the CAAS-DC to measure the career adaptability of adolescent athletes in Finland.

Validation of CAAS-DC Scores

While scores from the international form of the Career Adapt-Abilities Scale (CAAS-International; Savickas & Porfeli, 2012), initially constructed in the English language and then translated as needed for use in respective countries, have been validated with diverse social and cultural samples, as well as with adolescents, and while the instrument has been widely used to

measure career adaptability in these samples, Ryba et al. (2017, p. 87) hypothesized that "because talented young athletes face the unique demands of combining their athletic and academic pursuits, their concerns for the future might diverge from a six-item 'concern' factor of the CAAS". The dual career concern subscale was added to the CAAS to develop the Career Adapt-Abilities Scale - Dual Career Form (CAAS-DC; Ryba & Aunola, 2015; Ryba et al., 2017), an instrument developed to measure career adaptability specifically with student-athletes.

To demonstrate content-related validity, the CAAS 2.0 (Savickas & Porfeli, 2012) was translated from English to Finnish, then back translated into English by two bilingual experts, and then finalized in cooperation with a Finnish-speaking doctoral student studying counseling psychology at a university in America (Ryba et al., 2017). Three additional items were added to the CAAS, initially in Finnish, to measure dual career concern of adolescent athletes:

> "Becoming aware of the sport choices that I must make;" "Concerned about my athletic career;" and "Concerned about combining my sport and education." In addition, concern item # 6 of the CAAS ("Concerned about my career") was modified as "Concerned about my vocational career" to ensure a clear distinction between athletic career and vocational career. (Ryba et al., 2017, p. 88)

The subscale dual career concern measures how aware the individual is of the challenges in combining both academics and athletics and the degree to which the individual prepares for their dual career development.

Reliability was reported using the coefficient alpha (Cronbach, 1951), and the scores of the instrument were considered to be reliable. The reported reliability coefficients of the CAAS-DC subscales were, respectively, 0.85 (concern), 0.85 (dual career concern), 0.85 (control), 0.90

(curiosity), and 0.89 (confidence); and the reported reliability coefficient of the combined adaptability scale was 0.96 (Ryba et al., 2017).

Construct-related validity of the CAAS-DC was demonstrated with Finnish high school student-athletes (Ryba et al., 2017). Exploratory structural equation modeling (ESEM), which integrates the strengths of both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) into one equation modeling framework, was used given the five-factor measurement model was exploratory in nature and due to the new factor of dual career concern that was now being included. Confirmatory factor analysis (CFA) was used as well as an additional step in confirming the measurement of the CAAS-DC. Chi-square, chi-square to degrees-of-freedom ratio, comparative fit index (CFI), Tucker Lewis index (TLI), and root-mean-square error of approximation (RMSEA) were the statistics used to determine that the model fit was good.

Given what has been outlined above, Ryba et al. (2017) concluded that the CAAS-DC showed high structural, scale, and item reliabilities and that the CAAS-DC appears to be coherent with the career adaptability conceptual framework (Savickas, 2005; Savickas & Porfeli, 2012). Also, given that the scores from the CAAS-DC were found to be reliable and valid with the adolescent athlete participants in the study, it was demonstrated that the CAAS-DC may be used as a measurement tool of career adaptability with adolescent athletes to measure athletes' self-regulation competencies in combining academics and athletics (Ryba et al., 2017).

CAAS-DC Results

The study showed that the adolescent athletes in Finland were likely to put a prioritization on their athletic development and delay preparation for their professional career after sport, supporting the need for the dimension of dual career concern when measuring career

adaptability with adolescent athletes that are working to combine their academic and athletic pursuits. Athletes' motivation in sport and school predicted their development in the respective domains. Additionally, the study revealed that dual career adaptability may support adolescent athletes with self-esteem and protect them from academic burnout. Ryba et al. (2017) provide recommendations on how the Dual Career Form may be used in career counseling with athletes, suggesting that the CAAS-DC could be used to recognize athletes' strengths and to create opportunities for designing their life projects. Additionally, Ryba et al. (2017) suggest that the CAAS-DC may identify athletes' psychological resources and competencies that they have developed to support athletes during their transition to their professional career after sport. Given that participants were recruited for data collection of a longitudinal study, follow up analysis has been done with the CAAS-DC over time (Heinonen, 2018; Nikander et al., 2021, 2022, 2024; Ojala, 2019, 2023).

CAAS-DC Longitudinal Analysis

Between the five dimensions of the CAAS-DC, concern and curiosity were found to have the lowest mean scores across high school, while confidence, control, and dual career concern were found to have the highest mean scores (Nikander et al., 2021, 2022; Ojala, 2019, 2023). While overall levels of self-esteem and career adaptability were found to be positively related, female student-athletes showed lower levels of career adaptability and self-esteem than male student-athletes (Nikander et al., 2021). Additionally, self-esteem and career adaptability remained rather stable throughout the student-athletes' high school lifespan, with most of the variation coming from individual student-athlete differences. Student-athlete expectations for their success in school and sports have been associated with their career adaptability resources (Nikander et al., 2022). Higher success expectations that student-athletes had in sport showed the

increased likelihood that they demonstrated profiles of moderate adaptabilities, high adaptabilities, and increased adaptabilities than very low adaptabilities or low adaptabilities profiles. Also, the same finding occurred with student-athletes that reported higher success expectations in their academics. Additionally, mothers' expectations for high academic achievement increased the likelihood of student-athletes having higher career adaptability profiles (i.e., moderate adaptability, high adaptability, and increased adaptability). However, mothers' expectations of sport success and fathers' expectations of sports or school success did not show to be associated with student-athlete career adaptability profiles.

Heinonen (2018) identified three identity profiles with distinctive characteristics: (a) sport (identify strongly as athlete); (b) dual (simultaneous identification to both student and athlete role); and (c) uncommitted (don't identify strongly as either a student or an athlete). All three identity profiles remained highly stable through the first two years of high school with no additional groups appearing. A causal relationship was found to exist with career adaptability and identity group belonging. Career adaptability levels were found to be lower with individuals within the uncommitted identity group than with those in the dual identity group

Nikander et al. (2022, 2024) identified five career adaptability profiles across time with student-athletes: (a) stable very low adaptabilities; (b) stable low adaptabilities; (c) stable moderate adaptabilities; (d) stable high adaptabilities; and (e) increased adaptabilities. Stable moderate adaptabilities was the largest profile represented, with 37% of the student-athletes in the respective sample falling into this category. However, only 8% of the student-athletes demonstrated the increased adaptabilities profile, with more male student-athletes showing this profile than female student-athletes. Ojala (2019, 2023) found four different career adaptability profiles across time with student-athletes: (a) higher adaptability; (b) lower adaptability; (c)

increasing adaptability; and (d) decreasing adaptability. Student-athletes' career adaptability with higher and lower adaptability profiles (40.41% of sample) remained stable across time, where the remaining sample of student-athletes (59.59%) demonstrated changing levels of career adaptability over time (i.e., increasing and decreasing adaptability profiles).

High career adaptability scores were associated with high grade point averages, while low career adaptability scores were associated with low grade point averages and a probability to drop out from competitive sport. Nikander et al. (2024) found that despite reporting the highest number of sports training hours and high academic success, student-athletes in the highly successful (sport and academic) environment were most likely to belong to the high or increased career adaptability profile. While Nikander et al. (2022, 2024) and Ojala (2019, 2023) found differences in their observations of student-athletes' career adaptability profiles over time from the same sample, a key takeaway from their findings is that there are in fact differences in student-athlete career adaptability developmental pathways when measured over time. Additionally, these findings highlight the ability over time for career adaptability skills within these respective profiles to remain static or to change.

Knowing that different career adaptability profiles exist with student-athletes and that student-athlete career adaptability profiles may or may not change over time, it is not only important for practitioners to assess student-athletes' career adaptability resources early, but also for continued assessment to take place over time as practitioners work to develop resources with student-athletes. Furthermore, it is important for practitioners to not only build confidence in student-athletes' academic success, but also find ways to support student-athletes' confidence in their athletic success (e.g., sport performance and sport psychology). Additionally, given that gender differences, student-athlete academic and athletic motivation, and parent expectations of

student-athletes' academic success, specifically mothers' academic success expectations, have been found to potentially impact student-athletes' career adaptability resources, it is important that practitioners are mindful of these findings as they conduct student-athlete career adaptability assessments and interventions.

Another key finding surrounding follow-up analysis that has been done with the data collected from the original CAAS-DC sample of high school student-athletes, is that concern and curiosity were shown to have the lowest mean scores across high school. As previously mentioned, career concern is the most important dimension of career adaptability and concern has been shown to positively predict academic achievement. Additionally, career adaptability profiles have been shown to exist with student-athletes, and adaptability profiles may or may not change over time. This finding highlights not only the importance of career adaptability assessment with student-athletes and the time sensitivity for this assessment, but also the importance for interventions to build these respective resources early in a student-athletes' academic career. Building career adaptability resources, specifically with student-athletes with low career adaptability profiles, may also support with competitive sport retention. Gender differences, student academic and athletic motivations, and parental academic expectations (especially mother's academic expectations) should also be considered when working with student-athletes in career adaptability assessments and interventions.

The Career Adapt-Abilities Scale (CAAS-International; Savickas & Porfeli, 2012) was constructed by a team of psychologists from 18 countries with the goal of having an instrument to measure career adaptability resources in numerous countries and to be able to easily compare results (Porfeli & Savickas, 2012). Although scores from the CAAS-International proved to have excellent reliability and good validity across the 13 countries measured, Porfeli & Savickas

(2012) address the importance of examining its validity for use in each country. Similarly, Ryba et al. (2017) address the limitation in the application of the CAAS-DC results to other athletic populations (i.e., collegiate student-athletes and athletes from other countries) and also stress the necessity to examine the factor structure of the CAAS-DC in larger athletic populations. While the development of the CAAS-DC and the longitudinal design of the study are important contributions to career adaptability research with student-athletes, validation of the scores of the CAAS-DC have not been analyzed outside of the Finnish student-athlete participants in the study (Ryba et al., 2017).

Career Adaptability Research: Measuring Career Adaptability with Student-Athletes in the United States

In the United States, one research study was found using the CAAS-DC to measure career adaptability with student-athletes (Sides, 2021). This study explored the relationship between career adaptability, dysfunctional career thoughts, and athletic identity. There were significant negative associations between most of the subscales of the CAAS-DC and the Career Thoughts Inventory (CTI; Sampson et al., 1996). There was no correlation between the dual career concern subscale and the CTI total score or any CTI subscales (Sides, 2021), and there was no significant correlation between the decision-making confusion subscale of the CTI and the curiosity subscale of the CAAS-DC.

Sides (2021) highlights that findings from the study demonstrate that when student-athletes can decrease their negative career thoughts, they are likely to have more career adaptability resources that assist them in achieving their professional goals. Additionally, Sides (2021) provides several explanations regarding not finding correlations between the dual career concern subscale and any of the CTI subscales (i.e., no association with dual career concern and

dysfunctional career thoughts and emotions, positive outcomes for dual career participation without the influence of negative career thoughts, external support combined with resiliency in adversity and determination to sustain a dual career, and confirmation of future career plans). They also suggest that given the dual career concern subscale is recently developed, it may not account for dual career concerns that student-athletes experience within a university environment.

Athletic identity was determined not to be an adequate factor in determining the career adaptability of collegiate student-athletes, concluding that a student-athletes' athletic identity may simultaneously positively or negatively impact career adaptability (Sides, 2021). Student-athletes who identified with an athletic role entirely reported negative thoughts and emotions regarding their career outlook.

While a small percentage of the sample (5.4%) reported having a disability, student-athletes that reported having a disability had a statistically significant lower overall career adaptability score than those who did not report having a disability (Sides, 2021). The only subscale to have a significant finding with a student-athletes' disability status was the concern subscale, where student-athletes that reported having a disability were found to have lower scores. This finding brings attention to the importance for practitioners to be aware that student-athletes with disabilities may need additional support in preparing for future career tasks, transitions, and traumas. Additionally, given that many practitioners working with student-athletes in career development may not be aware of student-athletes' disabilities, it is important for practitioners to be conscientious of this finding when working with all student-athletes.

Reliability was reported using the coefficient alpha (Cronbach, 1951), and the scores of the instrument were considered to be reliable. The reported reliability coefficients of the CAAS-

DC subscales were, respectively, 0.88 (concern), 0.83 (dual career concern), 0.89 (control), 0.92 (curiosity), and 0.95 (confidence); and the reported reliability coefficient of the combined adaptability scale was 0.96 (Sides, 2021). While good internal consistency was found for the CAAS-DC, Sides (2021), as Ryba et al. (2017), encouraged future research to examine the validity of CAAS-DC scores with additional athletic populations (i.e., collegiate student-athletes in the United States).

While content-related validity, construct-related validity, and goodness-of-fit was demonstrated by Ryba et al. (2017), this was done with high school Finnish student-athletes. The validation of scores of the CAAS-DC has still not been demonstrated in the United States with collegiate student-athletes, as Sides (2021) did not complete this additional analysis in their study. Additionally, Sides' (2021) study included 92 participants; while the sample size is not the only factor considered to determine the sufficiency of the study's sample, a larger sample size increases the comfortability that the sample is representative of the population (Locke et al., 2010). Given that scores of the CAAS-DC have not been validated in the United States, and that the instrument was developed with high school student-athletes in Finland, additional analysis should be completed to determine if the CAAS-DC is an effective measure of career adaptability with student-athletes in the United States.

Career Adaptability Research: Summary

This section provided an overview of career adaptability, existing empirical research surrounding career adaptability, and how career adaptability has specifically been measured with student-athletes. Overall, career adaptability was found to have positive relationships with education, career preparedness, well-being (i.e., personal and professional), and life satisfaction. Empirical research was found that demonstrated career adaptability could be obtained with

college student-athletes in a career development context and that career adaptability serves as a mediator in the student-athletes' career development. Additionally, higher levels of career adaptability were shown to be associated with student-athletes that were able to better manage both their academic and athletic demands.

A key finding from this literature review is that while scores from the CAAS-International have been validated with numerous samples and while the instrument has been widely used to measure career adaptability, when measuring career adaptability with student-athletes, it may require an adaptation to the CAAS-International (i.e., CAAS-DC) given the unique challenges student-athletes face in combining their academic and athletic aspirations and given that student-athletes may prioritize their athletic development over preparation for their professional career after sport. CAAS-DC research, while limited, has found the CAAS-DC to be a reliable measurement tool of career adaptability with scores that have been validated with adolescent athletes in Finland. Additionally, research has shown that the CAAS-DC can support practitioners with measuring student-athlete career adaptability resources and can also support in identifying psychological resources and competencies student-athletes have developed that can support them with their transition to their professional career when sport comes to an end.

The dimensions of concern and curiosity should be paid close attention to by practitioners when assessing student-athlete career adaptability resources, as it has been shown that student-athletes may be vulnerable to having lower skills in these areas. Additionally, it was found that student-athletes with a disability status may have lower concern subscale scores. The importance of individual assessments and interventions have also been emphasized in the aforementioned research through the understanding that individual career adaptability profiles exist with student-athletes and the variation of career adaptability resources found over time have been connected

largely to individual student-athlete differences. Finally, given that prioritization of athletic development may lead to student-athletes experiencing a delay in their preparation for their professional career after sport, the dual career concern dimension may be an important dimension to include when assessing student-athlete professional preparedness.

Career adaptability resources have been found to offset career indecisiveness beliefs student-athletes may have and to support student-athletes' preparation for their professional career after sport. While research using the CAAS-DC has been limited, particularly in the United States with only one study using the CAAS-DC (Sides, 2021), the CAAS-DC may be a tool that can support student-athletes with both the challenges of integrating academics and athletics and with their after-sport career preparation.

Finally, it was found that further research needs to be conducted to validate scores of the CAAS-DC in other athletic populations, as it presently is limited in its application and scores of the CAAS-DC have only been validated with high school student-athletes in Finland (Ryba et al., 2017). Currently, only one study (Sides, 2021) has used the CAAS-DC with student-athletes in the United States to measure career adaptability and no research has been conducted to validate the scores of the CAAS-DC with United States student-athletes. This study aimed to build on the existing CAAS-DC research and literature by testing the psychometric properties of the CAAS-DC scores with collegiate student-athletes in the United States.

Methods Used to Validate Scores of a Quantitative Research Instrument

The third section of this chapter will outline how to demonstrate the reliability and validity of scores from a quantitative research instrument. Methods outlined in this section are taken from national standards that have been outlined by the American Educational Research Association (AERA), American Psychological Association (APA), and National Council on

Measurement in Education (NCME; AERA, APA, & NCME, 2014). Practices included have been used as the framework to review the CAAS (Savickas & Porfeli, 2012) and CAAS-DC (Ryba et al., 2017; Sides, 2021) studies outlined in this chapter, and will serve as the guiding practices for this research study.

Demonstrating Reliability and Validity

Researchers studying career adaptability using quantitative methods may use an instrument other than the CAAS-DC to measure career adaptability. Johnston (2018) found eight instruments that have been used to measure career adaptability resources and responses. The respective instruments are detailed in Table 1, and information included in this literature review is cited from the original instruments. Regardless of the instrument used to measure career adaptability in individuals, the quality of the measurement needs to be examined (Silverman & Subramaniam, 1999). This is primarily done by examining reliability and validity. Reliability signifies how accurate and consistent the measurement of an attribute (i.e., career adaptability) is. Validity indicates how much the instrument measures the attribute it was developed to measure (Litwin, 1995).

Table 1

Instruments That Have Been Used to Measure Career Adaptability and Responses

Instrument	Instrument description
Career Adapt-Abilities Scale (Savickas & Porfeli, 2012)	24 items that measure the subdimensions of concern, control, curiosity, and confidence
Career Adapt-Abilities Scale-Short Form (Maggiori et al., 2017)	12 items that measure the subdimensions of concern, control, curiosity, and confidence
Career and Work Adaptability Questionnaire (Nota et al., 2012)	31 items that measure the subdimensions of confidence, control, cooperation, curiosity, and concern
Career Maturity Inventory-Form C (Savickas & Porfeli, 2011)	24 items that measure a total score for career choice readiness and the subdimensions of concern, curiosity, confidence, and consultation
Career Adaptability Inventory (Savickas, 2010, as cited in Ferreira & Coetzee, 2013, p. 1372)	55 items that measure the subdimensions of concern, control, curiosity, cooperation, and confidence
Student Career Construction Inventory (Savickas et al., 2018)	18 items that measure the subdimensions of crystallizing, exploring, deciding, and preparing
Career Futures Inventory (Rottinghaus et al., 2005)	25 items that measure the subdimensions of career adaptability, career optimism, and perceived knowledge
I-Adapt Measure (Ployhart & Bliese, 2006)	55 items that measure the subdimensions of crisis, work stress, creativity, uncertainty, learning, interpersonal, cultural, and physical

Reliability

Establishing reliability of an instrument can be demonstrated in various ways (Silverman & Subramaniam, 1999). Two measures that have been used to approximate the calculation of reliability are coefficient alpha (Cronbach, 1951) and McDonald's omega (ω; McDonald, 1985), reporting the degree of reliability using a correlation coefficient between the ranges of 0.00 to 1.00 (Silverman & Subramaniam, 1999). Scores of the instrument are considered more reliable the closer the reported reliability coefficient is to 1.00.

Validity

The AERA, APA, and NCME (2014), organizations involved in measurement, identifies the following ways to demonstrate validity: (a) content-related validity; (b) criterion-related validity; and (c) construct-related validity (Silverman & Subramaniam, 1999). This study utilized content-related validity and construct-related validity to validate the scores of the CAAS-DC with student-athletes in the United States. Often, with the development of socio-cognitive instruments, content validity and construct-related validity are the two ways that are most often used.

Content-related validity confirms that the items included in the instrument are actually measuring the content that they are aimed to measure (Silverman & Subramaniam, 1999). It is important to review that the items in the instrument are written clearly so that the content of the items are not misinterpreted by someone. This was important in this research study given the following: (a) the development of the CAAS-DC involved the translation of the CAAS 2.0 (Savickas & Porfeli, 2012) from English to Finnish and back translation into English (Ryba et al., 2017); (b) data were collected from the participants in Finnish; (c) three new items were added to the CAAS-DC to measure the dual career concern of the Finnish high school student-

athletes; and (d) a modification was made to an item of the CAAS (concern item #6) to assure that there was a clear differentiation between a student-athlete's athletic career and vocational career. Experts in a respective field may be identified to evaluate the content of the items in the instrument (guidelines are given) to confirm content validity (Silverman & Subramaniam, 1999).

The extent to which an instrument measures an attribute that it was developed to measure is construct-related validity (Silverman & Subramaniam, 1999). By administering an instrument to a specific population for which the instrument is designed (e.g., student-athletes), construct-related validity is demonstrated. Scores collected from administering the instrument are then analyzed to test for reliability and validity of the instrument. If there is no previous experience or observations with the items in the instrument, exploratory factor analysis is conducted and revisions may be made based on the findings. Structural Equation Modeling (SEM), specifically Confirmatory Factor Analysis (CFA), uses statistical tests to decide the fit of the data to the model (Suhr, 2006). Confirmatory factor analysis is done to confirm the items from the previous analysis (exploratory factor analysis) definitely fit the model. If there is previous knowledge of the items, exploratory factor analysis does not need to be done and the researcher can begin with confirmatory factor analysis (Silverman & Subramaniam, 1999). If a researcher begins with confirmatory factor analysis, and the fit is not good, exploratory factor analysis can be done to determine where the failure of the model occurred. It is not uncommon for the process to require several attempts before demonstrating construct-related validity and there is not one test to best analyze the data to determine if the model is a good fit.

Several statistics may be used to determine if the model fit is good, such as the following: factor loadings, goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), the root-mean-square residual (RMR), root-mean-square error of approximation (RMSEA),

McDonald's omega, and the Tucker-Lewis Index (Silverman & Subramaniam, 1999). While chi-square and chi-square to degrees-of-freedom ratio are additional statistics used to show construct-related validity, they are now not used as often given that they tend to show significant probability with large sample sizes. Given that the CAAS-DC was newly developed, exploratory factor analysis and confirmatory factor analysis were used to demonstrate construct-related validity.

Section Summary

This section outlined important methods for demonstrating the reliability and validity of a quantitative instrument. Methods outlined were taken from the AERA, APA, and NCME (2014) standards. Additionally, this section outlined the various instruments found that have been used to measure career adaptability.

While the validation of scores for the CAAS-DC has been demonstrated with Finnish high school student-athletes, validation of scores have not been completed in the United States with collegiate student-athletes. Before the CAAS-DC can be used with this population, a validation study should be completed to ensure the results are reliable and valid with this population. This study aimed to validate the scores of the CAAS-DC with collegiate student-athletes in the United States for the purpose of assessing their preparation for their professional career after sport.

Chapter Summary

This literature review covered the following three areas: (a) career adaptability; (b) career adaptability research; and (c) methods used to validate scores of a quantitative research instrument. A case was made that career adaptability has been studied in a number of contexts, and various positive associations were found to be linked with career adaptability (i.e., academic

achievement, lower levels of anxiety and confusion around career planning, teamwork skills, personal and professional well-being, etc.) Specifically, in relation to sport, career adaptability has been studied heavily in Europe, but has not been studied to a great degree in the American collegiate environment. Additionally, a case was made that an instrument is needed to measure career adaptability with American college student-athletes and that scores need to be validated with this population. Therefore, there is a need to explore if career adaptability scores are reliable and valid with collegiate student-athletes in the United States and a need to better understand this construct in relation to undergraduate American student-athletes.

Chapter 3: Methods

This chapter will explain how this study was conducted. There are four sections in this chapter: (a) participants; (b) instruments; (c) procedures; and (d) design and analysis. First, the participants section explains how and why the participants were selected and includes relevant characteristics of the participants in the study. Second, the instruments section includes detailed information about the measurements selected to gather data from the participants. Next, the procedures section outlines how the data was obtained and all testing procedures used in the study to attain scores from the participants. The design and analysis section covers a detailed description of the design of the study and data analysis that was conducted.

My previous roles as a NCAA Division I student-athlete and assistant and graduate assistant coach, and my current responsibilities as a senior administrator overseeing student-athlete support services within a NCAA Division I athletic department, uniquely position me within this research topic. I acknowledge that my positionality may influence participation in this study. This section also outlines how my positionality was examined and addressed through the Teachers College Institutional Review Board protocol and the research study's methodology.

Participants

The first section of this chapter explains how and why participants were selected for this study. Additionally, this section includes important characteristics of participants that are necessary for this research. Furthermore, characteristics that exclude participation in this study are outlined.

For this study, inclusion criteria for the participant population are NCAA Division I student-athletes in the United States; transfer student-athletes from 2-year and 4-year colleges are included. Participants are members of women's and men's teams from various NCAA Division I

sports and conferences and include student-athletes with different academic standings. The sample size of 172 participants meets the requirements for a sufficient sample size (i.e., at least 5 cases per parameter estimate; Suhr, 2006), which is required given that psychometric properties of the Career Adapt-Abilities Scale - Dual Career Form (CAAS-DC; Ryba & Aunola, 2015; Ryba et al., 2017) have only been demonstrated currently with adolescent student-athletes in Finland.

Participants are of varied racial and gender identities and include international student-athletes that compete in the United States. Non-student-athletes and NCAA Division II and III student-athlete participants were excluded from the study, given that the intention of the study is to validate scores of the CAAS-DC with NCAA Division I student-athlete participants in the United States.

Instruments

The second section of this chapter provides information about the instruments that were used to collect data from participants. Reported score reliability and validity are included for each instrument, and a copy of the measurements are placed within the appendix section. Scoring summaries are also outlined for each instrument. Finally, this section provides information on how the CAAS-DC was adapted for student-athletes in the United States.

The questionnaire for this study was developed and includes multiple parts (see Table 2). Questions related to demographics and the student-athlete experience were included from the NCAA GOALS Study (NCAA, 2019) and the NCAA Student-Athlete Health and Wellness Study (NCAA, 2022a). Some questions were modified and all selected questions included in this survey are outlined in Appendix A.

Table 2

Parts of the Questionnaire

Part of questionnaire	Questions
Part 1: Demographics	Questions 1-7
Part 2: College athletics experience	Questions 8-11
Part 3: College academic experience	Questions 12-15
Part 4: Recruitment	Questions 16-18
Part 5: Health and well-being	Questions 19-25
Part 6: Time commitments	Questions 26-33
Part 7: Career adaptability	Questions 34-60
Part 8: Career construction	Questions 61-78
Part 9: Resilience	Questions 79-84
Part 10: Self-esteem	Questions 85-94

This research study examined if career adaptability scores of the CAAS-DC are reliable and valid for student-athletes in the United States. Additionally, this study analyzed the relationship between U.S. student-athletes' CAAS-DC scores and their scores in the following

constructs: (a) career construction; (b) self-esteem; (c) resilience; and (d) sport burnout. In addition to the CAAS-DC, four instruments were used in this study to examine the relationship of the student-athletes' career adaptability scores with the aforementioned constructs. The respective instruments are detailed in Table 3, information included in this section is cited from the original instruments.

Table 3

Dissertation Instruments

Construct	Instrument
Career adaptability	Career Adapt-Abilities Scale - Dual Career Form (CAAS-DC; Ryba & Aunola, 2015; Ryba et al., 2017) [a]
Career construction	Student Career Construction Inventory (SCCI; Savickas et al., 2018)
Self-esteem	Rosenberg General Self-Esteem Scale (RGSE; Rosenberg, 1965)
Resilience	Brief Resilience Scale (BRS; Smith et al., 2008)
Sport burnout	NCAA GOALS Study 2019 survey instrument (NCAA, 2019, Q55); NCAA Student-Athlete Health and Wellness Study survey instrument (NCAA, 2022a, Q27)

[a] Items of the CAAS-DC were adapted in this study for U.S. student-athletes (see Appendix B).

Career Adaptability

The Career Adapt-Abilities Scale - Dual Career Form (CAAS-DC; Ryba & Aunola, 2015; Ryba et al., 2017) consists of 27 items and was developed to measure five dimensions of career adaptability. The five dimensions include the following: (a) concern (4 items); (b) dual

career concern (5 items); (c) control (6 items); (d) curiosity (6 items); and (e) confidence (6 items). Participants are asked to respond to each item using the following 5-point Likert-type scale: 5 = strongest; 4 = very strong; 3 = strong; 2 = somewhat strong; and 1 = not strong. CAAS-DC scores are calculated by summing the number of items for each dimension and calculating the average (Glavin & Berger, 2013). Individual dimension scores can be calculated by dividing each individual's total dimension scores by the number of items in the dimension. Both scale raw scores and averages can be used to interpret the results.

The CAAS-DC was developed for Finnish adolescent athletes and data were collected from the participants in Finnish. CAAS-DC development involved the translation of the CAAS 2.0 (Savickas & Porfeli, 2012) from English to Finnish and back translation into English (Ryba et al., 2017). Additionally, three new items were added to the CAAS-DC to measure the dual career concern of the Finnish high school student-athletes, and a change was made to an item of the CAAS (concern item #6) to assure that there was a clear differentiation between a student-athlete's athletic career and vocational career. A complete copy of the CAAS-DC is included in Appendix C.

For this study, preliminary content-related validity was demonstrated by independently thinking about how U.S. student-athletes may interpret items of the CAAS-DC and by discussing with researchers in Finland that developed the CAAS-DC (Ryba & Aunola, 2015), which included a bilingual native Finnish speaker, how certain CAAS-DC items may be interpreted differently in English. As a result, three questions of the CAAS-DC were modified: dual career concern item #3 ("Concerned about my vocational career") was modified to "Thinking about my career after sport" as student-athletes may interpret the item to mean worrying about their professional sport career instead of thinking about their career after sport. Additionally, dual

career concern item # 4 (“Concerned about my athletic career”) was modified to “Thinking about my athletic career” and dual career concern item #5 (“Concerned about combining my sport and education”) was modified to “Thinking about combining my sport and education” as student-athletes may interpret the items to mean worrying about, not thinking about, their athletic career (dual career concern item #4) and combining sport and education (dual career concern item #5). Also, concern item # 4 (“Becoming aware of the educational and vocational choices that I must make") was first modified to “Becoming aware of the educational and career choices that I must make” to align with the Career Adapt-Abilities Scale-USA Form (CAAS-USA Form; Porfeli & Savickas, 2012). Then, to ensure a clear distinction between professional sport career and vocational career after sport, it was modified to “Becoming aware of the educational and after sport career choices that I must make.” Finally, the first sentence of the CAAS-DC instrument prompt (“Different people use different strength to build their careers.”) was modified to “Different people use different strengths to build their careers.” to align with the Career Adapt-Abilities Scale-USA Form (CAAS-USA Form; Porfeli & Savickas, 2012).

Additionally, three Division I student-athletes were selected for informal testing of the questionnaire from different sports and conferences: (a) football, Atlantic Coast Conference; (b) women’s basketball, The Ivy League; and (c) women’s golf, Big Ten Conference. Student-athletes completed the questionnaire on Google Docs, and then I spoke with them individually to discuss survey flow, timing to complete the questionnaire, overall clarity and understanding of the instrument, any difficulties the student-athletes may have had in understanding questions, and specific items that were identified in conversations with the researchers in Finland (i.e., ensuring a clear distinction was made between professional sport career and vocational career after sport).

Overall, feedback from the student-athlete discussions supported the modifications made to the CAAS-DC as outlined in this section.

The final form of the CAAS-DC for student-athletes in the U.S. (CAAS-DC-U.S.) was reviewed again by the previously mentioned researchers in Finland (including a bilingual native Finnish speaker) to ensure modifications made to the CAAS-DC instrument reflected the career adaptability concern and dual career concern constructs. A complete copy of the CAAS-DC-U.S. is included in Appendix B; the U.S. form in Appendix B includes the modifications to the CAAS-DC outlined in this chapter for utilization with student-athletes in the United States. Career adaptability in this study was measured with the modifications included in the CAAS-DC-U.S. Given that this study is a validation study, reliability and validity information of the CAAS-DC-U.S. scores with student-athletes in the United States were analyzed.

Career Construction

Career construction was measured with the Student Career Construction Inventory (SCCI; Savickas et al., 2018). The scale consists of 18 items which includes four scales assessing: (a) crystallizing a vocational self-concept (6 items); (b) exploring to gather information about occupations (3 items); (c) deciding to commit to an occupational choice (5 items); and (d) preparing to implement that choice (4 items). The four scales make up a range of adapting responses during the exploration phase of a career, assessing a specific career construction task that includes crystallizing, exploring, deciding, and preparing. Participants are asked to respond to each item using the following 5-point Likert-type scale: 5 = I have already done this; 4 = I am now doing what needs to be done; 3 = I know what to do about it; 2 = I have thought about it but do not yet know what to do about it; and 1 = I have not yet thought much about it. Scale scores and total scores are calculated from the SCCI items. Scores for each scale

are found by finding the sum of all responses to the items in the scale and dividing the sum by the number of items in the scale, and total scores from the SCCI are found by finding the sum of the 18 items and dividing by 18. A complete copy of the SCCI is included in Appendix D.

The primary publication of the SCCI (Savickas et al., 2018) reported a coefficient alpha of 0.93 for the total score of adapting, demonstrating reliability of the SCCI. The coefficient alpha's of the SCCI subscales also demonstrated reliability, ranging from 0.84 to 0.94. For undergraduates specifically, a coefficient alpha score of 0.90 were reported for the total score of adapting, and coefficient alpha's of the SCCI subscales reported ranged from 0.78-0.91. The SCCI's content-related validity was demonstrated by the content outline, which called for items broadly spanning and sufficiently differentiating the exploration stage of the vocational development continuum, and exploratory and confirmatory factor analysis of the SCCI were conducted to create a final form of the instrument. The comparative fit index (CFI = 0.955), root-mean-square error of approximation (RMSEA = 0.065), and the standardized root mean square residual (SRMR = 0.045) were the statistics used to determine that the model fit was good, demonstrating construct-related validity; results include data for all participants (i.e., high school students, college students, and graduate students).

Self-Esteem

Self-esteem was measured with the Rosenberg General Self-Esteem Scale (RGSE; Rosenberg, 1965). The scale contains 10 items that measure the extent to which participants feel that they have good qualities and have accomplished individual success. Participants are asked to respond to each item using the following 4-point Likert-type scale: 4 = strongly agree; 3 = agree; 2 = disagree; and 1 = strongly disagree. The RGSE is scored by reverse scoring items 2, 5, 6, 8,

and 9 and finding the sum of all ten items. A complete copy of the RGSE is included in Appendix E.

Scores of the RGSE have been validated and the instrument has been one of the most universally used measures of self-esteem (Alessandri et al., 2015). Alessandri et al. (2015) conducted a study using the RGSE with 1,192 participants in the United States, ranging in age from 18 to 28 years. Overall scale reliability was reported as 0.88, demonstrating reliability of the RGSE. Construct-related validity was demonstrated by conducting confirmatory factor analysis, using the Satorra and Bentler scaled chi-square statistic (SBχ2 = 13.52), comparative fit index (CFI = 1.00), Tucker Lewis index (TLI = 1.02), and root-mean-square error of approximation (RMSEA = 0.001) to determine that the model fit was good.

Resilience

Resilience was measured with the Brief Resilience Scale (BRS; Smith et al., 2008). The scale contains 6 items that measures an individual's ability to bounce back or recover from stress. Participants are asked to respond to each item using the following 5-point Likert-type scale: 5 = strongly agree; 4 = agree; 3 = neutral; 2 = disagree; and 1 = strongly disagree. The BRS is scored by reverse scoring items 2, 4, and 6 and finding the mean of the six items. A complete copy of the BRS is included in Appendix F.

Smith et al. (2008) conducted a study using the BRS with four samples, and two of the samples included 192 undergraduate students (Sample 1 consisted of 128 undergraduate students and Sample 2 consisted of 64 undergraduate students). Reliability of the BRS has been demonstrated by Smith et al. (2008), reporting Cronbach's alpha ranging from 0.84 - 0.87 with undergraduate students. Convergent validity and discriminant predictive validity were used to demonstrate construct-related validity and to determine that the model was a good fit.

Convergent Validity

Convergent validity of the BRS was demonstrated by zero-order correlations between the BRS and personal characteristics, social relations, coping, and health outcomes for each sample (see Table 4; Smith et al., 2008). Scores of the BRS were shown to be positively correlated among undergraduate students with the following measures: ego resiliency, optimism, purpose in life, social support, active coping, positive reframing, and positive affect. Scores of the BRS were shown to be negatively correlated among undergraduate students with the following measures: pessimism, alexithymia, negative interactions, behavioral disengagement, denial, self-blame, perceived stress, anxiety, depression, negative affect, and physical symptoms.

Discriminant Predictive Validity

Discriminant predictive validity of the BRS was examined in the larger sample of undergraduates (i.e., Sample 1) by zero-order and partial correlations between the BRS, CD-RISC (Connor & Davidson, 2003), ego resiliency, and health outcomes (Smith et al., 2008). Zero-order correlations showed that the measures of resilience were almost always related to the anticipated direction with the outcomes, except for ego resiliency which was marginally related to less negative affect. Partial correlations demonstrated a negative relationship with scores of the BRS and perceived stress, anxiety, depression, negative affect, and physical symptoms. Scores of the CD-RISC were negatively related to perceived stress and scores of the CD-RISC and ego resiliency scale were positively related to positive affect. Correlations between the BRS and aforementioned measures are included in Table 5.

Table 4

Correlations Between the BRS and Other Measures

Measures	Sample 1	Sample 2
Personal characteristics		
Alexithymia	-.47**	-
Ego resiliency	.51**	-
Optimism	.45**	.63**
Pessimism	-.40**	-.56**
Purpose in life	.46**	-
Social relationships		
Negative interactions	-.25**	-.47**
Social support	.28**	.27*
Coping		
Active coping	.40**	.41**
Behavioral disengagement	-.39**	-
Denial	-.37**	-.33*
Positive reframing	.40**	.41**
Self-blame	-.27**	-.47**
Health-related outcomes		
Anxiety	-.46**	-.56**
Depression	-.41**	-.49**
Negative affect	-.34**	-.53**
Perceived stress	-.60**	-.71**
Physical symptoms	-.39**	-.28*
Positive affect	.46**	.17

Note. Adapted from "The Brief Resilience Scale: Assessing the Ability to Bounce Back," by B. W. Smith, J. Dalen, K. Wiggins, E. Tooley, P. Christopher, and J. Bernard, 2008, *International Journal of Behavioral Medicine*, *15*(3), p. 198 (http://dx.doi.org/10.1080/10705500802222972). Copyright 2008 by International Society of Behavioral Medicine. Sample 1 = 128 undergraduate students, Sample 2 = 64 undergraduate students.

*$p < .05$. **$p < .01$.

Table 5

Zero-Order and Partial Correlations Between Resilience Measures and Outcomes for Undergraduate Students

	Zero-order correlations			Partial correlations		
	BRS	CD-RISC	Ego resiliency	BRS	CD-RISC	Ego resiliency
Perceived stress	-.60**	-.53**	-.40**	-.38**	-.26*	.04
Anxiety	-.46**	-.40**	-.33**	-.29**	-.15	-.02
Depression	-.41**	-.35**	.28**	-21*	-.14	-.04
Negative affect	-.34**	-.25**	-.16+	-.24*	-.14	.12
Positive affect	.46**	.68**	.69**	.09	.40**	.26**
Physical symptoms	-.39**	-.35**	-.25*	-.23*	-.15	.04

Note. Adapted from "The Brief Resilience Scale: Assessing the Ability to Bounce Back," by B. W. Smith, J. Dalen, K. Wiggins, E. Tooley, P. Christopher, and J. Bernard, 2008, *International Journal of Behavioral Medicine*, *15*(3), p. 198 (http://dx.doi.org/10.1080/10705500802222972). Copyright 2008 by International Society of Behavioral Medicine. Sample 1 = 128 undergraduate students, Sample 2 = 64 undergraduate students.

+$p < .10$. *$p < .05$. **$p < .01$.

Sport Burnout

Sport burnout was measured using burnout items in question 55 from the NCAA GOALS Study 2019 Survey Instrument (NCAA, 2019, p. 9) and question 27 from the NCAA Student-Athlete Health and Wellness Study Survey Instrument (NCAA, 2022a, p. 7), which are adapted from the Athlete Burnout Questionnaire (Raedeke & Smith, 2001). Permission was received from the NCAA to use the sport burnout items in this study and a National Collegiate Athletic Association Agreement Governing use of Original Survey Items was signed and sent to the NCAA. There are six items within the following three subscales: reduced sense of accomplishment (2 items); emotional/physical exhaustion (2 items); and devaluation (2 items). These characteristics are believed to describe burnout in terms of common signs and symptoms associated with the phenomenon. Participants are asked to respond to each item using the following 6-point Likert-type scale: 6 = strongly agree; 5 = agree; 4 = somewhat agree; 3 = somewhat disagree; 2 = disagree; and 1 = strongly disagree. Items 1, 5, and 6 are reverse scored. Subscale scores can be calculated by dividing each individual's total subscale scores by the number of items in the subscale (Raedeke & Smith, 2001). A complete copy of the sport burnout items is included in Appendix G.

Scores from the Athlete Burnout Questionnaire have demonstrated the instrument to be a psychometrically sound measure of athlete burnout (Raedeke & Smith, 2001). The NCAA has modified the Athlete Burnout Questionnaire to six items to measure burnout in the NCAA GOALS Study (NCAA, 2015, 2019) and the NCAA Student-Athlete Health and Wellness Study (NCAA, 2022a). Reliability and validity information from the respective NCAA studies could not be obtained. Given that reliability and validity data were not able to be received for the adapted six items, reliability will need to be demonstrated for sport burnout items in this study.

Procedures

The third section of this chapter describes how the data in this study was collected and provides a detailed outline of all study testing procedures. The potential risks to participants are outlined and strategies utilized for minimizing these risks are included. Finally, confidentiality procedures used for participant privacy and data security procedures are shared.

Data Collection

Prior to recruitment for this study, IRB approval was received from the Teachers College Institutional Review Board. Additionally, IRB approval was obtained from any respective institution that required their own IRB approval prior to data collection with student-athletes from that institution. Site permission forms were required by an athletic department or conference prior to survey distribution, and an additional external site permission form was required for in-person recruitment. Any protocols required by a department or conference were followed in consultation with the Teachers College Institutional Review Board. Permission was also required from an association, company, or organization by email prior to survey distribution. Approval from the Teachers College Institutional Review Board was received for any protocol modifications.

NCAA Division I student-athletes were selected for a pilot study to complete the final version of the questionnaire on Qualtrics prior to the start of the study. In total, 11 participants were asked to participate. General feedback was requested from the 11 student-athletes on overall clarity and understanding of the questionnaire and any difficulties the student-athletes may have had in understanding questions.

Data were collected electronically through a questionnaire using the web-based software Qualtrics. A complete copy of the participant questionnaire is included in Appendix H.

Participants were asked to complete 94 close-ended questions once, and the expected total duration of participation was approximately 15 minutes to complete the questionnaire. Data collection took place from February 2024 to January 2025. There were no possible direct benefits to the participants, and no compensation was given for student-athlete participation.

In total, 172 student-athletes participated in this study, representing both Division I men's and women's sports, all academic class years, different racial and gender identities, and multiple Division I conferences. Non-student-athletes and NCAA Division II and III student-athletes were excluded from the study, given the intention of the study is to validate scores of the CAAS-DC with NCAA Division I student-athletes in the United States.

Participants were recruited through the following methods: administrators, coaches, staff, and student-athletes (current and prior) of NCAA Division I conferences and athletic departments, high school coaches, high school/collegiate training facilities staff, student-athlete groups and committees, associations, companies, organizations, and conferences, college/university faculty and staff, personal outreach, and social media. Additionally, participants were recruited through email, in person, virtual meeting spaces, phone calls, text messaging, listservs, direct messaging and posting on social media platforms (i.e., LinkedIn, X, and Instagram), message boards/digital platforms, and with flyers advertising the opportunity to participate in the survey. In addition to utilizing personal accounts on X and LinkedIn, accounts were created on Instagram, X, and TikTok. LinkedIn, Instagram, and X were utilized for participant recruitment. Key strategies utilized for social media recruitment included the following: followed, liked, and shared social media accounts and respective posts/messages, included relevant hashtags and social media accounts in posts/messages, direct messaged recruitment scripts and posts/messages to social media accounts, used an online graphic design

platform to create social media posts/messages, and paid social media platforms for higher placement on the respective platform and additional features. A complete copy of the recruitment script for all recruitment methods is included in Appendix I; any additional recruitment scripts were adapted from this documentation. Participants may have received the survey link via email, text message, QR Code, message board/digital platform, social media post/direct message, or flyer, and to ensure participants' understanding of the study and what it involved, detailed information was included in the recruitment script and in the informed consent form embedded in the Qualtrics questionnaire. A complete copy of the informed consent form is included in Appendix J.

Data do not have identifiers and there were no possible direct benefits to the participants. The research study involved minimal risk and the questionnaire is similar to existing surveys that student-athletes may be asked to complete by their respective athletic department, conference, and the NCAA. The student-athlete could stop taking the survey at any time, and contact information was included in the informed consent form for emergency assistance if needed.

Student-athletes may have felt compelled to participate in the survey by receiving the recruitment script from their athletic department, coach, conference, or peer. Also, given my previous roles (i.e., student-athlete, assistant coach, and graduate assistant coach) and personal and professional relationships within the NCAA, participants may have felt that it was necessary to complete the questionnaire. Finally, given my role in a Division I institution, overseeing student-athlete support services and working with student-athletes directly, participants at my respective institution may have felt obligated to participate in the study. The recruitment script (for all recruitment methods) and informed consent form clearly state that completing the questionnaire is voluntary, data will be collected with no identifiers, data collected will remain

confidential, and the research project is related to my dissertation, not to my employment. Additionally, the informed consent form also states that there is no penalty for not completing the questionnaire. Finally, I was not present at any time during the data collection with student-athletes at my institution. All communication sent to participants was done outside of my professional role and for research-purposes only, and did not give the impression that the questionnaire was being sent out through my role within my respective department.

To ensure data security, I used a Virtual Private Network (VPN) for secure data transfer from Qualtrics to a password-protected Excel file. Data from Qualtrics were downloaded to Excel, and the data were reviewed to ensure that there were no out of range answers submitted. I then formatted the Excel file so that it could be uploaded from Excel to IBM SPSS Amos and IBM SPSS Statistics. Data were uploaded from Excel to IBM SPSS Amos and IBM SPSS Statistics for data analysis. All data and data analysis were stored on a password-protected local or external computer hard drive and on my Teachers College Google Drive in a folder with restricted access. Privacy settings were taken care of immediately upon setup, and old files were deleted.

Design and Analysis

The fourth section of this chapter describes the study design and data analysis. Descriptive statistics are provided, and correlational techniques are outlined for the variables that were correlated in the study. Psychometric properties of the CAAS-DC have not been demonstrated with collegiate student-athletes in the United States. This validation study aimed to test the scores of the CAAS-DC for reliability and validity with collegiate Division I student-athletes in the U.S. IBM SPSS Amos and IBM SPSS Statistics were used for all data analysis.

Reliability

The measure that was used to approximate the calculation of reliability of all instruments used in this study (see Table 3) is coefficient alpha (Cronbach, 1951). The degree of reliability is reported using a correlation coefficient between the ranges of 0.00 to 1.00 (Silverman & Subramaniam, 1999). Cronbach alpha was calculated for the combined scales and subscales outlined in Table 6. Scores of the combined scales and subscales will be considered more reliable the closer the reported reliability coefficient is to 1.00.

Validity

This study validated scores of the CAAS-DC with student-athletes in the United States utilizing content-related validity and construct-related validity, two of the most frequently used ways to demonstrate validity with the development of socio-cognitive instruments. A detailed outline of how preliminary content-related validity was demonstrated in this study is included in the instruments section of this chapter.

Table 6

Dissertation Instruments

Construct	Instrument	Combined scale	Subscales
Career adaptability	Career Adapt-Abilities Scale - Dual Career Form (CAAS-DC; Ryba & Aunola, 2015; Ryba et al., 2017) [a]	CAAS-DC	Concern, Dual Career Concern, Control, Curiosity, Confidence
Career construction	Student Career Construction Inventory (SCCI; Savickas et al., 2018)	SCCI	Crystalizing, Exploring, Deciding, Preparing
Self-esteem	Rosenberg General Self-Esteem Scale (RGSE; Rosenberg, 1965)	RGSE	
Resilience	Brief Resilience Scale (BRS; Smith et al., 2008)	BRS	
Sport burnout	NCAA GOALS Study 2019 survey instrument (NCAA, 2019, Q55); NCAA Student-Athlete Health and Wellness Study survey instrument (NCAA, 2022a, Q27)		Reduced Sense of Accomplishment, Emotional/Physical Exhaustion, Devaluation

Note. Empty cells indicate instrument measures one factor (i.e., no subscales).

[a] Items of the CAAS-DC were adapted in this study for U.S. student-athletes (see Appendix B).

Construct-Related Validity

Construct-related validity of the CAAS-DC was demonstrated by administering the CAAS-DC with Division I student-athletes in the United States. Scores collected from the participants were then analyzed to determine reliability and validity of the instrument. Data were transferred from Qualtrics to a password-protected Excel file. Given that there are no prior observations with items in the CAAS-DC (CAAS-DC-U.S.) with student-athletes in the U.S., data were uploaded from Excel to IBM SPSS Statistics to conduct exploratory factor analysis (EFA); no revisions were made based on the findings. Confirmatory factor analysis was then completed by uploading data from Excel to IBM SPSS Amos to verify the items' fit to the model. Several statistics were used to conclude that the model fit was good: factor loadings, goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), Tucker-Lewis Index (TLI), root-mean-square residual (RMR), root-mean-square error of approximation (RMSEA), and standard root mean square residual (SRMR).

Correlations

Correlation coefficients were first calculated among the five subscales (i.e., concern, dual career concern, control, curiosity, and confidence) of the CAAS-DC and the combined scales (i.e., career construction, self-esteem, and resilience) and subscales (i.e., sport burnout) of the variables listed in Table 7. Then, correlation coefficients were calculated between the combined scale of the CAAS-DC and the combined scales and subscales of the respective aforementioned variables. Finally, a correlation coefficient was calculated between the combined scale of the CAAS-DC and participant academic performance (i.e., estimated cumulative GPA). The degree of the relationship between the CAAS-DC scores and the respective measures were established by using the Pearson product moment coefficient of correlation; data from Excel were uploaded

to IBM SPSS Statistics to conduct bivariate correlation analysis. Cohen's (1988) guidelines were used to interpret the effect size of the correlation coefficients as small (r=.10), medium (r=.30), or large (r=.50).

Chapter Summary

This chapter described how this dissertation study was conducted. The chapter provided details on four key characteristics of the study: (a) participants; (b) instruments; (c) procedures; and (d) design and analysis. The participants section provided characteristics of the participants in the study and included information regarding how and why participants in this study were selected. The instruments section provided an outline of all measures that were used in this study, as well as scoring information for the respective measures. The procedures section described how the data were obtained, as well as the testing procedures utilized to collect scores from the participants. Finally, the design and analysis section included the design of the study and statistical analysis testing that was used.

Table 7

Variables for Correlation Coefficient Calculations

Career adaptability [a]	Variables [b]
CAAS-DC subscale 1: Concern	SCCI combined scale: Career construction (SCCI; Savickas et al., 2018)
CAAS-DC subscale 2: Dual Career Concern	RGSE combined scale: Self-esteem (RGSE; Rosenberg, 1965)
CAAS-DC subscale 3: Control	BRS combined scale: Resilience (BRS; Smith et al., 2008)
CAAS-DC subscale 4: Curiosity	Burnout subscales: Sport burnout (NCAA, 2019, Q55; NCAA, 2022a, Q27)
CAAS-DC subscale 5: Confidence	
CAAS-DC combined scale: Career Adaptability	

[a] Items of the CAAS-DC were adapted in this study for U.S. student-athletes (see Appendix B). The combined scale score and individual subscale scores of the CAAS-DC (career adaptability) were used for the analysis.

[b] Combined scale scores of the SCCI (career construction), RGSE (self-esteem), and BRS (resilience) and subscale scores of the NCAA survey instruments (sport burnout) were used for the analysis.

Chapter 4: Results

This chapter provides detailed results of all statistical tests conducted in this study. There are four sections in this chapter: (a) descriptive statistics; (b) reliability; (c) validity; and (d) correlation analysis. The first section provides an overview of the descriptive statistics for the participants in the study. Sections two and three provide the results of the statistical tests utilized to demonstrate score reliability and validity of the CAAS-DC-U.S. Finally, the last section of this chapter includes the results of the correlational analysis conducted with the CAAS-DC-U.S. and other variables in this study.

Descriptive Statistics

In total, 172 NCAA Division I student-athletes (132 women, 39 men, and 2 genderqueers; 1 participant identified as both woman and genderqueer) participated in this study. There was no missing data (missing rate = 0%) included in the analysis and any responses that were identified as fraudulent by Qualtrics were removed.

There was representation from all academic years, including 17.4% first-years, 25% sophomores, 23.8% juniors, 25% seniors, and 8.7% having completed their bachelor's degree. Participants identified as White (83.1%), Black or African American (9.9%), Hispanic or Latino/a/x (9.3%), Asian (7.6%), American Indian or Alaska Native (0.6%), and Middle Eastern or North African (0.6%); participants were able to select all racial identities that applied to them. The mean cumulative GPA for all participants was 3.6 (N = 150; 20 student-athletes did not report having a cumulative GPA).

Out of the 172 student-athletes, 132 student-athletes participated on women's teams and 40 student-athletes participated on men's teams across 20 various sports (see Table 8). Two participants selected other and included that they participated on another sport than the NCAA

Division I sports listed in the study. While the two sports the participants recorded are not affiliated with the NCAA, NCAA Division I athletic departments offer the respective sports for intercollegiate participation. Student-athletes that participated in multiple sports were able to select all sports that applied and were asked to complete the remaining questions in the questionnaire according to their main sport.

There was representation from 26 NCAA Division I conferences (see Table 9). Four participants selected other, and all four responses recorded included Division I conferences or conferences, associations, or leagues with NCAA Division I institutional membership. Additionally, 10 international student-athletes participated in the study, and 14 participants transferred from a 4-year college and 1 participant transferred from a 2-year college. While the number of participants in the study meet the requirements for a sufficient sample size (Suhr, 2006), further analysis of descriptive statistics was not conducted (i.e., CAAS-DC-U.S. scores for gender identities, correlation analysis, etc.) because of small cell sizes.

Career Adapt-Abilities Scale - Dual Career Form - U.S.

The mean values, standard deviation values, and skewness and kurtosis values for all items of the Career Adapt-Abilities Scale - Dual Career Form - U.S. (CAAS-DC-U.S.) are included in Table 10. The skewness and kurtosis values were less than 2 (absolute values) for all items, demonstrating a normal distribution.

Table 8

Sport Participation

Varsity Sport	*N*	Percent
Baseball	5	2.9%
Basketball	7	4.1%
Beach Volleyball	2	1.2%
Bowling	1	0.6%
Cross Country	13	7.6%
Fencing	1	0.6%
Field Hockey	8	4.7%
Football	7	4.1%
Golf	12	7.0%
Gymnastics	7	4.1%
Lacrosse	16	9.3%
Rowing	19	11.0%
Soccer	16	9.3%
Softball	14	8.1%
Swimming & Diving	9	5.2%
Tennis	6	3.5%
Track (Indoor or Outdoor)	29	16.9%
Volleyball (Indoor)	8	4.7%
Water Polo	1	0.6%
Wrestling	3	1.7%
Other	2	1.2%
Total	186	108.1%

Note. Participants were able to select participation in multiple sports. Other sports recorded by participants are not recognized as official NCAA sports, but NCAA Division I programs offer the respective sports for intercollegiate participation.

Table 9

Conference Affiliation

Conference	N	Percent
America East Conference	1	0.6%
American Athletic Conference	3	1.7%
Atlantic 10 Conference	2	1.2%
Atlantic Coast Conference	3	1.7%
Atlantic Sun Conference	4	2.3%
Big 12 Conference	2	1.2%
Big East Conference	1	0.6%
Big Sky Conference	6	3.5%
Big South Conference	1	0.6%
Big Ten Conference	60	34.9%
Colonial Athletic Association	1	0.6%
Conference USA	4	2.3%
Eastern Intercollegiate Wrestling Association	2	1.2%
Golden Coast Conference	1	0.6%
Metro Atlantic Athletic Conference	3	1.7%
Mid-American Conference	1	0.6%
Mountain Pacific Sports Federation	1	0.6%
Mountain West Conference	1	0.6%
Northeast Conference	9	5.2%
Ohio Valley Conference	2	1.2%
Patriot League	27	15.7%
Southeastern Conference	1	0.6%
Southern Conference	4	2.3%
Southwestern Athletic Conference	2	1.2%
The Ivy League	23	13.4%
Western Athletic Conference	3	1.7%
Other	4	2.3%
Total	172	100.0

Note. Other responses recorded included Division I conferences or conferences, associations, or leagues with NCAA Division I institutional membership.

Table 10

Descriptive Statistics for the Career Adapt-Abilities Scale - Dual Career Form - U.S. (CAAS-DC-U.S.)

Construct	Item	Mean	SD	Skewness	Kurtosis
Concern	1. Thinking about what my future will be like	3.61	1.05	-.530	-.015
	2. Realizing that today's choices shape my future	3.79	.981	-.396	-.673
	3. Preparing for the future	3.51	1.05	-.566	-.213
	4. Becoming aware of the educational and after sport career choices that I must make	3.73	1.02	-.827	.374
Dual career concern	1. Becoming aware of the sport choices that I must make	3.62	.981	-.385	-.224
	2. Planning how to achieve my goals	3.69	.981	-.625	.152
	3. Thinking about my career after sport	3.76	1.12	-.724	-.261
	4. Thinking about my athletic career	3.48	1.08	-.266	-.635
	5. Thinking about combining my sport and education	3.23	1.21	-.207	-.849
Control	1. Keeping upbeat	3.48	1.07	-.143	-.912
	2. Making decisions by myself	3.81	.975	-.524	-.337
	3. Taking responsibility for my actions	4.16	.755	-.445	-.602
	4. Sticking up for my beliefs	3.96	.868	-.573	-.002
	5. Counting on myself	3.90	1.04	-.773	-.019

Construct	Item	Mean	SD	Skewness	Kurtosis
	6. Doing what's right for me	3.61	1.02	-.507	-.237
Curiosity	1. Exploring my surroundings	3.24	1.16	-.180	-.703
	2. Looking for opportunities to grow as a person	3.67	1.02	-.599	.000
	3. Investigating options before making a choice	3.54	.951	-.572	.075
	4. Observing different ways of doing things	3.40	.994	-.356	-.187
	5. Probing deeply into questions I have	3.07	1.10	.047	-.796
	6. Becoming curious about new opportunities	3.45	1.05	-.335	-.428
Confidence	1. Performing tasks efficiently	3.75	.956	-.536	-.060
	2. Taking care to do things well	3.80	.902	-.709	.520
	3. Learning new skills	3.48	1.06	-.368	-.454
	4. Working up to my ability	3.79	.938	-.645	.192
	5. Overcoming obstacles	3.86	.981	-.430	-.843
	6. Solving problems	3.92	.918	-.262	-1.02

Note. $N = 172$.

Reliability

To approximate the calculation of reliability of all instruments in this study, coefficient alpha (Cronbach, 1951) was used. Cronbach's alpha was calculated for the combined scales and subscales outlined in Table 6. The degree of reliability is reported below for each respective scale and subscale using a correlation coefficient between the ranges of 0.00 to 1.00. All scores

of the combined scales and subscales were found to be acceptable except for sport burnout: reduced sense of accomplishment (0.62) and sport burnout: devaluation (0.59).

Career Adaptability

The reliabilities of the CAAS-DC-U.S. subscales were respectively 0.78 (concern), 0.75 (dual career concern), 0.80 (control), 0.86 (curiosity), and 0.85 (confidence); and the reliability of the combined adaptability scale was 0.93.

Career Construction

The reliabilities of the Student Career Construction Inventory (SCCI; Savickas et al., 2018) subscales were respectively 0.74 (crystalizing), 0.89 (exploring), 0.93 (deciding), and 0.91 (preparing); and the reliability of the combined scale was 0.93.

Self-Esteem

The reliability of the combined Rosenberg General Self-Esteem Scale (RGSE; Rosenberg, 1965) was 0.90.

Resilience

The reliability of the combined Brief Resilience Scale (BRS; Smith et al., 2008) was 0.77.

Sport Burnout

The reliabilities of the sport burnout subscales (i.e., reduced sense of accomplishment, emotional/physical exhaustion, and devaluation) taken from the NCAA GOALS 2019 survey instrument (NCAA, 2019, Q55) and the NCAA Student-Athlete Health and Wellness Study survey instrument (NCAA, 2022a, Q27) were respectively 0.62 (reduced sense of accomplishment), 0.81 (emotional/physical exhaustion), and 0.59 (devaluation).

Validity

To validate scores of the CAAS-DC with student-athletes in the United States, content-related validity and construct-related validity were utilized. A detailed outline demonstrating preliminary content-related validity is included in the instruments section in Chapter 3.

Construct-Related Validity

Given that there are no prior observations with items in the CAAS-DC (CAAS-DC-U.S.) with student-athletes in the U.S., exploratory factor analysis (EFA) was conducted. Confirmatory factor analysis (CFA), using structural equation modeling (SEM), was then completed to verify the items' fit to the model.

Exploratory Factor Analysis

The pattern matrix results from the conducted exploratory factor analysis demonstrated that the model looked good overall as a factor structure and was acceptable. While the model included some factor cross loadings of meaningful size, the model mostly had loadings on the principal factors. No changes were made to the items in the model prior to conducting confirmatory factor analysis.

Confirmatory Factor Analysis and Structural Equation Modeling

Confirmatory factor analysis (CFA) and Structural Equation Modeling (SEM) were used to look at the factor structure and fit of the data to the model. The standardized factor loadings of all CAAS-DC-U.S. items of the five-factor model are included in Table 11. There are no items in the model that loaded on more than one factor and all items loaded above 0.400.

Table 11

Standardized Factor Loadings

Item	Concern	Dual concern	Control	Curiosity	Confidence
Concern 1	0.617				
Concern 2	0.641				
Concern 3	0.906				
Concern 4	0.585				
Dual concern 1		0.712			
Dual concern 2		0.751			
Dual concern 3		0.414			
Dual concern 4		0.643			
Dual concern 5		0.581			
Control 1			0.561		
Control 2			0.538		
Control 3			0.679		
Control 4			0.697		
Control 5			0.777		
Control 6			0.622		
Curiosity 1				0.721	
Curiosity 2				0.749	
Curiosity 3				0.690	
Curiosity 4				0.698	
Curiosity 5				0.747	
Curiosity 6				0.641	
Confidence 1					0.669
Confidence 2					0.706
Confidence 3					0.638
Confidence 4					0.763
Confidence 5					0.673
Confidence 6					0.752

It was confirmed that there was a good fit of the observed data to the correlated five-factor model of the CAAS-DC-U.S. Several statistics were used to demonstrate that the model fit was good (i.e., AGFI, GFI, RMR, CFI, TLI, RMSEA, SRMR, and factor loadings [standardized regression weights]). Table 12 provides fit statistics for the correlated five-factor model of the CAAS-DC-U.S.

Table 12

Fit Statistics for the Correlated Five-Factor Model of the CAAS-DC-U.S.

	Fit statistics
AGFI	0.725
CFI	0.820
GFI	0.772
RMR	0.075
RMSEA	0.085
SRMR	0.071
TLI	0.799

Through the respective assessments of model fit, acceptable criterion values were observed to determine that the five-factors of the CAAS-DC-U.S. (concern, dual career concern, control, curiosity, and confidence) can be combined and used to measure career adapt-abilities with NCAA Division I student-athletes in the U.S.

Correlation Analysis

The Pearson product moment coefficient of correlation was used to establish the degree of relationship between the five subscales of the CAAS-DC-U.S. and the combined scales and subscales of the variables listed in Table 7. Additionally, correlation coefficients were calculated between the combined scale of the CAAS-DC-U.S. and the combined scales and subscales of the respective aforementioned variables. Finally, a correlation coefficient was calculated between the combined scale of the CAAS-DC-U.S. and participant academic performance.

A significant and large positive correlation was found between the combined scale of the CAAS-DC-U.S. (concern, dual career concern, control, curiosity, and confidence) and self-esteem (r=.530, $p < .01$). Significant and medium positive correlations were found between the combined scale of the CAAS-DC-U.S. and career construction (r=.482, $p < .01$) and resilience (r=.398, $p < .01$). Significant and medium negative correlations were found between the

combined scale of the CAAS-DC-U.S. and sport burnout (reduced sense of accomplishment [r=-.421, $p < .01$], emotional/physical exhaustion [r=-.371, $p < .01$], and devaluation [r=-.295, $p < .01$]).

There was not a significant correlation between the CAAS-DC-U.S. subscale concern and sport burnout (devaluation [r=-.120]). Additionally, no significant correlation was found between the combined scale of the CAAS-DC-U.S. and participant academic performance (r=-.021). A summary of all correlation coefficient calculations is included in Table 13.

Table 13

Pearson's Correlations

Variables	Factors of the CAAS-DC-U.S.					
	Concern	Dual Career Concern	Control	Curiosity	Confidence	CAAS-DC-U.S. Combined Factors
Career construction	.415**	.386**	.358**	.360**	.408**	.482**
Self-esteem	.322**	.462**	.530**	.330**	.461**	.530**
Resilience	.191*	.303**	.435**	.252**	.383**	.398**
Sport burnout: Reduced sense of accomplishment	-.329**	-.423**	-.338**	-.332**	-.263**	-.421**
Sport burnout: Emotional/ physical exhaustion	-.191*	-.354**	-.358**	-.292**	-.264**	-.371**
Sport burnout: Devaluation	-.120	-.424**	-.264**	-.174*	-.195*	-.295**
Academic performance	.029	.002	-.089	-.105	.101	-.021

Note. *$p < .05$. **$p < .01$.

Chapter Summary

This chapter provided the results of the statistical tests utilized in this study to evaluate the psychometric properties of the CAAS-DC-U.S. with collegiate student-athletes in the United States. Specifically, this chapter provided results for four key areas: (a) descriptive statistics; (b) reliability; (c) validity; and (d) correlation analysis. The descriptive statistics section provided information on the descriptive statistics for participants in the study. The reliability and validity sections provided the results for the calculation of reliability of all instruments in the study and for content-related validity and construct-related validity of the CAAS-DC-U.S. Finally, the last section provided the correlation analysis results of the CAAS-DC-U.S. and other respective variables in this study.

Chapter 5: Discussion

Introduction

This chapter will provide a discussion of the meaning of the results in this study. There are four sections in this chapter: (a) descriptive statistics; (b) reliability and validity; (c) correlations; and (d) research applications and contributions. The first section provides an overview of descriptive statistics for participants in the study. The next two sections directly address the meaning of the results as they pertain to the research questions asked in this study. The fourth section of this chapter will provide an overview of how the research findings can be applied and the contributions made to existing career adaptability research.

Descriptive Statistics

There were 172 NCAA Division I student-athletes who participated in the study. The majority of participants identified as women, representing about 77% of the total sample (132 women, 39 men, and 2 genderqueers; 1 participant identified as both woman and genderqueer). Research has shown a higher number of women than men have reported that they wished their coaches and athletic administrators talked more about preparing for a career after college (NCAA, 2020a). Additionally, more women than men (juniors and seniors) reported that they have or will take part in an internship. Given these findings, student-athletes that identified as women may have been more willing to participate.

While participants recorded participation from over 20 sports and over 26 NCAA Division I conferences, three conferences were strongly represented (Big Ten Conference [34.9%], Patriot League [15.7%], and The Ivy League [13.4%]). Recruitment for this study was more difficult than expected, extending for almost one year. The recruitment process required persistence in outreach and follow up. Main challenges that were encountered included the

following: (a) differences in conference, department, and institutional policies for participation; (b) high volume of requests for support with survey distribution; (c) student-athlete time demands; (d) student-athlete survey fatigue; and (e) low response rate from recruitment outreach and survey distribution.

Department, conference, or institutional survey distribution policies may have permitted distribution to student-athletes, but at times policy differences between them prohibited distribution. Departments and conferences communicated that due to the volume of requests received for survey distribution to their student-athletes, their policies limited student-athlete survey distribution for research purposes. Additionally, there was also concern for student-athlete survey fatigue, given the volume of requests student-athletes receive to participate in research surveys. Departments and conferences also have their own student-athlete surveys and may support with NCAA survey opportunities as well. Finally, the response rate was low for both recruitment outreach to departments and conferences and for student-athletes that received the invitation to participate in the survey.

Due to the difficulties experienced in recruitment, several IRB protocol modifications were required to be submitted for approval. Modifications included updating recruitment methods (i.e., using social media for recruitment) and recruitment scripts (i.e., presenting research for consideration of survey distribution). The challenges outlined in this section impacted the time required for recruitment and student-athlete participation in the study. While the extended time and attention dedicated to recruit subjects for this study allowed for a sufficient number of participants to be possible, it also resulted in participant recruitment limitations. Some examples of these limitations are as follows: (a) student-athlete participation may have been during a time with decreased student-athlete time demands; (b) student-athletes

that participated may have higher career adaptability resources than a larger student-athlete sample; (c) limited demographic representation may have impacted the outcomes found in this study; (d) student-athletes that participated may be in an athletic environment that supports career development and provides access to career development resources. The participant recruitment limitations outlined in this section should be considered when reviewing results in this study. Additionally, these limitations should be considered when conducting future research studies with this population.

Reliability and Validity

The results of the data analysis show that all reliability scores of the combined scales and subscales of the Career Adapt-Abilities Scale - Dual Career Form - U.S. (CAAS-DC-U.S.) are acceptable. Additionally, through the respective assessments of model fit, acceptable criterion values were observed to determine that there was a good fit of the observed data to the correlated five-factor model of the CAAS-DC-U.S. Therefore, the correlated five-factor model of the CAAS-DC-U.S. was found to have reliable and valid scores.

Reliability

Reliability scores of the CAAS-DC-U.S. were in line with the reliability scores of the Career Adapt-Abilities Scale - Dual Career Form (CAAS-DC; Ryba & Aunola, 2015; Ryba et al., 2017). Both the CAAS-DC-U.S. and CAAS-DC indicated acceptable reliabilities for the respective subscales and combined adaptability scale.

Validity

Several statistics were used to determine that there was a good fit of the observed data to the correlated five-factor model of the CAAS-DC-U.S. While the model was not a perfect fit, the case can be made for a parsimonious fit based on the overall evidence of all the respective fit

statistics. The standardized factor loadings of all CAAS-DC-U.S. items of the correlated five-factor model loaded above 0.400. Additionally, the following obtained values in this study indicate an adequate fit: AGFI (0.725), CFI (0.820), GFI (0.772), RMR (0.075), RMSEA (0.085), SRMR (0.071), and TLI (0.799).

Values for AGFI, GFI, and RMR range from zero to one (Byrne, 1989). Values for CFI also range from zero to one, and values for TLI can extend outside of this range (Hu & Bentler, 1999). Values close to 1.00 for AGFI and GFI are considered to be indicative of a well-fitting model (Byrne, 1989). Additionally, some commonly practiced guidelines and suggestions when assessing the fit of the data to the model are as follows: AGFI values should be equal or greater than 0.80 (Cuttance, 1988), GFI values should be greater than 0.90 (McDonald, 1999), TLI and CFI values should be close to 0.95 (Hu & Bentler, 1999), RMR values should be less than 0.05 (Byrne, 1989), RMSEA values should be close to 0.06 (Hu & Bentler, 1999), and SRMR values should be close to 0.08 (Hu & Bentler, 1999). The aforementioned statistics are ideal values, and the values obtained in this study are close to these guidelines and indicate a fairly good fit. It is not likely the model will fit perfectly on all the statistics and the case has been made that a parsimonious fit is acceptable based on an overall review of the statistics observed (Silverman & Subramaniam, 1999).

McDonald (1999) also has suggested that no one fit statistic can be used to determine fit. He further suggested that the collection of statistics provide a more complete analysis. In the case of this study, the variety of statistics clearly suggests an adequate or better fit of the data to the model.

The standardized factor loadings of all CAAS-DC-U.S. items were strong, further suggesting that the data fit the model. No items in the model loaded on more than one factor, and

all items loaded above 0.400. A commonly accepted level of standardized factor loadings is greater than 0.300 (McDonald, 1999). Standardized factor loadings of the CAAS-DC-U.S., as with the CAAS-DC, show that the added factor, dual career concern, can be combined into the five-factor measurement model of career adapt-abilities. While model-fit indexes were found to be acceptable for the CAAS-DC-U.S. and the CAAS-DC, the CAAS-DC indexes were found to be stronger. The values of CFI, TLI, and RMSEA for the correlated five-factor model of the CAAS-DC were 0.915, 0.906, and 0.055 respectively (Ryba et al., 2017).

Findings in this study for reliability and validity are consistent with the career adaptability theoretical framework (Savickas, 2005, 2013, 2019; see also Porfeli & Savickas, 2012; Savickas & Porfeli, 2012). The correlated five-factor model of the CAAS-DC-U.S. was found to be psychometrically acceptable, having reliable and valid scores. Through the respective assessments of model fit, acceptable criterion values were observed to determine that the five-factors of the CAAS-DC-U.S. (concern, dual career concern, control, curiosity, and confidence) can be combined and used to measure career adapt-abilities with NCAA Division I student-athletes in the U.S.

Correlations

This study analyzed the degree of relationship between NCAA Division I student-athletes' CAAS-DC-U.S. scores and scores in the following constructs: (a) career construction; (b) self-esteem; (c) resilience; and (d) sport burnout. The degree of relationship between career adaptability and academic performance was also observed. Overall, significant correlations were found between the scores of the CAAS-DC-U.S. combined scale and career construction, self-esteem, resilience, and sport burnout. A significant correlation was not found between career adaptability and academic performance.

Career Construction

A significant and medium positive correlation was found between the combined scale of the CAAS-DC-U.S. and career construction (r=.482, p < .01). Findings in this study were as expected based on previous research outcomes that found career adaptability to relate positively to career construction (Ryba et al., 2017; Savickas et al., 2018). This finding is important because the Student Career Construction Inventory (SCCI; Savickas et al., 2018) measures adapting responses that are part of constructing career choices. Adapting responses have been found to mediate the relationship between adaptability resources and adaptation outcomes. Additionally, similar to the results found with the CAAS-DC (Ryba et al., 2017), career construction was associated with all factors of the CAAS-DC-U.S., also suggesting that concern for the dual career dimension is compatible with the theoretical principals of career construction (Savickas, 2005, 2013, 2019; see also Porfeli & Savickas, 2012; Savickas & Porfeli, 2012).

Self-Esteem

A significant and large positive correlation was found between the combined scale of the CAAS-DC-U.S. and self-esteem (r=.530, p < .01). Results in this study were as expected based on previous outcomes exploring the relationship between self-esteem and career adaptability (Ryba et al., 2017; see also Öncel, 2014; Rusu et al., 2015). The fourth and final dimension of career adaptability is confidence, which indicates how an individual feels regarding their ability to make good academic and career decisions (Savickas, 2005, 2013). This finding is important because as previously noted in Chapter 2, individuals will face many adversities throughout their lifetime, both personally and professionally, and individuals with high career confidence are able to navigate these challenges by critically thinking through possible solutions, making difficult decisions, and maintaining their well-being through difficult times (Del Corso, 2013).

Resilience

As predicted, a significant and medium positive correlation was found between the combined scale of the CAAS-DC-U.S. and resilience (r=.398, p < .01). While Ryba et al. (2017) did not include a specific resilience measure in the study, research has shown career adaptability to serve as a resource to increase an individual's resilience (Xu et al., 2020). This finding is important because previous research has demonstrated that career adaptabilities may constitute a resilience factor to cope with career transitions and stressful situations effectively (Maggiori et al., 2017; Ryba et al., 2017).

Sport Burnout

Significant and medium negative correlations were found between the combined scale of the CAAS-DC-U.S. and sport burnout (reduced sense of accomplishment [r=-.421, p < .01], emotional/physical exhaustion [r=-.371, p < .01], and devaluation [r=-.295, p < .01]). There was not a significant correlation found between the CAAS-DC-U.S. subscale concern and sport burnout (devaluation [r=-.120]). A possible reason for this observation may be due to the lower reliability scores found for sport burnout (reduced sense of accomplishment [0.62] and devaluation [0.59]), which may have weakened the observed correlations between career adaptability and sport burnout.

Although Ryba et al. (2017) did not use the same items to measure sport burnout as this study (i.e., NCAA, 2019, Q55 and NCAA, 2022a, Q27), negative correlations were predicted. Ryba et al. (2017) also found negative correlations between career adaptability resources and sport burnout. This finding is particularly important as research has shown the need to support student-athletes with burnout, particularly with student-athletes that identify as female, with older NCAA eligibility, or following an injury (Giusti et al., 2022).

When observing the correlation analysis in this study between career adaptability and sport burnout, it is important to note the reliability scores for sport burnout were lower than normally acceptable. Therefore, when reviewing the results of the correlation analysis between career adaptability and sport burnout in this study, they should be assessed with caution.

Academic Performance

No significant correlation was found between the combined scale of the CAAS-DC-U.S. and participant academic performance (r=-.021). This finding is different from the expected finding given Ryba et al.'s (2017) observation that school burnout was negatively associated with the CAAS-DC. Additionally, associations have been found between career adaptability and academic achievement, specifically with career concern, which has been found to predict positively academic achievement (Negru-Subtirica & Pop, 2016). Individuals with higher levels of career adaptability have also shown to have increased motivation in educational environments (Pouyaud et al., 2012) and notice fewer internal and external barriers to continuing their education (Soresi et al., 2012).

One potential explanation for this finding is due to range restriction of the cumulative GPA variable. The mean cumulative GPA for all participants was 3.6 (N = 150), and the standard deviation was small (SD = .30). The small standard deviation observed may have improperly defined the relationship between career adaptability and academic performance.

Research Applications and Contributions

The aim of this study was to validate scores of the CAAS-DC with NCAA Division I student-athletes in the United States for the purpose of assessing their preparation for their professional career after sport. The correlated five-factor model of the CAAS-DC-U.S. was found to have reliable and valid scores. By demonstrating this instrument produces reliable and

valid career adaptability scores with NCAA Division I student-athletes, U.S. practitioners and researchers now have a standardized instrument to assess and measure career adaptability resources with NCAA Division I student-athletes and to better understand this construct in relation to this population.

While career adaptability has been researched widely, research with student-athletes has been limited. Career adaptability is a fundamental part of career construction theory (Savickas, 2005). This study expanded on existing career adaptability research by validating scores of the CAAS-DC-U.S. with NCAA Division I student-athletes in the United States. The CAAS-DC-U.S. is grounded in career construction theory (Savickas, 2005, 2013, 2019) and like the CAAS-DC (Ryba et al., 2017), the CAAS-DC-U.S. is built on one of the most universally used career adaptability questionnaires (CAAS; Savickas & Porfeli, 2012).

An important contribution of this study is that it builds on career construction theory literature (Savickas, 2005, 2013, 2019), contributing to a deeper understanding of career adaptability with NCAA Division I student-athletes in the United States. Also, this study adds to cross-cultural research by comparing career adaptability findings between U.S. athletes and athletes in Finland (Ryba et al., 2017), extending career construction theory research and our understanding of career adaptability to populations of student-athletes in different countries.

Results in this study also highlight that career adaptability resources are associated with adapting responses that have been found to mediate the relationship between adaptability resources and adaptation outcomes (career construction; Savickas et al., 2018). Additionally, this study found career adaptability resources were associated with self-esteem, resilience, and sport burnout (reliability scores for sport burnout were lower than normally acceptable). Given the difficulties student-athletes have reported in balancing their academics and extracurricular

activities, including their athletic commitments (NCAA, 2020b; NCAA, 2022b), building career adaptability resources with student-athletes may support them with effectively navigating their student-athlete experience and with preparation for their professional career after sport.

Findings in this study have demonstrated that the CAAS-DC-U.S. may be used by practitioners and researchers to measure career adaptability with NCAA Division I student-athletes in the United States. By having an instrument to measure career adaptability with student-athletes, practitioners can also work to build student-athletes' career adaptability resources to support them with combining their academic and athletic commitments and to better prepare them for their professional career after sport. Additionally, researchers in the United States now have an instrument to build on existing career adaptability research and look further into relationships with career adaptability resources (e.g., student-athlete academic success, athletic performance, athletic burnout, etc.). Researchers may now also utilize the CAAS-DC-U.S. to conduct studies that focus on interventions for building career adaptability resources with NCAA Division I student-athletes in the United States.

This study provides researchers with a starting place for building on career adaptability research with NCAA Division I student-athletes. It is important to continue to expand on this research study with increased demographic participation. With expanded demographic participation, researchers will be able to look deeper into this construct with this population and into correlations with other constructs.

It is also recommended that research studies not only look at how to best build career adaptability resources with student-athletes, but also into barriers departments, coaches, and student-athletes encounter with offering and accessing support in building these resources. Qualitative research studies may be helpful in better understanding administrators', coaches',

and student-athletes' narratives for identifying these barriers. It is also recommended that sport and the student-athlete experience are utilized and integrated into the building of these resources to support with student-athlete time demands.

Finally, it is recommended that researchers collaborate with researchers in other disciplines that also face challenges in vocational development with students due to the time demands and requirements of their domain (i.e., dance and music). This interdisciplinary approach may support researchers with finding creative ways to not only build career adaptability resources, but also to identify opportunities to make career adaptability assessments and development resources accessible.

Chapter Summary

This chapter provided a discussion of the meaning of the results in this study. The first section provided an overview of the descriptive statistics for the participants in this study. The following two sections addressed the two research questions in this study. The fourth section provided an overview of the applications and contributions of this research study and recommendations for future research studies. Two key findings in this study were as follows: (a) the correlated five-factor model of the CAAS-DC-U.S. was found to have reliable and valid scores and (b) significant correlations were found with career adaptability and self-esteem, career construction, resilience, and sport burnout (reliability scores for sport burnout were lower than normally acceptable).

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Appendix A

NCAA Demographic and Student-Athlete Experience Questions Included in Questionnaire

NCAA Student-Athlete Health and Wellness Study (NCAA, 2022a)	NCAA GOALS Study (NCAA, 2019)
Question 1	Question 1
Question 2	Question 4
Question 3	Question 8
Question 4	Question 9
Question 5	Question 19
Question 7	Question 21
Question 27	Question 46
Question 32	Question 51
	Question 55
	Question 61

Note. Some questions and participant options for responses were modified to meet the needs of the study.

Appendix B

Career Adapt-Abilities Scale - Dual Career Form - U.S.

Different people use different strengths to build their careers. No one is good at everything, each of us emphasizes some strengths more than others. Please rate how strongly you have developed each of the following abilities using the scale below.

Construct	Item
Concern	1. Thinking about what my future will be like
	2. Realizing that today's choices shape my future
	3. Preparing for the future
	4. Becoming aware of the educational and after sport career choices that I must make
Dual career concern	1. Becoming aware of the sport choices that I must make
	2. Planning how to achieve my goals
	3. Thinking about my career after sport
	4. Thinking about my athletic career
	5. Thinking about combining my sport and education
Control	1. Keeping upbeat
	2. Making decisions by myself
	3. Taking responsibility for my actions

	4. Sticking up for my beliefs
	5. Counting on myself
	6. Doing what's right for me
Curiosity	1. Exploring my surroundings
	2. Looking for opportunities to grow as a person
	3. Investigating options before making a choice
	4. Observing different ways of doing things
	5. Probing deeply into questions I have
	6. Becoming curious about new opportunities
Confidence	1. Performing tasks efficiently
	2. Taking care to do things well
	3. Learning new skills
	4. Working up to my ability
	5. Overcoming obstacles
	6. Solving problems

Note. Adapted from "Career Adapt-Abilities Scale - Dual Career Form (CAAS-DC): Psychometric Properties and Initial Validation in High-School Student-Athletes," by T. V. Ryba,

C.-Q. Zhang, Z. Huang, and K. Aunola, 2017, *Health Psychology and Behavioral Medicine*, *5*(1), pp. 85-100 (https://doi.org/10.1080/21642850.2016.1273113). Adapted with permission.

Appendix C

Career Adapt-Abilities Scale - Dual Career Form (CAAS-DC; Ryba & Aunola, 2015; Ryba et al., 2017)

Different people use different strength to build their careers. No one is good at everything, each of us emphasizes some strengths more than others. Please rate how strongly you have developed each of the following abilities using the scale below.

Construct	Item
Concern	1. Thinking about what my future will be like
	2. Realizing that today's choices shape my future
	3. Preparing for the future
	4. Becoming aware of the educational and vocational choices that I must make
Dual career concern	1. Becoming aware of the sport choices that I must make
	2. Planning how to achieve my goals
	3. Concerned about my vocational career
	4. Concerned about my athletic career
	5. Concerned about combining my sport and education
Control	1. Keeping upbeat
	2. Making decisions by myself

	3. Taking responsibility for my actions
	4. Sticking up for my beliefs
	5. Counting on myself
	6. Doing what's right for me
Curiosity	1. Exploring my surroundings
	2. Looking for opportunities to grow as a person
	3. Investigating options before making a choice
	4. Observing different ways of doing things
	5. Probing deeply into questions I have
	6. Becoming curious about new opportunities
Confidence	1. Performing tasks efficiently
	2. Taking care to do things well
	3. Learning new skills
	4. Working up to my ability
	5. Overcoming obstacles
	6. Solving problems

Appendix D

Student Career Construction Inventory (SCCI; Savickas et al., 2018)

Please indicate how much thinking or planning you have done about each one of the following statements using the following scale.

Construct	Item
Crystalizing	1. Forming a clear picture of my personality
	2. Recognizing my interests and abilities
	3. Determining what values are important to me
	4. Knowing how other people view me
	5. Identifying people that I want to be like
	6. Finding out what my interests are
Exploring	1. Learning about different types of jobs
	2. Reading about occupations
	3. Investigating occupations that might suit me
Deciding	1. Deciding what I really want to do for a living
	2. Finding a line of work that suits me
	3. Selecting an occupation that will satisfy me
	4. Planning how to get into the occupation I choose

	5. Reassuring myself that I made a good occupational choice
Preparing	1. Finding opportunities to get the training and experience I need
	2. Beginning the training needed for my preferred job
	3. Qualifying for the job I like best
	4. Getting a job once I complete my education or training

Appendix E

Rosenberg General Self-Esteem Scale (RGSE; Rosenberg, 1965)

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

Item
1. On the whole, I am satisfied with myself.
2. At times I think I am no good at all.
3. I feel that I have a number of good qualities.
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of.
6. I certainly feel useless at times.
7. I feel that I'm a person of worth, at least on an equal plane with others.
8. I wish I could have more respect for myself.
9. All in all, I am inclined to feel that I am a failure.
10. I take a positive attitude toward myself.

Appendix F

Brief Resilience Scale (BRS; Smith et al., 2008)

Please indicate the extent to which you agree with each of the following statements by using the following scale.

Item
1. I tend to bounce back quickly after hard times
2. I have a hard time making it through stressful events
3. It does not take me long to recover from a stressful event
4. It is hard for me to snap back when something bad happens
5. I usually come through difficult times with little trouble
6. I tend to take a long time to get over set-backs in my life

Appendix G

Sport Burnout Items: NCAA Survey Instrument (NCAA, 2019, p. 9, 2022a, p. 7)

Please indicate how strongly you agree or disagree with the following statements.

Construct	Item
Reduced sense of accomplishment	1. I am accomplishing many worthwhile things in my sport
Emotional/physical exhaustion	2. I feel so tired from the physical demands of my sport that I struggle to find energy to do other things
Devaluation	3. The effort I spend in my sport would be better spent doing other things
Emotional/physical exhaustion	4. I am exhausted by the mental demands of my sport
Reduced sense of accomplishment	5. I am performing up to my ability in my sport
Devaluation	6. I care about my sport as much or more than I ever have

Appendix H

Participant Questionnaire

Q1. By checking the “I agree” box, you agree to participate in this study. You also confirm you are 18 years or older. To agree: Check the “I agree” box below and then click next to participate in the study. If you do not wish to participate in this study, simply close out of this browser window or check the "I do not agree" box below and then click next.

- ☐ I agree
- ☐ I do not agree (End Survey, Add Skip Logic)

Q2. Do you participate on a collegiate varsity sports team in the United States?

- ☐ Yes
- ☐ No (End Survey, Add Skip Logic)

Q3. In what NCAA division does your team compete?

- ☐ Division I
- ☐ Division II (End Survey, Add Skip Logic)
- ☐ Division IIII (End Survey, Add Skip Logic)

Q4. What is your gender identity? (Mark all that apply)

- ☐ Man
- ☐ Woman
- ☐ Genderqueer
- ☐ Nonbinary
- ☐ Transgender
- ☐ Another gender identity (Insert option to enter text if preferred, not required)
- ☐ Prefer not to answer

Q5. What is your current academic standing?

- ☐ First-Year
- ☐ Sophomore
- ☐ Junior
- ☐ Senior
- ☐ Completed bachelor’s degree

Q6. How do you describe yourself? (Select all that apply)

- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Hispanic or Latino/a/x
- ☐ Middle Eastern or North African
- ☐ Native Hawaiian or Pacific Islander
- ☐ White
- ☐ Other: _____ (Insert option to enter text if preferred, not required)

Q7. Are you an international student?

- ☐ Yes
- ☐ No

Q8. Are you playing on a men's or women's team(s)?

- ☐ Men's
- ☐ Women's

Q9. Of the following, what varsity sport(s) do you compete in (select all that apply)?

If you select more than one sport below, please answer the following questions in this questionnaire according to your main sport.

☐ Acrobatics & Tumbling	☐ Football	☐ Soccer
☐ Baseball	☐ Golf	☐ Softball
☐ Basketball	☐ Gymnastics	☐ Swimming & Diving
☐ Beach Volleyball	☐ Ice Hockey	☐ Tennis
☐ Bowling	☐ Lacrosse	☐ Track (Indoor or Outdoor)
☐ Cross Country	☐ Rifle	☐ Triathlon
☐ Equestrian	☐ Rowing	☐ Volleyball (Indoor)
☐ Fencing	☐ Rugby	☐ Water Polo
☐ Field Hockey	☐ Skiing	☐ Wrestling
☐ Other: _____		

Q10. Please select the affiliated conference of the varsity sport you compete in?

- [ ] America East Conference
- [ ] American Athletic Conference
- [ ] ASUN Conference
- [ ] Atlantic 10 Conference
- [ ] Atlantic Coast Conference
- [ ] Atlantic Hockey Association
- [ ] Big 12 Conference
- [ ] Big East Conference
- [ ] Big Sky Conference
- [ ] Big South Conference
- [ ] Big Ten Conference
- [ ] Big West Conference
- [ ] Central Collegiate Hockey Association
- [ ] Coastal Collegiate Sports Association
- [ ] Coastal Collegiate Sports Association Beach Volleyball
- [ ] College Hockey America
- [ ] Collegiate Water Polo Association
- [ ] Colonial Athletic Association
- [ ] Conference USA
- [ ] Eastern College Athletic Conference
- [ ] Eastern Intercollegiate Volleyball Association
- [ ] Eastern Intercollegiate Wrestling Association
- [ ] ECAC Hockey
- [ ] Golden Coast Conference
- [ ] Hockey East Association
- [ ] Horizon League
- [ ] Metro Atlantic Athletic Conference
- [ ] Mid-American Conference
- [ ] Mid-Eastern Athletic Conference
- [ ] Midwestern Intercollegiate Volleyball Association
- [ ] Missouri Valley Conference
- [ ] Missouri Valley Football Conference
- [ ] Mountain Pacific Sports Federation
- [ ] Mountain Rim Gymnastics Conference
- [ ] Mountain West Conference
- [ ] National Collegiate Hockey Conference
- [ ] New England Women's Hockey Alliance
- [ ] Northeast Conference
- [ ] Northeast Water Polo Conference
- [ ] Ohio Valley Conference
- [ ] Pac-12 Conference
- [ ] Patriot League
- [ ] Pioneer Football League

- ☐ Southeastern Conference
- ☐ Southern Conference
- ☐ Southland Conference
- ☐ Southwestern Athletic Conference
- ☐ Sun Belt Conference
- ☐ The Ivy League
- ☐ The Summit League
- ☐ West Coast Conference
- ☐ Western Athletic Conference
- ☐ Western Collegiate Hockey Association
- ☐ Other

Q11. Based on your roster spot or frequency of competition, how would you classify your current status in your sport?

- ☐ First team (you start in a team sport or compete in your preferred events in individual sports)
- ☐ Second team (regular substitute in a team sport, often compete in some event in individual sports)
- ☐ Third team (participate in practice but compete infrequently)
- ☐ Practicing or training but not competing

Q12. Did you transfer into your current school?

- ☐ No
- ☐ Yes, from a 2-year college
- ☐ Yes, from a 4-year college

Q13. As of this term, what is your estimated cumulative GPA?

Please round up to the nearest tenth (3.18 = 3.2), but NOT to the nearest whole number (3.78 ≠ 4.0).

- ☐ Please include your estimated cumulative GPA here: _____
- ☐ I currently don't have a cumulative GPA.

Q14. Have you been involved or do you plan to be involved in an internship program during college?

(Please select only one.)

- ☐ Yes, I have taken part in an internship
- ☐ Yes, I will take part in an internship
- ☐ I would like to but can't because of my athletics participation
- ☐ I would like to but can't because of other reasons (e.g., finances, availability)
- ☐ No, I have no interest
- ☐ I don't know at this time

Q15. In your first year after leaving college, what do you intend to be doing? (Please select only one.)

- ☐ Working at a job related to my major
- ☐ Working at a job, but not necessarily one that is related to my major
- ☐ Attending graduate school
- ☐ Serving in the military
- ☐ Devoting myself to my sport (e.g., training, playing professional sports, etc.)
- ☐ Taking some transition time before embarking upon a career
- ☐ Staying at home/ serving as a caregiver
- ☐ I don't yet have any post-graduate plans or goals

Q16-Q18. Since I was young, my family expected that I would…

Q16. Be a college athlete

- ☐ Yes
- ☐ No

Q17. Be a professional or Olympic athlete

- ☐ Yes
- ☐ No

Q18. Earn a college degree

- ☐ Yes
- ☐ No

Q19. Are you currently unable to compete in your sport due to a long-term (e.g., month or more) injury or health concern?

☐ Yes
☐ No

Q20-Q25. Please indicate how strongly you agree or disagree with the following statements:

Strongly Agree (6)	Agree (5)	Somewhat Agree (4)	Somewhat Disagree (3)	Disagree (2)	Strongly Disagree (1)

Q20. I am accomplishing many worthwhile things in my sport
Q21. I feel so tired from the physical demands of my sport that I struggle to find energy to do other things
Q22. The effort I spend in my sport would be better spent doing other things
Q23. I am exhausted by the mental demands of my sport
Q24. I am performing up to my ability in my sport
Q25. I care about my sport as much or more than I ever have

For the following question, think about the current (or most recent) season in which you played your sport:

Q26-Q33. While school was in session during the season, picture the weekday (Monday to Friday) that most felt like your "typical" day on campus. On that day, how many HOURS did you spend on each of the following activities?

0 hrs/day	1 hrs/day	2 hrs/day	3 hrs/day	4 hrs/day	5 hrs/day	6 hrs/day	7 hrs/day	8+ hrs/day

Q26. Attending class, lab, discussion groups, etc.
Q27. Studying or academic work outside of class
Sport commitments:
Q28. Athletic Activities
(Practicing, training, competing, athletic training room, etc.)
Q29. Non-Athletic Activities
(Meetings with coaches, team functions, film study, etc.)
Q30. Other extracurricular activities
Q31. A job (for pay)

Q32. Socializing, relaxing, family
Q33. Sleeping

Q34-Q60. Different people use different strengths to build their careers. No one is good at everything, each of us emphasizes some strengths more than others. Please rate how strongly you have developed each of the following abilities using the scale below.

Strongest (1)	Very Strong (2)	Strong (3)	Somewhat Strong (4)	Not Strong (5)

Q34. Thinking about what my future will be like
Q35. Realizing that today's choices shape my future
Q36. Preparing for the future
Q37. Becoming aware of the educational and after sport career choices that I must make
Q38. Becoming aware of the sport choices that I must make
Q39. Planning how to achieve my goals
Q40. Thinking about my career after sport
Q41. Thinking about my athletic career
Q42. Thinking about combining my sport and education
Q43. Keeping upbeat
Q44. Making decisions by myself
Q45. Taking responsibility for my actions
Q46. Sticking up for my beliefs
Q47. Counting on myself
Q48. Doing what's right for me
Q49. Exploring my surroundings
Q50. Looking for opportunities to grow as a person
Q51. Investigating options before making a choice
Q52. Observing different ways of doing things
Q53. Probing deeply into questions I have
Q54. Becoming curious about new opportunities
Q55. Performing tasks efficiently
Q56. Taking care to do things well
Q57. Learning new skills
Q58. Working up to my ability
Q59. Overcoming obstacles
Q60. Solving problems

Q61-Q78. Please indicate how much thinking or planning you have done about each one of the following statements using the following scale.

I have already done this. (1)	I am now doing what needs to be done. (2)	I know what to do about it. (3)	I have thought about it but do not yet know what to do about it. (4)	I have not yet thought much about it. (5)

Q61. Forming a clear picture of my personality
Q62. Recognizing my interests and abilities
Q63. Determining what values are important to me
Q64. Knowing how other people view me
Q65. Identifying people that I want to be like
Q66. Finding out what my interests are
Q67. Learning about different types of jobs
Q68. Reading about occupations
Q69. Investigating occupations that might suit me
Q70. Deciding what I really want to do for a living
Q71. Finding a line of work that suits me
Q72. Selecting an occupation that will satisfy me
Q73. Planning how to get into the occupation I choose
Q74. Reassuring myself that I made a good occupational choice
Q75. Finding opportunities to get the training and experience
Q76. Beginning the training needed for my preferred job
Q77. Qualifying for the job I like best
Q78. Getting a job once I complete my education or training

Q79-Q84. Please indicate the extent to which you agree with each of the following statements by using the following scale:

Strongly Agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly Disagree (5)

Q79. I tend to bounce back quickly after hard times
Q80. I have a hard time making it through stressful events
Q81. It does not take me long to recover from a stressful event
Q82. It is hard for me to snap back when something bad happens
Q83. I usually come through difficult times with little trouble
Q84. I tend to take a long time to get over set-backs in my life

Q85-Q94. Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)

Q85. On the whole, I am satisfied with myself.
Q86. At times I think I am no good at all.
Q87. I feel that I have a number of good qualities.
Q88. I am able to do things as well as most other people.
Q89. I feel I do not have much to be proud of.
Q90. I certainly feel useless at times.
Q91. I feel that I'm a person of worth, at least on an equal plane with others.
Q92. I wish I could have more respect for myself.
Q93. All in all, I am inclined to feel that I am a failure.
Q94. I take a positive attitude toward myself.

Appendix I

Recruitment Script (All Recruiting Methods)

**Will use and adapt as needed*

The TC IRB Protocol Number 24-149 will be included on all recruitment materials, including announcements, online posts, email, text, etc.

Verbal

You are invited to participate in this voluntary research study (TC IRB Protocol Number 24-149) being conducted by Jessica De Palo, a Principal Investigator at Teachers College, Columbia University. (Jessica is also a former NCAA Division 1 student-athlete (a proud graduate of Lehigh University and the Patriot League) and served as a NCAA Division I Student-Athlete Advisory Committee member and representative for the Patriot League. She currently serves as the Senior Associate Athletics Director for Success Through Well-Being for Columbia Athletics.)

The research study examines how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources. If you decide to participate in this study, you will be asked a series of questions related to your career development and well-being.

The survey is anticipated to take approximately 15 minutes.

Participation in this study is voluntary. No identifying information will be collected from you in the survey and data collected will remain confidential. This research project is related to the researcher's dissertation, not their employment.

A) If you wish to participate, you were emailed/texted the survey link on (date and time) with the email subject line: Invitation to Participate.
B) If you wish to participate, please scan the following QR code.

(If Applicable) If you are not a current NCAA Division I student-athlete, but are interested in supporting with survey distribution, please contact Jessica De Palo at jd2923@tc.columbia.edu.

(If Applicable) You are welcome to share the survey link/QR code with other current NCAA Division I student-athletes. Institutional Review Board (IRB) and athletics department approval may be required at a respective institution to share the survey. If you have questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

(If Applicable) While you are welcome to share the survey link/QR code with other current NCAA Division I student-athletes at your respective institution, please first consult with (X), as approval from your athletics department and Institutional Review Board (IRB) may be required.

If you have any questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

(If Applicable) While you are welcome to share the survey link/QR code with other current NCAA Division I student-athletes within your conference and at your respective institution, please first consult with (X), as approval from your conference, athletics department, and Institutional Review Board (IRB) may be required. If you have any questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

Survey Distribution (In Person): Given that you are taking this survey in person, please note that person-to-person exposure is the most frequent route of transmission for infectious viruses (e.g., flu, COVID-19) and occurs via direct inhalation of respiratory droplets during close contact.

Simple preventative measures (e.g., maintaining social distance) can help reduce disease transmission.

Survey Distribution (Not In Person): Please practice preventative measures for reducing virus transmission (e.g., flu, COVID-19) if taking this survey in person.

Email

Subject: Invitation to Participate

You are invited to participate in this voluntary research study (TC IRB Protocol Number 24-149) being conducted by Jessica De Palo, a Principal Investigator at Teachers College, Columbia University. (Jessica is also a former NCAA Division 1 student-athlete (a proud graduate of Lehigh University and the Patriot League) and served as a NCAA Division I Student-Athlete Advisory Committee member and representative for the Patriot League. She currently serves as the Senior Associate Athletics Director for Success Through Well-Being for Columbia Athletics.)

The research study examines how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources. If you decide to participate in this study, you will be asked a series of questions related to your career development and well-being.

The survey is anticipated to take approximately 15 minutes.

Participation in this study is voluntary. No identifying information will be collected from you in the survey and data collected will remain confidential. This research project is related to the researcher's dissertation, not their employment.

Please click the following link to participate:
https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4

(If Applicable) You are welcome to share the survey link with other current NCAA Division I student-athletes. Institutional Review Board (IRB) and athletics department approval may be

required at a respective institution to share the survey. If you have questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

(If Applicable) While you are welcome to share the survey link with other current NCAA Division I student-athletes at your respective institution, please first consult with (X), as approval from your athletics department and Institutional Review Board (IRB) may be required. If you have any questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

(If Applicable) While you are welcome to share the survey link with other current NCAA Division I student-athletes within your conference and at your respective institution, please first consult with (X), as approval from your conference, athletics department, and Institutional Review Board (IRB) may be required. If you have any questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

Please practice preventative measures for reducing virus transmission (e.g., flu, COVID-19) if taking this survey in person.

(If Applicable) If you are not a current NCAA Division I student-athlete, but are interested in supporting with survey distribution, please contact Jessica De Palo (jd2923@tc.columbia.edu).

Text

You are invited to participate in this voluntary research study (TC IRB Protocol Number 24-149) being conducted by Jessica De Palo, a Principal Investigator at Teachers College, Columbia University. (Jessica is also a former NCAA Division 1 student-athlete (a proud graduate of Lehigh University and the Patriot League) and served as a NCAA Division I Student-Athlete Advisory Committee member and representative for the Patriot League. She currently serves as the Senior Associate Athletics Director for Success Through Well-Being for Columbia Athletics.)

The research study examines how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources. The survey is anticipated to take approximately 15 minutes. Participation in this study is voluntary. No identifying information will be collected from you in the survey and data collected will remain confidential. This research project is related to the researcher's dissertation, not their employment.

Please click the following link to participate:
https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4

(If Applicable) You are welcome to share the survey link with other current NCAA Division I student-athletes. Institutional Review Board (IRB) and athletics department approval may be required at a respective institution to share the survey. If you have questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

(If Applicable) While you are welcome to share the survey link with other current NCAA Division I student-athletes at your respective institution, please first consult with (X), as approval from your athletics department and Institutional Review Board (IRB) may be required. If you have any questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

(If Applicable) While you are welcome to share the survey link with other current NCAA Division I student-athletes within your conference and at your respective institution, please first consult with (X), as approval from your conference, athletics department, and Institutional Review Board (IRB) may be required. If you have any questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

Please practice preventative measures for reducing virus transmission (e.g., flu, COVID-19) if taking this survey in person.

(If Applicable) If you are not a current NCAA Division I student-athlete, but are interested in supporting with survey distribution, please contact Jessica De Palo (jd2923@tc.columbia.edu).

Social Media/Message Board/Digital Platform Post

Current NCAA Division I Student-Athletes: You're Invited
Current NCAA Division I student-athletes: You are invited to participate in this voluntary research study (TC IRB Protocol Number 24-149) being conducted by Jessica De Palo, a Principal Investigator at Teachers College, Columbia University. (Jessica is also a former NCAA Division 1 student-athlete (a proud graduate of Lehigh University and the Patriot League) and served as a NCAA Division I Student-Athlete Advisory Committee member and representative for the Patriot League. She currently serves as the Senior Associate Athletics Director for Success Through Well-Being for Columbia Athletics.) The research study examines how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources. If you decide to participate in this study, you will be asked a series of questions related to your career development and well-being. The survey is anticipated to take approximately 15 minutes. No identifying information will be collected from you in the survey and data collected will remain confidential. This research project is related to the researcher's dissertation, not their employment.

Please click the following link to participate:
https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4

(If Applicable) You are welcome to share the survey link with other current NCAA Division I student-athletes. Institutional Review Board (IRB) and athletics department approval may be required at a respective institution to share the survey. If you have questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

(If Applicable) While you are welcome to share the survey link with other current NCAA Division I student-athletes at your respective institution, please first consult with (X), as approval from your athletics department and Institutional Review Board (IRB) may be required. If you

have any questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

(If Applicable) While you are welcome to share the survey link with other current NCAA Division I student-athletes within your conference and at your respective institution, please first consult with (X), as approval from your conference, athletics department, and Institutional Review Board (IRB) may be required. If you have any questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

(If Applicable) If you are not a current NCAA Division I student-athlete, but are interested in supporting with survey distribution, please contact Jessica De Palo (jd2923@tc.columbia.edu).

Please practice preventative measures for reducing virus transmission (e.g., flu, COVID-19) if taking this survey in person.

Direct Messaging (Student-Athletes)

(200 Character Limit) My name is Jessica, I am sharing an invite to participate in my dissertation study for NCAA D1 student-athletes on career prep & well-being: https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4

(300 Character Limit) My name is Jessica De Palo, and I am connecting to share an invite to participate in my research study for NCAA D1 student-athletes on career prep & well-being. The research is for my doctorate dissertation. Click the link to participate: https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4

My name is Jessica De Palo, and I am a doctoral candidate researcher at Teachers College, Columbia University. (I am also a former NCAA Division 1 student-athlete [a proud graduate of Lehigh University and the Patriot League] and served as a NCAA Division I Student-Athlete Advisory Committee member [and representative for the Patriot League]. I currently serve as the Senior Associate Athletics Director for Success Through Well-Being for Columbia Athletics.) I am connecting to share an invitation to participate in my dissertation research study for NCAA D1 student-athletes on career preparation & well-being. I am including the link below if you would be willing to participate: https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4

Direct Messaging (Social Media Accounts)

My name is Jessica De Palo, and I am a doctoral candidate researcher at Teachers College, Columbia University. (I am also a former NCAA Division 1 student-athlete [a proud graduate of Lehigh University and the Patriot League] and served as a NCAA Division I Student-Athlete Advisory Committee member [and representative for the Patriot League]. I currently serve as the Senior Associate Athletics Director for Success Through Well-Being for Columbia Athletics.) I am currently recruiting NCAA D1 student-athletes to participate in my research study on career preparation & well-being. I am connecting to ask if you would be willing to share/post (a recruitment script post/message) on your social media account? Thank you for any support that you may be able to provide.

Personal Outreach: Email (Student-Athletes)

Subject: Invitation to Participate

Hello (X),

I am emailing you with permission from (X) to share information regarding my dissertation research study that examines how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources.

My name is Jessica De Palo, and I am a doctoral candidate for the Ed.D. in Interdisciplinary Studies in Education program at Teachers College, Columbia University. (I am also a former NCAA Division 1 student-athlete (a proud graduate of Lehigh University and the Patriot League) and served as a NCAA Division I Student-Athlete Advisory Committee member and representative for the Patriot League. I currently serve as the Senior Associate Athletics Director for Success Through Well-Being for Columbia Athletics.) This research project is related to my dissertation, not my employment.

You are invited to participate in this voluntary research study (TC IRB Protocol Number 24-149). The survey is anticipated to take approximately 15 minutes. Participation in this study is voluntary. No identifying information will be collected from you in the survey and data collected will remain confidential.

Please click the following link to participate:
https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4

(If Applicable) You are welcome to share the survey link with other current NCAA Division I student-athletes. Institutional Review Board (IRB) and athletics department approval may be required at a respective institution to share the survey. If you have questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

(If Applicable) While you are welcome to share the survey link with other current NCAA Division I student-athletes at your respective institution, please first consult with (X), as approval from your athletics department and Institutional Review Board (IRB) may be required. If you have any questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

(If Applicable) While you are welcome to share the survey link with other current NCAA Division I student-athletes within your conference and at your respective institution, please first consult with (X), as approval from your conference, athletics department, and Institutional Review Board (IRB) may be required. If you have any questions, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

Please practice preventative measures for reducing virus transmission (e.g., flu, COVID-19) if taking this survey in person.

Personal Outreach: Email (Administrators/Staff/Coaches)

Subject: Invitation to Participate

Hello (X):

I am emailing you with permission from (X) to share information regarding my dissertation research study that examines how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources.

My name is Jessica De Palo, and I am a doctoral candidate for the Ed.D. in Interdisciplinary Studies in Education program at Teachers College, Columbia University. (I am also a former NCAA Division 1 student-athlete (a proud graduate of Lehigh University and the Patriot League) and served as a NCAA Division I Student-Athlete Advisory Committee member and representative for the Patriot League. I currently serve as the Senior Associate Athletics Director for Success Through Well-Being for Columbia Athletics.) This research project is related to my dissertation, not my employment.

I am emailing to kindly request your assistance in sharing the invitation to participate in my dissertation study (TC IRB Protocol Number 24-149) with student-athletes at your respective institution. If you are able to do so, I can share information regarding Institutional Review Board (IRB) requirements for student-athlete survey distribution. Participation in this study is voluntary. Data is collected electronically through a questionnaire, and the survey is anticipated to take approximately 15 minutes. No identifying information will be collected and data collected will remain confidential.

Please let me know if you have any questions or would like to set up a time to speak.

Thank you for any support that you may be able to provide.

Professional Association: Email to Listserv

Jessica De Palo, a Principal Investigator and doctoral candidate at Teachers College, Columbia University, is currently conducting their dissertation research study (TC IRB Protocol Number 24-149) that examines how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources. Jessica also serves as the Senior Associate Athletics Director for Success Through Well-Being for Columbia Athletics. This research project is related to their dissertation, not their employment.

If members are able to share the invitation to participate in the study with current NCAA Division I student-athletes, please reach out to Jessica at jd2923@tc.columbia.edu. Jessica will share information regarding IRB requirements for student-athlete survey distribution (e.g., review of your institution's IRB policy, site permission documentation, informed consent).

The survey is anticipated to take approximately 15 minutes. No identifying information will be collected from student-athletes in the survey and data collected will remain confidential.

Thank you for any support that you may be able to provide.

Flyer

CURRENT NCAA DIVISION I STUDENT-ATHLETES: YOU'RE INVITED

SURVEY QR CODE

Please scan the following QR code to participate:

You are welcome to share the above QR code with other current NCAA Division I student-athletes.

*Please practice preventative measures for reducing virus transmission (e.g., flu, COVID-19) if taking this survey in person.

RESEARCH STUDY INFORMATION

Current NCAA Division I student-athletes: You are invited to participate in this voluntary research study (TC IRB Protocol Number 24-149) being conducted by Jessica De Palo, a Principal Investigator at Teachers College, Columbia University.

The research study examines how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources.

If you decide to participate in this study, you will be asked a series of questions related to your career development and well-being.

The survey is anticipated to take approximately 15 minutes.

No identifying information will be collected from you in the survey and data collected will remain confidential. This research project is related to the researcher's dissertation, not their employment.

QUESTIONS

If you have questions, and/or if IRB approval is required at a respective institution to share the survey, please contact Jessica De Palo at jd2923@tc.columbia.edu for more information.

Supplemental Communication

Hi (Insert Name),

I hope that you are doing well. I am reaching out to connect with you regarding my dissertation research study (TC IRB Protocol Number 24-149) which examines how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources. Do you have time to connect and discuss?

Hi (Insert Name),

(My name is Jessica De Palo, and I am a doctoral candidate for the Ed.D. in Interdisciplinary Studies in Education program at Teachers College, Columbia University. (Additionally, I serve as the Senior Associate Athletics Director for Success Through Well-Being for Columbia Athletics. I am also a former NCAA Division 1 student-athlete (a proud graduate of Lehigh University and the Patriot League) and served as a NCAA Division I Student-Athlete Advisory Committee member and representative for the Patriot League.) I was referred to you by, (X). As (X) may have shared, I am currently conducting a research study (TC IRB Protocol Number 24-149) for my dissertation that examines how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources. This research project is related to my dissertation, not my employment.)

Thank you for your willingness to share my dissertation research survey (TC IRB Protocol Number 24-149) with (insert relationship to the student-athlete[s]).

I have confirmed IRB approval from your institution(s) that the survey may be shared with student-athletes.

Prior to sharing the survey with you for distribution, the attached (conference/department) site permission form is required to be signed by (X).

Additionally, if the survey will be distributed to student-athletes in person, the attached external site permission letter is required to be signed by (X). In-person survey distribution requires a staff member/administrator/coach to be present in the external site space at all times if the researcher is not present.

Thank you for your support in adhering to the above IRB requirements for student-athlete survey distribution. If you have any questions, please do not hesitate to reach out to me.

Hi (Insert Name),

Thank you for your willingness to share my dissertation research survey (TC IRB Protocol Number 24-149) with (insert relationship to the student-athlete[s]). Please find the survey information below for student-athlete survey distribution, and please let me know if you have any questions.

A. As a reminder, if the survey will be distributed to student-athletes in person, the attached external site permission letter is required to be signed by (X).
B. (As a reminder,) in-person survey distribution requires a staff member/administrator/coach to be present in the external site space at all times if the researcher is not present.

Below, please find templates for consideration when sharing the invitation to participate in the survey:

A: Posting the following invitation for current NCAA Division 1 student-athletes that may be interested in participating. (Feel free to share the opportunity to participate with other current NCAA Division 1 student-athletes.) If you are not a current NCAA Division I student-athlete, but are interested in supporting with survey distribution, please contact Jessica De Palo at jd2923@tc.columbia.edu.
B: We are sharing the following invitation for current NCAA Division 1 student-athletes to participate in a voluntary research study on career development and well-being. (Feel free to share the opportunity to participate with other current NCAA Division 1 student-athletes.) If you are not a current NCAA Division I student-athlete, but are interested in supporting with survey distribution, please contact Jessica De Palo at jd2923@tc.columbia.edu.
C: Sharing the following invitation in the event that you have an interest in participating. (Feel free to share with other current NCAA Division I student-athletes that may be interested.)

Include as needed (e.g., former/current student-athletes, coaches, administrators, staff, companies, organizations, etc.): While Institutional Review Board (IRB) protocols do not allow soliciting participation, sharing the invitation to participate is permitted.

Hi (Insert Name),

I hope that this message finds you doing well.

My name is Jessica De Palo, and I am a doctoral candidate for the Ed.D. in Interdisciplinary Studies in Education program at Teachers College, Columbia University. (Additionally, I serve as the Senior Associate Athletics Director for Success Through Well-Being for Columbia Athletics. I am also a former NCAA Division 1 student-athlete (a proud graduate of Lehigh University and the Patriot League) and served as a NCAA Division I Student-Athlete Advisory Committee member and representative for the Patriot League.)

I am currently conducting a research study (TC IRB Protocol Number 24-149) for my dissertation that examines how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources. This research project is related to my dissertation, not my employment.

I am emailing to request your ability to share the survey with (insert relationship to student-athletes and/or colleagues). If you are able to do so, I will confirm IRB approval from your (respective) institution(s) that the survey may be shared with student-athletes. Additionally, I will share information regarding IRB requirements for student-athlete survey distribution.

Please let me know if you have any questions or would like to set up a time to speak.

Thank you for any support that you may be able to provide.

Hi (Insert Name),

I hope that this message finds you doing well.

I am currently conducting a research study (TC IRB Protocol Number 24-149) for my dissertation that examines how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources. This research project is related to my dissertation, not my employment.

I am emailing to request your ability to share the survey with (insert relationship to student-athletes and/or colleagues). If you are able to do so, I will confirm IRB approval from your (respective) institution(s) that the survey may be shared with student-athletes. Additionally, I will share information regarding IRB requirements for student-athlete survey distribution.

Please let me know if you have any questions or would like to set up a time to speak.

Thank you for any support that you may be able to provide.

Hi (Insert Name),

My name is Jessica De Palo, and I am a doctoral candidate for the Ed.D. in Interdisciplinary Studies in Education program at Teachers College, Columbia University. (Additionally, I serve as the Senior Associate Athletics Director for Success Through Well-Being for Columbia Athletics. I am also a former NCAA Division 1 student-athlete (a proud graduate of Lehigh University and the Patriot League) and served as a NCAA Division I Student-Athlete Advisory Committee member and representative for the Patriot League.)

I am currently conducting a research study (TC IRB Protocol Number 24-149) for my dissertation that examines how to best prepare NCAA Division I student-athletes for their

professional career after sport and how to support student-athlete well-being through career adaptability resources. This research project is related to my dissertation, not my employment.

Assuming it is permissible with your Institutional Review Board (IRB) and department policies, I am emailing to request if you would be able to support with sharing the invitation to participate in the survey with your student-athletes. If you are not able to support with this request, I completely understand. (However, if you are able to support with this request, I have outlined information below regarding the study and next steps that would be required prior to survey distribution. Pending on the option selected, I can then send the follow-up information for survey distribution.) (However, if you are able to support with this request, I have outlined information below regarding the study and can follow up with IRB protocols for survey distribution.)

(Also, if sending the survey to your Student-Athlete Advisory Committee members is an option, I can follow up with more information.)

Finally, if you know of anyone that may be interested in supporting with survey distribution to their respective student-athletes, please feel free to share my contact information with them.

Please let me know if you have any questions or would like to set up a time to speak.

Thank you for any support that you may be able to provide.

All the best,

Jessica

<u>(Data Collection Methods)</u>
-Participation is voluntary.
-Data will be collected electronically through a questionnaire.
-The total duration of participation is approximately 15 minutes to complete the questionnaire.
-Data will be collected with no identifiers.

<u>Survey Distribution Options (Invitation to Participate)</u>
-A staff member, administrator, or coach may distribute the survey to student-athletes electronically (email, text).
-A staff member, administrator, or coach may schedule a space and time for survey distribution (email, text).
-A staff member, administrator, or coach may distribute the survey to Student-Athlete Advisory Committee (SAAC) members electronically (email, text) or at a SAAC meeting.
-Display a recruitment flyer in a department space.

<u>IRB Protocols</u>
IRB Protocols for this study require the following documentation prior to survey distribution:
-Confirmation that survey distribution is permissible with institutional IRB policies. *Researcher will confirm this information with the respective institution.

-Department Site Permission Form: The Department Site Permission Form is required to be signed by the athletic director (or designated signee) of each respective athletics department that will be participating in the study. **Click here to review the Department Site Permission Form*
-External Site Permission Letter: If the survey may be distributed to student-athletes in person, the External Site Permission Letter is required to be signed by the athletic director (or designated signee) of each respective athletics department that will be participating in the study. In-person survey distribution requires a staff member/administrator/coach to be present in the external site space at all times. **Click here to review the External Site Permission Letter*
-If a site has a designated space for flyers, and the site has no restrictions for posting the flyer, it is permissible to post the flyer without a formal agreement.

Study Summary
-There are over 170,000 Division I student-athletes who compete annually in NCAA sports. Student-athlete time demands may lead to student-athletes prioritizing their athletic responsibilities. This prioritization can delay student-athletes' preparation for their professional career after sport. A concept that can support student-athletes' preparation for their professional career after sport is career adaptability. One issue in identifying career adaptability with student-athletes is how to measure it. This study will expand on existing research by aiming to validate scores of a career adaptability instrument with NCAA Division I student-athletes in the United States. By validating scores of this instrument with NCAA Division I student-athletes, U.S. practitioners and researchers will have a standardized way of measuring career adaptability resources for NCAA Division I student-athletes. Additionally, U.S. practitioners may be able to use the instrument to increase student-athletes' preparation for their professional career after sport.)

Hi (Insert Name),

Institutional Review Board (IRB) protocols for the study require the following before the survey can be shared.

1. (I must confirm with (institution's) IRB that survey distribution is permissible; I emailed them to confirm and will communicate their response with you when I receive it.)
2. (Permission form) is required to be signed by (X).

When I receive the permission form back from you, I can then send the invitation to participate. The invitation to participate can be shared with student-athletes via email or text, and the invitation shares participation is voluntary and data will be collected with no identifiers.
**If the invitation to participate to student-athletes is shared in-person (i.e., SAAC meeting), an additional External Site Permission Letter is required to be signed by (X). In-person survey distribution requires a staff member/administrator/coach to be present in the external site space at all times.*

Please let me know if you have any questions.

Hi (Insert Name),

Below, please find the (permission letters) required to be signed by (X) prior to survey distribution.
(Insert Permission Forms)

When I receive the signed form(s) back from you, I can then send the Participant Recruitment Invitation to be emailed to the student-athletes.

Please let me know if you have any questions.

Thank you for your continued assistance with this process.

Hi (Insert Name),

Thank you for sending the permission documentation, it is now permissible to distribute the survey to student-athletes.

As a reminder:

- Please find the Participant Recruitment Invitation communication below that must be used for survey distribution.
    - Participant Recruitment Invitation (Click Here)
- Student-athlete participation must be voluntary.
- If the survey is distributed to student-athletes in person, a staff member/administrator/coach must be present in the external site space at all times.
- The survey must be distributed to student-athletes via email or text, as in person survey distribution is not permissible due to IRB protocols.

Thank you so much again for your assistance with survey distribution to your student-athletes, please let me know if you have any questions.

Hi (Insert Name),

Thank you for your willingness to share my research study information with (X).
As you are aware, I am currently conducting a research study (TC IRB Protocol Number 24-149) for my dissertation that examines how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources. This research project is related to my dissertation, not my employment.
If (X) is able to share the survey with (insert relationship to student-athletes and/or colleagues), I will confirm IRB approval with their institution(s) that survey distribution is permissible.

Additionally, I will share information regarding IRB requirements for student-athlete survey distribution.

Please let me know if you have any questions, and please encourage anyone to reach out to me at jd2923@tc.columbia.edu if they have any questions or would like to set up a time to speak.
I am grateful for any support that is able to be provided.

(Insert Salutation),

My name is Jessica De Palo, and I am a doctoral candidate for the Ed.D. in Interdisciplinary Studies in Education program at Teachers College, Columbia University. (I currently serve as the Senior Associate Athletics Director for Success Through Well-Being for Columbia Athletics. I am a former NCAA Division 1 student-athlete (a proud graduate of Lehigh University and the Patriot League) and served as a NCAA Division I Student-Athlete Advisory Committee member and representative for the Patriot League.) This research project is related to my dissertation, not my employment.

I am conducting a research study (TC IRB Protocol Number 24-149) for my dissertation that examines how to best prepare NCAA Division I student-athletes for their professional career after sport. The aim of this study is to validate the scores of a career development instrument with NCAA Division I student-athletes, which may assist U.S. practitioners with increasing student-athletes' preparation for their professional career after sport.

I am emailing to request your ability to share an invitation to participate in my dissertation survey with student-athletes at your respective institution. I can provide a summary of the study findings in aggregate upon request.

If you are able to support with this request, I will share information regarding Institutional Review Board (IRB) requirements for student-athlete survey distribution.

Please let me know if you have any questions or would like to set up a time to speak.

Thank you for any support that you may be able to provide.

Best,

Jessica

LinkedIn: (Insert profile information.)
X: (Insert profile information.)
Instagram: (Insert profile information.)

** Kindly feel free to distribute my recruitment posts on your personal social media platforms.*

Presentation of Research for Consideration of Survey Distribution

*The following template will be used when it is requested to present my research for consideration of survey distribution; adjustments will be made as needed.

- Introduction
  - Student-athlete time demands
  - Career adaptability
- Background
  - Career adaptability research: General overview of the literature
  - Measuring career adaptability
  - Career adaptability research: Student-athletes
- Problem Statement
  - Current results are limited in application to other student-athlete populations
  - Necessary to validate scores of the instrument with NCAA Division I student-athletes for utilization
- Aims of the Proposed Work
  - Psychometric evidence of reliability and validity of the interpretation of scores of the instrument
  - Utilization of the instrument to assess student-athlete career adaptability resources
- Research Questions
  1. Are career adaptability scores of the instrument reliable and valid for NCAA Division I student-athletes in the United States?
  2. What is the degree of relationship between NCAA Division I student-athletes' instrument scores and scores in the following constructs: (a) career construction; (b) self-esteem; (c) resilience; and (d) sport burnout?
- Significance
  - Standardized instrument for career adaptability assessment and career preparation with student-athletes in the United States
- Methods
  - Participants
  - Dissertation instruments
  - Procedures
  - Data collection
  - Design and analysis
- Timeline
- Discussion

Social Media Recruitment Script (Posts, Stories, Messages, Videos)

- Posts/messages will include different formatting, images, and templates using the social media recruitment script outlined below.
- If the survey link can't be included in the post/message, recruitment script will be updated to include "To Participate: Click the link in bio/profile."
- Google Drive Images Link: https://drive.google.com/drive/folders/1qlr8ua7v0nJG01RHxqqTAlzCmTv2gMNs?usp=sharing

Text in Post/Profile Picture (X): Current NCAA D1 Student-Athletes Needed Participate in research to support D1 student-athlete career development and well-being Click the link in bio to participate TC IRB Protocol Number 24-149 See image: XPP
Text in Post: TC IRB Protocol Number 24-149 Current NCAA D1 Student-Athletes Needed Reflect on your future & participate in research to support D1 student-athlete career development & well-being X, LinkedIn: To Participate: Click the link above Instagram: To Participate: Click the link in bio/profile Click here to participate Text in Caption/Message: X, LinkedIn: Click the following link to participate: https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4 Instagram: To Participate: Click the link in bio See image: SMP01(Instagram), SMP01 (X, LinkedIn)
Text in Post: Current NCAA D1 Student-Athletes Needed Reflect on your professional career and participate in research to support D1 student-athlete career development and well-being X, LinkedIn: To Participate: Click the link above

Instagram: To Participate: Click the link in bio/profile Click here to participate TC IRB Protocol Number 24-149 Text in Caption/Message: X, LinkedIn: Click the following link to participate: https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4 Instagram: To Participate: Click the link in bio See image: SMP02 (Instagram), SMP02 (X, LinkedIn)
Text in Post: To Participate: Click the link above To Participate: Click the link in bio/profile Click here to participate Current NCAA D1 Student-Athletes Needed Reflect on your future & participate in research to support D1 student-athlete career development & well-being TC IRB Protocol Number 24-149 Text in Caption/Message: Click the following link to participate: https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4 See image: SMP03
Text in Post: Current NCAA D1 Student-Athletes Needed Reflect on planning for your future and participate in research to support D1 student-athlete career development and well-being To Participate: Click the link above To Participate: Click the link in bio/profile Click here to participate TC IRB Protocol Number 24-149 Text in Caption/Message:

Click the following link to participate: https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4 See image: SMP04
Text in Post: Current NCAA D1 Student-Athletes Needed Are you prepared for your professional career? Reflect on planning for your future and participate in research to support D1 student-athlete career development and well-being X, LinkedIn: To Participate: Click the link above Instagram: To Participate: Click the link in bio/profile Click here to participate TC IRB Protocol Number 24-149 Text in Caption/Message: X, LinkedIn: Click the following link to participate: https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4 Instagram: To Participate: Click the link in bio See image: SMP05 (Instagram), SMP05 (X, LinkedIn)
Text in Post: Current NCAA D1 Student-Athletes Needed What are your professional plans? Reflect on planning for your future and participate in research to support D1 student-athlete career development and well-being To Participate: Click the link above To Participate: Click the link in bio/profile Click here to participate TC IRB Protocol Number 24-149 Text in Caption/Message: Click the following link to participate: https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4 See image: SMP06

Text in Post:

Current NCAA D1 Student-Athletes Needed
What are your plans for the future?

Reflect on planning for your future and participate in research to support D1 student-athlete career development and well-being

X, LinkedIn: To Participate: Click the link above
Instagram: To Participate: Click the link in bio/profile
Click here to participate

TC IRB Protocol Number 24-149

Text in Caption/Message:
X, LinkedIn: Click the following link to participate:
https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4
Instagram: To Participate: Click the link in bio

See image: SMP07 (Instagram), SMP07 (X, LinkedIn)
See image: SMP07B (Instagram), SMP07B (X, LinkedIn)

Text in Post:

Current NCAA D1 Student-Athletes Needed

Reflect on your professional career & participate in research to support D1 student-athletes with:
*Career Development
*Well-Being

X, LinkedIn: To Participate: Click the link above
Instagram: To Participate: Click the link in bio/profile
Click here to participate

TC IRB Protocol Number 24-149

Text in Caption/Message:
X, LinkedIn: Click the following link to participate:
https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4
Instagram: To Participate: Click the link in bio

See image: SMP08 (Instagram), SMP08 (X, LinkedIn)

Text in Post:

Current NCAA D1 Student-Athletes Needed

Participate in research to support with student-athlete career development and well-being

X, LinkedIn: To Participate: Click the link above
Instagram: To Participate: Click the link in bio/profile
Click here to participate

TC IRB Protocol Number 24-149

Text in Caption/Message:
X, LinkedIn: Click the following link to participate:
https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4
Instagram: To Participate: Click the link in bio

See image: SMP09 (Instagram), SMP09 (X, LinkedIn)

Text in Post:

Current NCAA D1 Student-Athletes Needed

Text in Caption/Message:
Reflect on your professional career and participate in research to support D1 student-athlete career development and well-being.

Click the link in bio/profile to participate.
Click here to participate
Click the following link to participate:
https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4

TC IRB Protocol Number 24-149

See image: SMP10

Text in Post:

Current NCAA D1 Student-Athletes Needed

X, LinkedIn: To Participate: Click the link above
Instagram: To Participate: Click the link in bio
Click here to participate

Reflect on your professional career & participate in research to support D1 student-athletes with:
*Career Development
*Well-Being

TC IRB Protocol Number 24-149 Text in Caption/Message: X, LinkedIn: Click the following link to participate: https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4 Instagram: To Participate: Click the link in bio See image: SMP11 (Instagram), SMP11 (X, LinkedIn)
My name is Jessica De Palo, and I am a doctoral candidate at Teachers College, Columbia University. (I am also a former NCAA Division 1 student-athlete [a proud graduate of Lehigh University and the Patriot League] and served as a NCAA Division I Student-Athlete Advisory Committee member and representative for the Patriot League.) My research examines how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources. Current NCAA Division 1 Student-Athletes: You are invited to participate in this voluntary research study (TC IRB Protocol Number 24-149). If you decide to participate in this study, you will be asked a series of questions related to your career development and well-being. Please click the following link to participate: https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4 Click the link in bio/profile to participate.
Current NCAA Division 1 Student-Athletes: You are invited to participate in this voluntary research study (TC IRB Protocol Number 24-149). If you decide to participate in this study, you will be asked a series of questions related to your career development and well-being. Please click the following link to participate: https://tccolumbia.qualtrics.com/jfe/form/SV_9YKSqYzO2hhNSD4 Click the link in bio/profile to participate.

Appendix J

Informed Consent

Protocol Title: Career Adapt-Abilities Scale - Dual Career Form - U.S. (CAAS-DC-U.S.): Psychometric Properties and Initial Score Validation in U.S. Collegiate Student-Athletes

Principal Researcher: Jessica De Palo
646-530-0005, jd2923@tc.columbia.edu

INTRODUCTION

You are invited to participate in this voluntary research study (TC IRB Protocol Number 24-149) called "Career Adapt-Abilities Scale - Dual Career Form - U.S. (CAAS-DC-U.S.): Psychometric properties and initial score validation in U.S. collegiate student-athletes." You may qualify to take part in this research study because of your participation on a NCAA Division I varsity athletic team and because you are 18 years of age or older. Approximately 300 people will participate in this study and it will take approximately 15 min of your time to complete.

WHY IS THIS STUDY BEING DONE?

This study is being done to examine how to best prepare NCAA Division I student-athletes for their professional career after sport and how to support student-athlete well-being through career adaptability resources. The survey and collection of data is for the primary researcher's dissertation and is not associated with their professional role as a NCAA Division 1 student-athlete support services administrator.

WHAT WILL I BE ASKED TO DO IF I AGREE TO TAKE PART IN THIS STUDY?

If you decide to participate in this study, you will be asked a series of questions in an online survey through Qualtrics. The questions are related to your career development and well-being (i.e., career adaptability, career construction, self-esteem, resilience, and sport burnout).

WHAT POSSIBLE RISKS OR DISCOMFORTS CAN I EXPECT FROM TAKING PART IN THIS STUDY?

This is a minimal risk study, which means the harms or discomforts that you may experience are not greater than you would ordinarily encounter while taking regularly administered surveys (e.g., career development, academic, or athletic). You can stop participating in the study at any time without penalty. No identifying information will be collected from you in the survey, and the primary researcher will not know if you do not complete the survey. The primary researcher is taking precautions to keep your information confidential and prevent anyone from discovering or guessing your identity, such as keeping all information on a password protected computer and on password-protected documents on a university Google Drive.

If you or someone you know is ever experiencing a well-being emergency, please call 911 or go to the nearest emergency room.

WHAT POSSIBLE BENEFITS CAN I EXPECT FROM TAKING PART IN THIS STUDY?

There is no direct benefit to you for participating in this study. Participation may benefit the field of student-athlete support services to better understand how to prepare student-athletes for their professional careers after sport and how to support student-athlete well-being through career adaptability resources.

This research study is related to the researcher's dissertation, not to their employment.

WILL I BE PAID FOR BEING IN THIS STUDY?

You will not be paid to participate.

WHEN IS THE STUDY OVER? CAN I LEAVE THE STUDY BEFORE IT ENDS?

The study is over when you have completed the survey. However, you can stop completing the survey at any time even if you have not finished.

PROTECTION OF YOUR CONFIDENTIALITY

For quality assurance, the study team and/or members of the Teachers College Institutional Review Board (IRB) may review the data collected from you as part of this study. As no identifying information will be collected from you in the survey, your identity will remain anonymous. Otherwise, all information obtained from your participation in this study will be held strictly confidential and will be disclosed only as required by U.S. or State law.

HOW WILL THE RESULTS BE USED?

The results of this study may be published in journals and presented at academic conferences. No identifying information will be collected from you in the survey. Therefore, your name or any identifying information about you will not be published. This study is being conducted as part of the dissertation of the primary researcher.

WHO CAN ANSWER MY QUESTIONS ABOUT THIS STUDY?

If you have any questions about taking part in this research study, you should contact the primary researcher, Jessica De Palo, at jd2923@tc.columbia.edu.

If you have questions or concerns about your rights as a research subject, you should contact the Institutional Review Board (IRB) (the human research ethics committee) at 212-678-4105 or email IRB@tc.edu or you can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY 10027, Box 151. The IRB is the committee that oversees human research protection for Teachers College, Columbia University.

PARTICIPANT'S RIGHTS

- I have read the Informed Consent Form and have been offered the opportunity to discuss the form with the researcher.
- I have had ample opportunity to ask questions about the purposes, procedures, risks and benefits regarding this research study.
- I understand that my participation is voluntary. I may refuse to participate or withdraw participation at any time without penalty.
- The researcher may withdraw me from the research at the researcher's professional discretion.
- If, during the course of the study, significant new information that has been developed becomes available which may relate to my willingness to continue my participation, the researcher will provide this information to me.
- Any information derived from the research study that personally identifies me will not be voluntarily released or disclosed without my separate consent, except as specifically required by law.
- De-identified data may be used for future research studies, or distributed to another researcher for future research without additional informed consent from you (the research participant or the research participant's representative).
- Download a copy of the TC IRB stamped informed consent, by clicking here.
- I confirm that I am 18 years of age or older.

By checking the "I agree" box, you agree to participate in this study. You also confirm you are 18 years or older. To agree: Check the "I agree" box below and then click next to participate in the study. If you do not wish to participate in this study, simply close out of this browser window or check the "I do not agree" box below and then click next.

☐ I agree
☐ I do not agree (End Survey, Add Skip Logic)