5-2018

Broad Skill Focused Job Seeking: A Study of Intervention and Employment Outcomes

Eric A. Knudsen

The Graduate Center, City University of New York

How does access to this work benefit you? Let us know!
Follow this and additional works at: https://academicworks.cuny.edu/gc_etds

Part of the Industrial and Organizational Psychology Commons

Recommended Citation

https://academicworks.cuny.edu/gc_etds/2646

This Dissertation is brought to you by CUNY Academic Works. It has been accepted for inclusion in All Dissertations, Theses, and Capstone Projects by an authorized administrator of CUNY Academic Works. For more information, please contact deposit@gc.cuny.edu.
BROAD SKILL FOCUSED JOB SEEKING:
A STUDY OF INTERVENTION AND EMPLOYMENT OUTCOMES

by

ERIC A. KNUDSEN

A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

2018
Broad Skill Focused Job Seeking: A Study of Intervention and Employment Outcomes

by

Eric A. Knudsen

This manuscript has been read and accepted for the Graduate Faculty in Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

Date

Erin Eatough

Chair of Examining Committee

Date

Richard Bodner

Acting Executive Officer

Supervisory Committee:

Kristen Shockley
Karen Lyness
Harold Goldstein
Robert Silzer

THE CITY UNIVERSITY OF NEW YORK
ABSTRACT

Broad Skill Focused Job Seeking: A Study of Intervention and Employment Outcomes

by

Eric A. Knudsen

Advisor: Erin M. Eatough

The job search has been the subject of research across many disciplines adopting varied perspectives. However, the industrial-organizational psychology literature on the job search has failed to properly consider the role of individual differences in thought about the utility of job skills independent of context. This dissertation is an attempt to establish and study the construct of broad skill focus- the extent to which individuals adopt a perspective and understanding of the broader generalizability of their work skills, versus their context-specific applications (i.e., the settings in which they were learned). As no measurement tool exists for studying this construct, Study 1 details the effort to develop and validate a psychometrically-sound instrument for measuring broad skill focus in individuals. It was subsequently posited that a high level of broad skill focus was advantageous for job seeking. Therefore, Study 2 served as an evaluation of an online author-developed training program (the Broad Skills Awareness Training or BSAT) designed to promote broad skill focus and employment expectancy in individuals. Results of Study 2 suggested the BSAT did exhibit merit for meaningfully increasing levels of both outcomes. Finally, Study 3 was designed to monitor the three-month employment outcomes of actual unemployed workers who have (and have not) completed the BSAT training. Final Study
3 results were mixed, again demonstrating the potential promise of the BSAT for improving broad skill focus, but not resulting in statistically significant changes in employment expectancy, and no definitive link to actual improved employment outcomes. Practical implications and future opportunities to expand this research are discussed.
Acknowledgements

For their guidance from the starting line to the finish line of this program, I would like to thank my two wonderful advisors, Erin Eatough and Kristen Shockley, who have shared their time, thoughts, and intellects with me throughout the entire journey of doctoral study. Under their wings I’ve felt confident and assured in my work the entire way. I also want to thank my committee members, Karen Lyness, Harold Goldstein, and Robert Silzer, for offering to devote their time and expertise to review and provide feedback on this paper. Finally, a thank you to my peers in the program for sharing in this academic adventure with me; I look forward to many years as your professional colleague.

To the family and friends who have cheered me on for the past six years, thank you for your unconditional love and support. Mom and Mike, I can’t thank you enough for all you have done for me over the past six years (not to mention before that). You gave me a solid foundation on which I could start pursuing this Ph.D without fear of failure. This achievement is as much yours as it is mine. Mom, you are my hero in so many ways. I hope in some small way this makes me one of yours. Melissa, thank you for being a gentle, kind, and loving twin sister; you have always been a model to me of what is right, and your influence has shaped much of my growth as a person these last six years. Finally, Lisa, you are my rock. You’ve lifted me up when I’ve been down, you’ve nudged me forward when I’ve felt little progress. You have always seen in me the things I aspire to be, even when I’ve had trouble seeing them in myself. Thank you for the unconditional love, support, and forever being my cheerleader.
# TABLE OF CONTENTS

LIST OF FIGURES........................................................................................................ix

LIST OF TABLES..........................................................................................................x

INTRODUCTION...........................................................................................................1

LITERATURE REVIEW...............................................................................................3

A Broad Skill-Focused Job Search.............................................................................3

Skill Networks As An Information Source..............................................................6

Contributions of a Broad Skills-Focused Approach..............................................8

Conceptualizing the Job Search................................................................................12

The Role of Cognition in Initial Search Decisions....................................................17

STUDY 1.....................................................................................................................22

Phase 1......................................................................................................................25

Method......................................................................................................................25

Procedure..................................................................................................................26

Results......................................................................................................................28

Phase 2......................................................................................................................29

Method......................................................................................................................30

Procedure..................................................................................................................31

Results......................................................................................................................31

Phase 3......................................................................................................................33

Method......................................................................................................................38

Procedure..................................................................................................................40

Results......................................................................................................................41
LIST OF FIGURES

FIGURE 1: Schwab et al. (1987) model of job search and choice

FIGURE 2: Scree plot of explained variance for Study 1 confirmatory factor analysis

FIGURE 3: Sample screenshot from the Education module of the BSAT

FIGURE 4: Sample screenshot from the Elaboration module of the BSAT

FIGURE 5: Sample screenshot #1 from the Equipment module of the BSAT

FIGURE 6: Sample screenshot #2 from the Equipment module of the BSAT

FIGURE 7: Sample screenshot #3 from the Equipment module of the BSAT

FIGURE 8: Barplot of simple slopes analysis

FIGURE 9: Multiplot of BSF response histograms
LIST OF TABLES

TABLE 1: Study 1 Phase 1 Item Relevance Ratings

TABLE 2: Study 1, Phase 2: Broad Skill Focus Item Correlations

TABLE 3: Goodness-of-fit indices for single-factor broad skill focus model

TABLE 4: Standardized single-factor $R^2$ values for remaining BSF measure items

TABLE 5: Results of Shapiro-Wilk tests on Study 1, Phase 2 scale scores

TABLE 6: Pearson correlation table of validation scale scores

TABLE 7: Mardia tests of multivariate normality

TABLE 8: Goodness-of-fit indices for validation confirmatory factor analyses

TABLE 9: Broad Skill Focus Items, Final Selection

TABLE 10: Study 2 Normality Tests, Pre- and Post- Transformation

TABLE 11: Study 3 Normality Tests, Pre- and Post- Transformation

TABLE 12: Study 3 t-tests on Three Time Points on Broad Skill Focus

TABLE 13: Study 3 t-tests on Three Time Points on Employment Expectancy

TABLE 14: Logistic Regression Output, Controlling for Projected Employment Growth

TABLE 15: Results of Logistic Regression (Hypothesis 9)

TABLE 16: Results of Simple Slope Analysis of Career Adaptability Moderator
Job searches are considered in the research literature to be complex self-regulatory processes composed of varying levels and types of motivation, effort, and strategy (Kanfer, Wanberg, & Kantrowitz, 2001; Horvath, 2015). Often, the job search operates primarily in the service of finding and securing employment that meets an individual’s expectations from both financial and personal perspectives (Schwab, Rynes, & Aldag, 1987; Werbel, 2000). In order to better understand the job search and job selection processes, a number of scholars across disciplines such as economics, sociology, and industrial-organizational psychology have aimed to theoretically model and explain the process. These conceptualizations have historically varied in many ways, each offering unique academic and applied perspectives of the process and experience of securing gainful employment. For example, economic models have historically adopted a purely rational perspective, focusing largely on the optimization of personal, financial, and/or temporal costs of a job search (Schwab et al., 1987). Alternately, sociological perspectives have often centered on the composition of job seekers’ social and relational networks and the career implications related to their size, structure, and density (e.g., Montgomery, 1992). Lastly, applied psychology has made efforts to establish explanatory models of job search and choice, attempting to identify the psychological factors that influence or explain these search and selection decisions.

Though scholarly work on job search and choice is scattered throughout psychology and these peripheral disciplines, Schwab et al. (1987) reviewed and unified much of the extant cross-disciplinary literature by synthesizing it into a succinct theoretical process model (Figure 1). This model delineates three phases of the job-seeking process: (1) job search, (2) job evaluation, and (3) outcomes. It is theorized by Schwab and colleagues (1987) that all three of these phases are broadly impacted by both individual characteristics (e.g., skills, interests, attitudes) and labor
market forces (e.g., job supply and demand). While distinctive disciplines steer their scholarly energies toward different components of this model, the focus of most psychological literature in this area is on the elements of individual influence described in the model. Most germane to this paper is the model’s “search” phase, which is broken down into (1) the sources used to generate alternative job options (i.e., information sources), and (2) the intensity with which job alternatives are explored (i.e., job search intensity). However, one notable absence from the job search portion of the model is how job seekers make initial and independent pre-search decisions about which types of jobs are viable to pursue at all (i.e., which job opportunities are worth pursuing and which are not?). This is a crucial yet understudied individual element of the job search process, as it directly impacts the breadth and characteristics of job pools that a job seeker ultimately enters and evaluates.

Among the individual factors which are broadly posited to inform the job search in the Schwab et al. model (1987) is occupational training (i.e., skills). The relationship between specific (or “narrow”) job skills and job choice has been well supported in the literature (e.g., Cable & Judge, 1996). In practice, job seekers with a number of prospective work opportunities might refer to the various job descriptions they encounter, comparing their own narrow skills (e.g., fluency in SPSS) with those listed in the descriptions (e.g., “2+ years conducting data analyses in statistical software such as SPSS, R, or Python”). The degree to which the job seekers’ skills and requirements outlined in the job description are in alignment may influence their ultimate decisions about viable prospective job opportunities. It appears that where the extant research has fallen short is in conducting a more thorough investigation into how a broader notion of job skills (e.g., critical thinking, public speaking) impact perceptions of job viability, and perhaps more importantly actual employment outcomes. More specifically, the
field has seemingly not explored the outcomes of variation in job seekers’ emphasis on these broad, more generalizable skills as a source of information about possible work opportunities. Simply posed as a question, what is the specific role of a focus on one’s own broad skills in influencing one’s perceptions of which job roles are possible and reasonable to pursue? How and why might variance in this “broad skill focus” impact those opportunities? Further, in light of the dearth of literature on this particular topic, it is not known whether there exist opportunities to improve job search outcomes by encouraging a job search strategy driven more heavily by reflection on one’s broad skill set.

A Broad Skill-Focused Job Search

When searching for potential jobs, individuals could conceivably exhibit meaningful variance in the degree to which they consider the breadth of applications for their broad job skills. Some job seekers may think in a narrow or limited manner during their search, focusing predominantly on their precise work histories, task-related accomplishments, or industry-specific experiences (e.g., narrow skills) as sources of information about their competence or proficiency, and from this assessment infer their practical work opportunities. In contrast, some other job seekers may adopt a broader approach to this reflection, considering all of the ways that their broad skills can translate across job roles independent of the industry, context, or career path in which they were learned or acquired. In order to understand how variance in this broad skill-focused approach to the job search might impact the search process and outcomes, consider the following illustration:

Sarah, a computer support specialist, feels limited in advancement and earning potential, but due to her prior work experience continues to seek opportunities in the customer service and
When Sarah searches for a new job, she may be biasing or limiting her search by focusing primarily on her existing work experience, her perception of a prescribed career path in the technology support space, or her narrow skill set (e.g., knowledge of Zendesk customer service software; Lent, Brown, & Larkin, 1994; Lent, Brown, & Hackett, 2002). Past theoretical work on job choice first proposed by Soelberg (1966) and later reviewed by Power and Aldag (1985) supports this assertion; when job seekers are first considering ideal jobs to pursue, they draw heavily from familiar occupations (i.e., those that the individual has substantial exposure to), and perceived job qualifications. Additionally, during the process of action planning their search, it is theorized that job seekers gather information about occupational ladders (Power & Aldag, 1985), furthering embedding their search in largely familiar realms of work. In our example, Sarah adopts such an approach to the advancement of her job and career, and is thus likely to initiate searches for other support specialist jobs, or perhaps seek positions highly similar in nature and function, like that of a computer programmer or database administrator. This approach may afford Sarah the opportunity to move between related jobs throughout her career, but the emphasis on work history, industry, and/or narrow skills may prevent her from exploring and pursuing other unique job opportunities in which she could leverage her existing broad skills and still experience success and satisfactory quality of employment.

Recent scholarly work has posited that over the course of an entire career, not mere tasks but entire occupations may be subject to automation as technology evolves and advances alongside work (Amtz, Gregory, & Zierahn, 2016). In fact, some estimates suggest that over the long term upwards of 47% of existing occupations are vulnerable to being substantially or
entirely automated, with an emphasis of risk on lower-skilled workers and jobs (Frey & Osborne, 2017; Amtz et al., 2016). Thus, if employment in one’s current industry or line of work is scarce or decreasing (e.g., occupations involving manual labor, postal workers, etc.), a narrow perspective to job seeking could result in less desirable employment outcomes, poor distribution of skilled workers, or loss of skilled workers from the job market altogether. While searchers possessing a high-demand skill set may not presently share in this experience of a difficult job search or a vulnerable career, there is little definitive evidence that what constitutes a “safe” skill set today will not become a vulnerable skill set later. All of these ideas together illustrate the criticality of the decisions we, as job seekers, make in anchoring our job search to our skills. Job skills are an indispensable source of information for guiding job searches, but the varying ways in which job seekers use this information may meaningfully sway employment and career outcomes.

In contrast to a narrower perspective on job skills, by adopting a thought process emphasizing broad job skills, Sarah might more easily mentally detach from her identified career path and the narrow skills related to computer systems. Instead, with a broader perspective on her skill offering as an employee, she may experience greater openness to exploring the wider applicability of her broad job skills (e.g., complex problem solving, critical thinking, decision-making). By allowing consideration of these broad skills to guide a more expansive and thoughtful research and job search process, she may discover that her user support specialist skill set substantially overlaps with the identified skill set of an air traffic controller (National Center for O*NET Development, n.d. A, B). While this may not appear to be a natural job transition, the overlap presents a unique opportunity for successful work and a suitable, data-backed alternative career path for which Sarah is already partially equipped. Such an occupational “connection”
(i.e., the great overlap in skill requirements) is unlikely to be discovered if her research and consideration process was guided by her narrow skills or work history as a user support specialist alone. These and other examples of occupational skill similarities demonstrate the potential expansion of work opportunities for job seekers who adopt a perspective in job searching that anchors on their broad skill set. Further, the increased breadth of opportunity should be not merely perceived, but actual (i.e., it should reveal work opportunities that can realistically be pursued), and should therefore translate into more desirable employment outcomes among these job seekers. Generally speaking, exploring the connections between the skill sets of occupations (e.g., user support specialist and air traffic controller) in this manner may help unveil these unexpected but plausible work opportunities. One useful but less conventional approach or platform for exploring the similarities in skill requirements of various occupations is rooted in the principles of network science, a set of tools and methods that has just recently started to gain more traction in the applied psychology space.

**Skill Networks as an Information Source**

Network analysis is, by its definition, a method designed for the analysis of connections (Marin & Wellman, 2011). Though in the social sciences it is often used to study the relationships between people (e.g., in the workplace, in society; e.g., Tichy, Tushman, & Fombrun, 1979), the same network analysis approach can be used to understand similarity between alternative entities such as occupations. For example, if two occupations require a similar broad skill set, they can be represented as a pair of connected entities (or ‘nodes’, as they are known in network science). Extending that visual of two linked nodes by drawing connections between each of the two occupations and any other occupations that they share required skills with, and cycling through this process for each occupation that joins the group, a
larger network of connected occupations is revealed. In a comparison of three human resource related occupations, Knudsen (2014, 2015) demonstrated the effectiveness of this methodology for gleaning both quantitative and qualitative insights about the structural nature of occupations and their required skill sets. By exploring this web of occupations interwoven by their skillsets, one can gain insight into the broader applicability of a particular skill or set of skills. Some of these connections (e.g., User Support Specialist and Air Traffic Controller) may be unintuitive at a superficial level, but become apparent when occupations are explored at a deeper level in this manner. Further, some shared skills may pull occupations into ‘clusters’ and drive greater connection between a number of highly-similar occupations, while other skills may be so widely applicable that they do not demonstrate the same “gravity” in connecting only very similar occupations. If such insight and information could be made readily digestible for a non-scholarly audience, a job seeker might be able to determine specifically which skills equip them for success in just a specific category of occupational roles (e.g., tech support), as well as which skills prepare them for a broader array of roles. Further, “zooming out” of these networks and observing the macro-level opportunity for a person with a given skill set could expose them to a new, unique, or unexpected range of potential jobs and career paths.

Despite the rather accessible concept of connecting occupations via shared skills, it may prove cognitively challenging in some cases for a person to effectively “scale up” his or her skill set from narrow ideas about job skills to identify broader skills that are already possessed. For example, it might not be easy for Sarah, the user support specialist in our earlier example, to realize her job (at the broad skill level) requires complex problem-solving, active listening, critical thinking, etc. These broad skills are generally more abstract than the task-related narrow skills she may be accustomed to thinking about when she reflects on her work and current role.
Thus, equipping job seekers with a deeper (but accessible) understanding of broad skills, as well as access to useful and practical tools that allow them to visualize and explore the “skill links” between occupations and their skill networks could prove to be greatly beneficial in their job search on a couple of fronts. Particularly because effective education and training to focus on broad skills should expand one’s notion of what constitutes a viable work opportunity, such job seekers should see improvement in terms of both objective employment outcomes (e.g., actually finding a new work opportunity) and subjective outcomes (e.g., expectancy about finding work in the near future).

While extant theory and some initial methodological work appears to support the value of this network-based approach for studying occupations and job skills, the principal investigator was aware of no scholarly work that leverages such an application to study job search processes and outcomes. Thus, the proposed approach had the potential to serve as a proof of concept in further establishing a new methodological tool for researching the ecosystem of occupational skills and how job seekers can leverage their knowledge of that ecosystem to improve their employment outcomes. Further, the use of these skill networks, and knowledge of how they can be leveraged to educate job seekers about realistic work opportunities, can help advance theoretical ideas about effective strategies that job seekers can use when making early assumptions about which types of occupations are realistic pursuits and which are not.

**Contributions of a Broad Skills-Focused Approach**

Until now, the job search literature (e.g., Schwab et al., 1987) has focused predominantly on the sources that job seekers use to find jobs (e.g., job websites, classifieds), seeing them as the formal inception of the job search. While the model proposed by Soelberg (1966) did incorporate a period of identifying ideal occupational alternatives, it proved rather agnostic about when job
seeker judgments in this phase were effective or not. It can be argued that before a job seeker, for example, types a search term into a job website, he/she must select that term based on some self-established notion or paradigm of what job opportunities make sense to pursue. In many cases, these judgments may be based on his/her work history or interests. However, an understanding of occupational skill networks may present a new paradigm for job seekers considering viable occupational alternatives. In this way, using broad skill networks as a tool can help advance theoretical work in this area by expanding our ideas about when and how the job search begins, as well as what dictates the efficacy of a job search process.

From a practical standpoint, no known empirical efforts have been made to assess whether (1) the degree of one’s tendency to reflect on broad (versus narrow) skills can be effectively measured, (2) a broad skill focused approach and an understanding of skill networks can be trained to targeted job seekers who can benefit most from the perspective (e.g., unemployed and underemployed), and (3) a broad skill focus impacts subsequent employment outcomes. As suggested by the first research question, it is conceivable that this broad skill focused approach could be taught to job seekers through training. For example, career centers could help career changers or unemployed individuals adopt broader perspectives about their skill generalizability. Additionally, college or vocational school students could be taught to think creatively about how their broad job skills might transfer across occupations and career paths to supplement their existing career exploration process. At a more macro or institutional level, promoting a broad skill focused approach among job seeking populations could help to spread talent more evenly across different occupations and industries. The benefits of this dispersion effect are conceivably twofold: (1) it may serve to alleviate “skill shortages” being reported in various industries and occupations (Bessen, 2014), and (2) it could further equip unemployed
and underemployed individuals with an additional strategy to securing satisfactory employment. Thus, if a broad skill focused training is shown empirically to be effective, it could result in great positive impact on both academic and applied fronts. Generally speaking, given the stated and rather important implications of these contributions, these are notable absences in the literature worth addressing.

With this in mind, the present studies aimed to fill these voids by taking three steps to advance thought and application of the subject. An initial study focused on the design of a psychometrically-sound measurement tool for assessing one’s inclination to think broadly about job skills. As no psychometric measure existed for measuring the broad skill focus of an individual, this was a critical first step in evaluating the efficacy of this perspective or “focus” in promoting more positive employment outcomes.

The second study involved the validation of an online self-guided training designed to promote a broad skill focused perspective to job seeking. Specifically, the degree to which the training effectively inspired the adoption of (or bolstered an existing) broad skill focus was assessed using a pre- and post-test methodology. This training sequence consisted of a self-guided presentation that (1) educated participants about the benefits of and how to go about using broad skills as a major source of information when considering what jobs to pursue, (2) used network visualization techniques (“skill networks”) to demonstrate how occupations can be related through substantial overlap in broad skills associated with on-the-job success, and (3) equipped job seekers with access to a dynamic online tool that empowered them to independently explore skill networks.

The third study utilized a quasi-experimental approach to assess the training’s impact on the longitudinal employment outcomes of actual unemployed job seekers. The position of the
principal investigator is that utilizing a broad skill focused approach should unveil a wider breadth of occupations in which an individual might find success given their existing skill set. Thus, job seekers more inclined to apply this line of thinking should (1) feel greater expectancy about finding a job because they see greater opportunity, and (2) realize better employment outcomes because a greater breadth of perceived and actual opportunity should translate into a greater likelihood of finding and selecting a job (Cable & Judge, 1996). Further, the moderating impact of career adaptability was argued to enhance the effectiveness of the training (e.g., job seekers high versus low in career adaptability are likely to see greater impact of the intervention on employment). If the training exhibited the potential to enhance the perceived and actual opportunities of job seekers, it could serve as an important contribution to the field and to job seekers.

In the following sections of this paper, the job search literature is reviewed in greater detail, with an emphasis on what is known about job search strategy and opportunity evaluation as synthesized by Schwab et al. (1987). Then social cognitive career theory (Lent et al., 1994) is positioned as a model explaining the tendencies of job seekers to use their narrow skills (as opposed to their broad skills) as a primary information source during their job searches. An alternative model, one driven by broad skills, is proposed by the principal investigator as a more productive approach to exploring work opportunities for job seekers in especially difficult circumstances (e.g., unemployment, decreasing relevance of narrow skills). Lastly, the three studies comprising this dissertation are described in greater detail: the first study involving the development of a sound measure of a broad focus on job skills, the second involving the initial validation of a training intervention inspired by the broad skills model, and a final study testing the longitudinal employment outcomes of the intervention.
Conceptualizing the Job Search

Most of the earliest literature regarding the job search came from the discipline of economics. In the postwar era of the 1950s, a number of economic studies aimed to survey the state of the labor market and the condition of employable citizens (Parnes, 1954). The broad consensus derived from this wave of studies was that job seekers largely lacked sufficient information about opportunities to most effectively pursue employment. In other words, job seekers did not always know where available jobs were or what options they had in securing gainful employment. Though this was in part a product of the times, which lacked the nearly-unhindered access to information of today’s digital age, remnants of this challenge for job seekers still persist in some form today. As information access, or some conceptualization of it, has long been incorporated into notions of the job search, its emphasis continues in related theory today.

Early psychological research related to the job seeking process focused largely on external job seeker characteristics (e.g., Carroll Jr., 1966), interview experiences (e.g., Speas, 1979, Stone & Sawatzki, 1980), and job seeking in dual-earner contexts (e.g., Berger, 1977, Foster, Wallston, & Berger, 1980, Wallston, Foster, & Berger, 1978). This work, however, primarily considered only individual stages of the job search. Numerous scholars have since recognized the job search as a process rather than a point in time. One of the earliest comprehensive process models of the job search to arise in the field of psychology came from Schwab and colleagues (1987). Schwab et al. (1987) provided a thorough review of the relevant literature across disciplines and integrated it into a robust model of job search and choice evaluation. Although nearly 20 years old, this model continues to serves as a productive framework for synthesizing related research and as such guides the high-level structure of this
review. The Schwab model itself presents the job search process as comprising three primary phases: (1) search, (2) evaluation, and (3) outcomes. Each of these three phases is considered to be impacted by individual factors (specifically employment status, occupational preferences, and training) and labor market characteristics (job supply/demand and institutional customs).

Representing the beginning of Schwab et al.’s (1987) model, the “search” phase is conceptualized as a combination of the information sources used by job seekers to research and discover job alternatives and the action or intensity of an individual’s job search efforts (e.g., persistence in applying for a multitude of jobs, refining one’s resume, etc.). Historically speaking, common sources of information have included personal acquaintances, family, friends, and in some cases brick-and-mortar employment centers (Schwab et al., 1987). However, technological advances such as the advent and evolution of the Internet and the development of websites/tools which serve to aggregate online job postings have enabled job seekers to obtain information about opportunities without requiring their physical presence (in contrast to a brick-and-mortar employment center; Fountain, 2005; Stevenson, 2008). These changes in mode of search have largely increased the convenience of exploring job opportunities. Modeled in the Schwab et al. process alongside these information sources is job search intensity. This construct is broadly defined as “the persistence with which job seekers search out job opportunities” (Schwab et al., 1987, p.138). The predominant thought is that, generally speaking, job seekers exhibiting greater job search intensity are more likely to find employment, as their greater persistence is likely to result in the discovery and exhaustion of a greater number or variety of information sources, subsequently revealing more work opportunities. A long line of research has supported the idea that among unemployed job seekers, a primary driver of job search intensity is the duration of unemployment benefits (i.e., intensity increases largely towards the
end or after unemployment benefits have expired; Mortenson, 1976; Katz & Meyer, 1990; Carling, Edin, Harkman, & Holmlund, 1996; Welch, 1997). Further, Kanfer and Hulin (1985) empirically linked self-confidence about one’s job search efforts to successful job search outcomes. Both information available and job search intensity are critical to guiding the job search process, and ultimately it is a combination of these two factors that is theorized to dictate the outcomes of their search for labor.

The next major phase of the Schwab et al. (1987) model is “evaluation”. During this phase, prospective work opportunities generated in the search phase are evaluated based on content and process rules established (sometimes implicitly) by the job seeker. “Content” refers largely to critical job characteristics (e.g., salary, advancement potential, benefits, etc.) and their relative desirability as perceived by the job seeker. “Process rules” are the various approaches and considerations that job seekers adopt while evaluating work opportunities. Many ideas about this decision process have roots in seminal decision-making and economic theory (e.g., Adams, 1963), and to a slightly lesser extent in similar psychological work (e.g., Vroom, 1964). An initial distinction defined in the job decision literature is that of a sequential versus a simultaneous process. Sequential job decision processes refer to the consideration of each independent job opportunity as it arises in the search process, not necessarily requiring the generation or alternatives or comparison options. In contrast, a simultaneous job decision process refers to the assessment of all possible job opportunities at a single point in time. While this was a key distinction studied in early job decision literature, more recently scholars have shifted focus to the specifics of evaluations. For example, Slaughter and Highhouse (2003) demonstrated that when a job option has unique positive attributes (e.g., abundant time off, high advancement potential) but its negative attributes (e.g., late hours, poor management) are shared with other
options, individuals are more likely to select it than if the positive attributes are shared among the options. Other scholars have revealed that individuals who are able to evaluate options simultaneously rather than sequentially exhibit greater commitment to and satisfaction with their final job choice (Mogilner, Shiv, & Iyengar, 2013). The researchers posit that this is the case because in sequential evaluation, individuals are more likely to feel that they can “hold out” for a better job alternative, rather than assessing and comparing all options at a single time. It is noted, however, that simultaneous evaluation may not always be possible during the job search process. More specifically, multiple job opportunities are likely to arise at different points in time rather than all at once (Schwab et al., 1987). In sum, the evaluation component of the job search process is dictated by a couple of central factors, including the timing of opportunities (i.e., decision process) and the attributes of the alternatives which serve as reference points for the job seeker. Following the conclusion of the evaluation phase, a choice is made about selecting a new job or remaining in a present one. This selection results in a change (or not) in employment status and eventually a resulting employment quality (which often consists of constructs such as job satisfaction, job improvement, and intention to turnover; Wanberg, Kanfer, & Rotundo, 1999). These outcomes together form the final component of the Schwab et al. (1987) model: job choice.

Although Schwab et al.’s (1987) model has long served as a general framework for understanding the different phases of the job search and choice processes, the authors appear to make little effort to discuss the underlying cognitive processes that occur during the initial stages of the search phase, specifically at the point during which a job seeker is composing a notion of which types of jobs are viable to explore and pursue. Nearly twenty years ago, when the model was published, job seekers were largely subject to whatever breadth of opportunities their chosen
information sources (e.g., newspaper classifieds, friends and family) provided at a given time. The literature cited previously acknowledged that this reality resulted in an ‘incomplete information’ problem, wherein job seekers were always operating without awareness of all possible (and sometimes ideal) alternatives. Recently, technological advancement has far increased the convenience of finding and evaluating many job opportunities. Today, job seekers can use internet-driven tools and services (e.g., Indeed.com, Glassdoor, LinkedIn) to instantaneously access thousands of job opportunities at the expense of very little effort and time. Further, with very little setup, job seekers can tailor the provision of such information to their precise desires, enabling virtual delivery of job opportunities by email or phone notification. At first glance, this revolution and its virtually limitless expansion of exposure to job opportunities may appear to alleviate the incomplete information problem. A deeper dive, however, reveals that the problem likely still exists, albeit in a new form.

While the advent of internet-based job search tools and technology has increased accessibility for job seekers, many of these modern information sources actually still present the job seeker with a mere subset of opportunities, often based on user-defined input (e.g., a keyword search, or set of search filters). For example, Sarah (from our earlier example) might search “user support specialist”, “customer support jobs”, or “Zendesk” on Indeed.com. As a result, she would be presented with a list of posted job openings exhibiting a certain degree of similarity to her query. This targeted approach, which is characteristic of many similar search-driven tools and resources, has the benefit of distilling tens or hundreds of thousands of work opportunities by trimming away many irrelevant ones, and focusing in on opportunities closely related to Sarah’s explicit, self-defined request (Marchal, Mellet, & Rieucau, 2007). Ironically, however, this methodology also produces a consequence akin to “tunnel vision,” in that Sarah
establishes the boundaries of her search, and may be likely to use her narrow job-specific skill set to inspire her search rather than her broad skills. Unfortunately, it is by adopting an approach focused more on her broad skills that she may be exposed to additional work opportunities she is not independently primed to think of. In order to better understand this assumption, one lens that provides theoretical insight into the potential mechanism of this self-imposed restriction is social cognitive career theory (Lent et al., 1994).

The Role of Cognition in Initial Search Decisions

Simply put, social cognitive career theory (SCCT) posits that individuals’ exposure to particular work environments influences their sense of work-related self-efficacy, their professional interests, and their expectations of work outcomes. It is posited that, when considered together, these three influences impact an individual’s subsequent career decisions. In the case of the present argument, the influence is theorized to be on the job seeker’s sense of what jobs are reasonable and achievable pursuits. Perhaps the most important and frequently-studied component of SSCT is the construct of self-efficacy (Lent et al., 1994). Self-efficacy is a judgment that a person makes about his or her own capabilities in a specific context or in pursuit of a specific target (Bandura, 1986, 1994). In the contexts of the workplace and careers, self-efficacy is tied to the sense that one is (or is not) capable of achieving success in a particular job role, in pursuit of a specific job task, or even demonstrating a certain job skill. Workers may derive their self-efficacy from the variety of responsibilities and opportunities that they encounter in the workplace, and this self-efficacy may even be specific to one part of the work experience and not others (e.g., one worker may possess a high self-efficacy at analyzing data but low self-efficacy at presenting it to leadership). The psychological literature on the construct of self-efficacy is expansive and well-established in research on the workplace. Meta-analytic
estimates suggest that the average correlation between self-efficacy and work-related performance is .38, with effect sizes decreasing as task complexity increases (Stajkovic & Luthans, 1986). Social cognitive career theory takes work-specific self-efficacy literature one step further by positing a symbiotic relationship between self-efficacy and the work that an individual pursues.

According to SCCT theory, when (prospective or current) employees move through their academic studies or careers, they are engaging in a cyclical process wherein their professional interests and activities are selected on the basis of the sense of self-efficacy that those interests and activities elicit. When people repeatedly experience success in a particular context, it bolsters their own self-image of success and efficacy in that context (Lent et al., 1994). This feedback loop stems from an intrinsic desire to be successful and perpetuate the cycle of reinforcing self-efficacy. A more process-oriented version of the SCCT details the types of behaviors during the child and student phases of one’s life that produce this self-efficacy: developing preliminary work-relevant interests and values, developing extracurricular skills, and forming provisional vocational aspirations. (Lent & Brown, 2013). Once an individual begins his or her career, they continue to refine and elaborate on their exploration of interests and values, prepare for and experience work-related changes, revise or stabilize vocational goals based on their experiences and interests developed. For example, if Sarah receives feedback from a manager or peer that indicates she provides exceptional customer support, she will begin to develop and bolster internal notions and self-imposed expectations about her own strong performance in the customer support space. These inward ideas of Sarah’s may further manifest as context-specific confidence and interest (i.e., she will feel reassured about her probability of success in a support role). Subsequently, this growing confidence and interest drives future
involvement in activities, and serves as a meaningful source of information when selection
decisions need to be made about participation in work activities (Lent et al., 1994). SCCT thus
theorizes that, in an effort to avoid disrupting this reinforcement feedback loop, Sarah is likely
only to consider working in contexts or pursuing task-level work in which she has previously
experienced success and a strong sense of self-efficacy.

Additionally, Lent and Brown’s (2013) process-focused model of SCCT extends the
notion of self-efficacy beyond task and context-specific varieties to include process efficacy.
Process efficacy is the “perceived ability to manage specific tasks necessary for career
preparation, entry, adjustment, or change across diverse occupational paths” (p. 562). This
theoretical addition accounts for a facet of the job search not previously acknowledged in SCCT:
broader self-perceptions about one’s ability to go about securing a new role altogether. In this
form of the model, each of the self-efficacy varieties detailed in SCCT are preceded by “learning
experiences”, which are the encounters and events previously detailed (first as students, later as
professionals) that carve one’s resulting sense of ability, as well as any subsequent goals and
actions resulting from that sense. The theory further states that, among students and career-
changing professionals, the extent to which exploratory career behaviors are exhibited depends
on numerous factors, including: positive beliefs about skills, expectancy of positive outcomes,
the presents of clear goals, environmental supports, and even some personality characteristics
(Lent & Brown, 2013). As supported by earlier versions of SCCT, the alignment of these factors
with realized positive outcomes is likely to generate senses of self-efficacy that are primarily
grounded in familiar, historical work activities.

The theoretical ideas suggested by SCCT and later updates are very pertinent to include
in discussion of the initial stage of a job search. This is true because they largely support the
position that, despite job seekers having near limitless online access to job opportunities (which should serve to alleviate the incomplete information problem), today’s keyword-driven job search still suffers from a form of informational range restriction. Such restriction is ultimately the byproduct of a search process that is now primarily self-directed (i.e., Sarah chooses how she wants to search or subset the opportunities presented to her). Which search decisions individuals make will be guided by their sense that the path is viable to pursue and likely to result in success. This sense, according to SCCT, will be steered by their work-related self-efficacy, which is likely to be determined by the set of narrow job-specific skills, tasks, and experiences that initiated and reinforced their feedback loop. Sarah has experienced success in the customer support space, thus building confidence in the application of her customer support skillset (e.g., knowledge of call center phone/VoIP systems, familiarity with remote access systems, memorized tech support protocols) and increasing the probability that Sarah will contain her job search to opportunities requiring similar narrow skills in order to continue feeding this loop. In many cases, these parameters imposed by the job seeker will be efficient in that most irrelevant work opportunities will no longer need to be reviewed and assessed for relevance. However, a job seeker’s implicit dependence on his or her narrow skills also omits a host of potentially relevant opportunities for success that would leverage his or her broader skills. While narrow skills may be enough to secure satisfactory employment for those individuals in flourishing industries and occupations, they are likely to prove insufficient for unemployed and underemployed individuals, as well as those in declining or increasingly-automated industries (which, contrary to popular belief, are not all tied to manual labor; Chui, Manyika, & Miremadi, 2015; Amtz et al., 2016; Frey & Osborne, 2017). Job seekers in these more vulnerable positions
have much to gain from disrupting the social cognitive feedback loop and leveraging their broad skills as a means of exploring less obvious (but equally viable) employment opportunities.

One likely criticism of this recommendation stems from the very weakness of the job search ecosystem that has inspired it: that many job search tools and platforms are designed to search for specific occupations, job families, and career lattices rather than skill sets. This critique is not entirely true, however, as the keyword-driven nature of these job search tools can be re-purposed to harness broad skill-related language. For example, a search query on Indeed.com for “numerical skills” yielded 353 jobs ranging from financial analyst to home décor showroom manager. As evidenced by the content of these job descriptions, both of the postings explicitly list numerical skills as vital to success in the role, and these posted requirements align with those of the standardized occupational profiles for Financial Analyst and Supervisors of Retail Sales Workers on O*NET Online (National Center for O*NET Development, n.d., C, D), which indicate that skills in mathematics fall in the top half of required skills for both roles. Such overlap in required skill sets is more readily revealed if the focus of a search is inspired by one’s broad skills rather than specific experiences. Further, under-leveraged tools like O*NET Online can operate as effective ways to discover occupations based on broad skill related input. O*NET Online in particular offers a skill-based search which yields recommended occupations based on skills selected by the user. Thus, despite the approach that job seekers commonly take being predominantly experience- and job- driven, the available tools are largely still useful for initiating job searches based on skills if job seekers are nudged or educated to do so.

Given the stated advantages of this approach, the present dissertation was a first effort to (1) develop measure of broad focus on job skills, (2) assess the efficacy of a series of readings and an exercise designed to promote a broad skill focus among job seekers, and (3) evaluate the
longitudinal employment outcomes of this “training” among unemployed job seekers. The greater purpose of these three studies in tandem was to contribute novel insight into the importance of the early processes which dictate the direction and mode of a job search (i.e., how a job seeker decides what types of jobs to search and apply for), and to provide some actionable guidance to job seekers who have the most to gain from rethinking their narrow job search approach.

**Study 1**

One of the methodological challenges of studying the trainability (Study 2) and employment impact (Study 3) of a broad skill focus was that there existed no known scientific measure or questionnaire designed to assess an individual’s cognitive emphasis on his or her broad skills. Without a properly validated psychometric instrument, one cannot easily (or soundly) draw empirical inferences about a construct of interest. Thus, in order to conduct empirical research on this proposed notion of broad skill focus, the development and validation of a new measure was essential. This study (Study 1) represented an effort to develop a psychometrically sound instrument for measuring broad skill focus. Beyond supporting the triad of studies outlined herein, the existence of this measure should serve to provide new and useful context to relevant job and career research: that of job seekers’ inward-facing perspectives on their work skills.

In order to begin the development of a scientific measure, there must be some established definition of the construct of interest to serve as an anchor for the process. As broad skill focus had not been studied in the literature before, there existed no conceptual or operational definitions of the construct. However, given the academic literature and supporting arguments presented previously, there emerged some greater clarity about the notion of broad skill focus.
Generally speaking, to be high in broad skill focus means to contemplate one’s skills at a high level of composition. In other words, specific skills can together roll up to higher and more categorical skills. For example, an individual may have specific proficiencies in algebra and calculus. Both of these specific skills, however, require a broader proficiency in numerical skills. As proficiency in numerical skills is partially composed of multiple other sub-skills (algebra and calculus, among others), numerical skills are a broader set of skills than algebra and calculus are. To take this model one step further, algebra and calculus are both broader than fundamental skills like addition and subtraction, which are the building blocks of mathematical operations. When conceptualized in this manner, it becomes clearer that there are many scopes or levels (as in a hierarchy) at which one can think of job skills. Thus, for the purposes of this research, broad skill focus was more formally defined as the extent to which an individual perceives his/her job-related skills to be applicable and useful in work contexts other than those where the skills have typically been used. This includes an understanding that narrow skills (such as proficiency in Excel) can also be represented in broader skills (such as technical proficiency). This definition set the context for the measure development process detailed in this study.

Proper measure development is often divided into multiple phases. While these phases may differ slightly in their number or purpose, all measure development processes largely aim to achieve the same end goal: develop, refine, and validate a construct-grounded assessment. In line with the standards outlined in the literature for the proper development of a new survey-based measure in the psychological sciences (e.g., Hinkin, 1998, APA, 1995), this measure development study was divided into similar methodological phases: (1) item generation and refinement, (2) construct and criterion-related validation, and (3) convergent/discriminant validation (which is sometimes packaged alongside the previous validation phase).
The item generation and refinement phase often takes one of two forms: deductive or inductive generation. The deductive method involves the generation of potential items based on some theoretically-derived understanding or conceptualization of the construct-of-interest (e.g., Eby, Durley, Evans, & Ragins, 2008), while the inductive method frequently involves the content analysis categorization of qualitative data to derive possible items (Hinkin, 1998). Some researchers utilize a combination of deductive and inductive methods to generate a pool of possible items for a measure (e.g., Shockley, Ureksoy, Rodopman, Poteat, & Dullaghan, 2016). The best method for any particular construct depends on the availability of germane literature and the structure of the data that can be (or has already been) collected (Hinkin, 1998). Regardless of the approach used, all item generation methods aim to produce a content valid measure of the construct.

The validation phase/s involve the evaluation of criterion-related validity, convergent validity, and discriminant validity, which all comprise evidence for the broader construct validity of a measure (Hinkin, 1998). Criterion-related validity is often split into predictive and concurrent validity, with both establishing the extent to which a measure effectively relates to a criterion of interest (Schmitt & Sinha, 2010). More specifically, concurrent validation involves the comparison of a measurement tool (e.g., questionnaire assessing extraversion) and a criterion variable (e.g., likeability) at the present moment. In contrast, predictive validation involves the assessment of the relationship between a measurement tool and some outcome measured at a later time point (Schmitt & Sinha, 2010). Convergent validity and discriminant validity are two types of validity which aim to establish both the conceptual similarity and distinction of a construct-of-interest from other constructs.
Convergent validity is the extent to which a measure of one construct is related to one or more measures of other constructs that theoretically should exhibit some relationship. In contrast, discriminant validity is evidenced by the absence of a relationship between a measure of the construct-of-interest and measures which theoretically should not demonstrate a relationship with it (Schmitt & Sinha, 2010). The broad purposes of this validation phase are to test components of a theorized nomological network which help clarify the distinctness and novelty of the proposed construct, and to test expected patterns and relationships with other relevant constructs and criteria. The American Psychological Association (APA) has declared that internal consistency and related reliability metrics are also essential components of establishing the construct validity of a new measure (APA, 1995). By establishing such a diverse set of promising validity and reliability evidence, researchers can better bolster confidence in the soundness of their theory and new psychometric measure. This study adhered to many of these standards and utilized numerous of these tools of measure development. Further, published measurement development pieces like those of Eby et al. (2008) and Shockley et al. (2016) served as additional models for effective and defensible development processes. Such well-established pieces have provided the basis for the multi-phase development framework of the present study.

**Phase 1: Item generation, refinement and content validation**

The first phase of Study 1 aimed to produce a psychometric measure exhibiting acceptable content validity. To achieve this, the principal investigator solicited the expertise of subject matter experts for item generation, and additional samples for item refinement and content validation. This phase of measure development leveraged a deductive approach to composing potential items for this new measure of broad skill focus.

**Method**
**Participants.** Two pools of participants were solicited for this initial stage of measure development. The *item generation* sample consisted of five (5) doctoral-level industrial-organizational psychology students (2 female, 3 male) at a public university who were colleagues of the principal investigator, and were recruited via email. The *content validation* sample consisted of forty-three (43) undergraduate students (46% male, 54% female) who were recruited via SONA Systems, an undergraduate research protocol platforms used by researchers at the university. This sample was composed of 62% Asian participants, 15% White, 10% Hispanic or Latino, and 13% other. Participants were considered for inclusion in the study if they were at least 18 years of age and reported having at least one year of work experience. These undergraduate students were granted research credits in exchange for their participation in this study. Participation was completely voluntary.

**Measures and Materials.** Materials consisted primarily of the item list generated by the SMEs, as well as a basic demographic questionnaire asking for sex and race/ethnicity. Blended into this pool of broad skill focus items were a couple of attention check items (“If you are reading this, select Strongly Relevant”, “For this statement, select ‘Slightly Relevant’”). Participants were to be removed for submitting an incorrect response to either one of the attention check items.

**Procedure.** First, five (5) subject matter experts (SMEs) in industrial-organizational psychology reviewed the following operational definition of the proposed unidimensional construct of broad skills focus (as described previously), and subsequently generated an exhaustive list of potential items:
Broad skill focus is the extent to which an individual perceives his/her job-related skills to be applicable and useful in work contexts other than those where the skills have typically been used. This includes an understanding that narrow skills (such as proficiency in Excel) can also be represented in broader skills (such as technical proficiency).

For example, a computer support specialist high in broad skills focus may understand that her ability to troubleshoot computers and identify multiple possible solutions indicates a broader ability in problem-solving. This competence in complex problem solving may represent a greater chance of success even in seemingly unrelated roles, such as air traffic controller (National Center for O*NET Development, n.d., A, B), which also has complex problem solving as a top required skill.

In line with guidelines for item development, items in this pool were encouraged to be succinct, use language common and likely familiar to a broad audience, and were not to be double-barreled (Hinkins, 1998). Each item generator was asked to generate a minimum of fifteen (15) unique items based on the definition and parameters provided. In order to increase the likelihood of capturing the entire domain of broad skill focus (i.e., not strictly in a job search context), the item pool generated was to reflect both job search contexts (e.g., “When looking for a new job, I brainstorm all of ways I can apply my skills”) and non-job search contexts (e.g., “Most work skills are job-specific and cannot be transferred”). These general guidelines were provided to deductively generate (i.e., using the theory outlined to ensure sufficient construct coverage) a large and varied pool of possible items related to an individual’s pattern of focus on their broad (or narrow) skill set.
Once all SMEs responded to the request and a sufficiently large pool of items was generated, the principal investigator reviewed the item pool for redundancies and revised items to clarify wording as necessary. In total, eighty-three (83) potential items were submitted by the SMEs for validation and possible inclusion in the measure. In some instances, items were redundant with other submissions or were designed using an unfeasible format. Items were determined to be unfeasible if they did not conform or could not readily be adapted to a five-point Likert-style format (e.g., “I would only apply for a job if I met 10%/30%/50%/70%/90% of the job qualifications.”). This format was planned for the BSF measure in order to yield a single mean broad skill focus score upon measure completion. Such items were eliminated from the pool or combined with other similar items. In total, the item pool was reduced by thirty-seven (37) items for the stated reasons. Further, three (3) new items were added to the pool by the principal investigator based on variations of the items submitted. The final item pool consisted of forty-nine (49) potential items to move on to the content validation phase.

For the content validation phase, the undergraduate study participants rated each of the potential items on the extent to which each one was deemed “relevant” to the operational definition of broad skills focus provided previously. Participants rated each item using a five-point Likert scale (not at all relevant to highly relevant). Additionally, there was an open-ended written response portion which allowed participants to record if any items were confusing or unclear.

**Results.** First, the data set was cleaned based on best practices for identifying attention concerns. Participants were removed from the data set if they failed the attention check (n = 3), submitted the survey without any responses (n = 3), or based on IP address and submission date/time appeared to be duplicate responses for the same individual (n = 5). The final usable
sample size was 32 responses (34% male, 66% female). Using the remaining data, relevance rating means were calculated for all items in the item pool across all participants retained in the study sample (Table 1). Any item with a relevance mean of 3.0 or less was excluded from the item pool. The cutoff point of 3.0 was selected as this is the point on the provided Likert scale at which is no longer deemed meaningfully relevant to the provided definition of broad skill focus. Using this cutoff, twenty-four (24) items were removed from consideration, bringing the item pool count to twenty-five (25) items remaining.

**Phase 2: Additional item refinement and data collection**

The objective of the second phase in the measure development process was to leverage a factor analysis to test the hypothesized unidimensionality of the broad skill focus construct. By collecting responses to the remaining broad skill focus items from study participants, this factor structure could be verified, and any underlying redundancies or irrelevancies in items could be exposed, assisting in further refinement of the measure. In addition to the remaining twenty-five (25) potential items, a number of additional validated measures were administered, which were later used to establish evidence for convergent and discriminant validity of the new measure. The validation measures included in this phase of data collection were selected based upon theoretical notions of similarities and dissimilarities with the proposed construct of broad skill focus. For these theory-driven reasons (described in greater detail later in Phase 3), the measures selected included tolerance for ambiguity (Schultz & Searleman, 2002), cognitive flexibility (Martin & Rubin, 1995; Martin & Anderson, 1998), protean career attitude (Briscoe & Hall, 2005), and agreeableness (John, Donahue, & Kentle, 1991). Despite Phase 2 (factor analysis) and Phase 3 (validation) using the same data collection and participant sample, the Method section
that immediately follows only references Phase 2 methods and results. Phase 3 of the development process and its associated measures and results are discussed subsequently.

Method

Participants. In line with recommendations by Hoelter (1983) for the use of factor analysis, two-hundred fifty-seven (257) participants (58% male, 42% female) were gathered from Amazon Mechanical Turk, a platform and service provided by Amazon commonly used for the targeted collection of research data. Participants were only allowed to participate in the study if they had a “Worker Rating” (an MTurk score of response quality) of 97% or greater. Of all participants, 76% identified as being a paid employee, 17% identified as self-employed, and the remainder identified as not presently employed. With regard to race/ethnicity, 65% of the sample identified as White, 21% as Asian, 5% Black or African American, 4% Hispanic or Latino, and the remainder as Other or mixed race. Participants were given financial compensation ($2.00 for the estimated 15-20 minute task) through the MTurk platform for their participation. Participation in this study was completely voluntary.

Measures and Materials.

Broad skill item pool. This measure comprised a survey containing the remaining pool of the twenty-five (25) items generated during Phase 1 of the measure development process. As described in Phase 1, the items were written by SMEs to measure the broad skill focus of individuals. All of the items were rated on a five-point Likert scale that ranged from strongly disagree to strongly agree.

Attention check items. To adhere to recommendations made by other scholars regarding the use of Amazon’s Mechanical Turk (MTurk) in research (Huang, Curran, Keeney, Poposki, & DeShon, 2012), several attention check items were planted throughout the survey to ensure that
participants were actually carefully reading the items, and that they were humans and not automated bots (computer programs that are developed to complete surveys without human intervention). These attention checks included a variety of instructions and items (e.g., “If you are spending the time to read this item, select Strongly Disagree”, “I had a heart attack while taking this survey”). To blend in with the remainder of the survey, each of the items was rated on the same five-point Likert scale from strongly disagree to strongly agree.

Demographics. To better understand the composition of the participant pool, data were collected on participant age, level of education, race/ethnicity, sex, employment status, and industry of work/career.

Procedure. Study participants provided responses to the remaining broad skill focus items and the attention check items. Responses for all items were rated on a five point Likert scale from disagree strongly to agree strongly. Ten (10) responses were removed for failing at least one of the attention checks, and two (2) additional responses were removed for beginning the survey but responding to zero (0) items. These data cleaning steps yielded a final count of two-hundred forty-five (245) responses for analysis.

Results. Following review of the data, it was cleaned according to recommendations by Huang et al. (2012) for use of Amazon MTurk data, which included the removal of all respondents who provided an incorrect or impossible response to any attention checks (e.g., responding ‘Agree’ to an item requiring you to select ‘Strongly Disagree’). With the final data set cleaned, a correlation matrix of all broad skill focus items was generated (Table 2). Items which correlated weakly with other items in the item pool were removed from consideration, as they likely do not effectively assess the correct content domain (Hinkin, 1998). There exists no precise standard about acceptable inter-item correlation magnitudes in measure development, so
in this study it was decided that items with average correlations that fell below 0.30 (i.e., constituting a “small” effect size according to Cohen, 1988) were removed from inclusion in the measure. Specifically, item #1 (average $r = .05$), item #14 (average $r = .23$), item #15 (average $r = .26$), item #19 (average $r = .08$), item #21 (average $r = .29$), item #22 (average $r = .03$), and item #24 (average $r = .21$) were removed for exhibiting weak average correlations (these items can be seen in Table 9). No item pairs exhibited the opposite problem, demonstrating correlations so extreme ($r = 0.80+$) that it would suggest redundancy in construct capture. Thus, no items were removed from the measure for this reason.

All remaining item-level data then served as the input for a principal components confirmatory factor analysis (CFA). First, the CFA assumption of multivariate normality was assessed using a Multivariate Normality test (Mardia, 1970) via the R package $MVN$. The Mardia test suggested that the data did not exhibit multivariate normality, $\gamma_1, p = 86.297$, $p < .00$, $\gamma_2, p = 492.849$, $p < .00$. As a result, a Box-Cox transformation (Osborne, 2010) was applied to the data to attempt to bring it closer to a state of normality, though the following Mardia test still evidenced non-normality. Despite this, maximum likelihood estimators commonly used in CFA are considered fairly robust against violations of the multivariate normality assumption, so the data were considered acceptable as input for the CFA.

The CFA tested for the theorized single factor of broad skill focus; specifically, a chi-square test of goodness-of-fit (Table 3) was performed to evaluate model fit, $\chi^2 (135, N = 232) = 420.930$, $p < .01$. The two goodness-of-fit indices (CFI and TLI) provided moderate support for the single factor model. Further, a scree plot (Figure 2) provided strong visual support for a single factor on the broad skill focus measure. Despite yielding fit indices only slightly under rule-of-thumb thresholds (.90) for strong model fit, a secondary two-factor CFA was conducted
(Table 3) to verify the one-factor model represented the best fit, \( \chi^2 (136, N = 233) = 265.739, p < .01 \). Fit indices for this two-factor model appeared stronger, but item-level analysis revealed that the second factor was composed exclusively of the three reverse-coded items (items 18, 20, and 25), suggesting that the second factor strictly represented a method factor, not a construct-related or trait factor. The implication is that the nature of reverse-worded items may result in subtle shared response patterns that cause them to correlate with one another more than with other items. In some instances, it is theorized, these shared response patterns may be due to a small number of careless responders to reverse-coded items (Wood, 2006). An exploratory review of the response distributions of all remaining BSF items (Figure 9) appears to show a slightly less left-skewed distribution among reverse-coded items relative to non-reversed items, supporting the idea that the reversed items were treated slightly differently than the rest.

As a final step in measure refinement, and in line with recommendations by Ford, MacCallum, and Tait (1986), only remaining items which demonstrated \( R^2 \) values at a weight of .40 or greater on the single theorized factor were retained for their construct relevance at this phase of the measure development (Table 4). This step resulted in the elimination of item #25 (\( R^2 = .261 \)), item #16 (\( R^2 = .312 \)), item #10 (\( R^2 = .316 \)), item #17 (\( R^2 = .333 \)), item #18 (\( R^2 = .361 \)), and item #20 (\( R^2 = .397 \)). All three reverse-coded items were eliminated in this final round of measure revision. Twelve (12) items remained in the measure after this round of cuts.

As a final test, a reliability analysis (i.e., a study of Cronbach’s alpha) was conducted on the remaining broad skill focus items. The existing 12 items together exhibited acceptably high reliability (\( \alpha = .92 \)), so no additional items were removed from inclusion in the measure. At this stage, the development of this broad skill focus measure was considered complete.

**Phase 3: Convergent and Discriminant validity**
The third and final phase of the measure development process involved further validation of the broad skill focus construct and measure. As previously mentioned, this validation phase leveraged additional data collected on Phase 2 participants’ tolerance for ambiguity, cognitive flexibility, protean mindset, and agreeableness to establish support for convergent and discriminant validities. These four constructs were thoughtfully selected for their theoretical similarities and distinctions from the proposed construct of broad skill focus.

As a construct, tolerance for ambiguity was conceptually spawned from the notion of rigidity (Schultz & Searleman, 2002). Rigidity is “one of the oldest psychological constructs” (Schultz & Searleman, 2002, p. 165) and thus has a long and established history of measurement and study. As the construct evolved from a unidimensional construct to a multidimensional one over several decades, psychologists came to consider its various components, of which intolerance of ambiguity is one. Budner (1962) defined intolerance of ambiguity as an inclination to interpret ambiguous situations as threats (whereas the opposite, tolerance for ambiguity, means greater comfort in such scenarios). Ambiguous situations are generally perceived as unpredictable, and are not easily categorized or cognitively structured by individuals. The nature of the construct is such that there is individual variance in the degree to which people are able to effectively function under such conditions (Budner, 1962). This construct is exceptionally relevant in the job search context because the process of seeking a job is highly ambiguous- often there is little or no feedback during both the search and the application processes. It is not uncommon for job seekers to wait weeks to receive word on their job application, if they hear anything at all from the company that they’ve applied to. This lack of feedback conceivably prevents job seekers from understanding if their current job search strategy is effective or ineffective. One way to temper this uncertainty might be to “stick to what you know”- searching
for and applying to only jobs that one is familiar with or has bonafide experience doing. This approach stands contrary to the notion of a broad skill focus, in which an individual is open and comfortable considering alternative (and perhaps less conventional) job opportunities given his or her extant broad skill set. As these job opportunities are probably relatively unfamiliar or new types of opportunities to apply one’s work skills, such a strategy of job pursuit is likely characterized by a high degree of ambiguity and uncertainty. Thus, it was hypothesized that:

_Hypothesis 1a: Broad skill focus is positively correlated with tolerance for ambiguity._

If the evidence is found to be in support of this hypothesis, the proposed positive correlation between broad skill focus and tolerance for ambiguity would constitute evidence of convergent validity. However, the relationship should also exhibit some degree of distinctness, as the two constructs are not theorized to be conceptually identical (i.e., they’re ultimately unique constructs with separate nomological networks). This distinction would be evidenced by a relationship that is not so strong that it suggests the two measures are assessing the same theoretical construct with little unique variation or contribution. Such a relationship would demonstrate discriminant validity, in that the measure of broad skill focus is not redundant even with constructs that share some distant conceptual linkage. Given this expectation, it was hypothesized:

_Hypothesis 1b: Broad skill focus is a distinct construct from tolerance for ambiguity._

Additionally, it was assessed that cognitive flexibility was an important construct to consider in the validation of a broad skill focus measure. Cognitive flexibility, as a construct, centers primarily on a disposition for understanding and contemplating possible options or solutions in any given situation or problem, as well as feeling confident in one’s ability to select and execute on one of the alternatives (Martin & Rubin, 1995; Martin & Anderson, 1998).
Individuals who exhibit high cognitive flexibility are more likely than those low in cognitive flexibility to consider all evidence available and to take more time to consider all angles of their position. Thus, job seekers who are high in such flexibility should theoretically be less likely to see only one or a few possible applications for their skills or talents (e.g., “I’m an IT expert”). Instead, they’re likely to demonstrate greater openness to exploring alternative applications for their skills (e.g., “I’m good with technology”). For this reason, cognitive flexibility was determined to be a reasonable comparator for further establishing convergent validity with broad skill focus. Thus, it was hypothesized:

_Hypothesis 2a: Broad skill focus is positively correlated with cognitive flexibility._

Although this hypothesized positive correlation between broad skill focus and cognitive flexibility would provide convergent validity support, this relationship should also be supported by some degree of distinction, or discriminant validity. Using the same reasoning as detailed for Hypothesis 1a and 1b, it was expected that the correlation between these constructs will not be so high in magnitude that it suggests the measures capture the same exact construct. This would provide additional evidence of discriminant validity for this new measure of broad skill focus. Given this expectation, it was hypothesized:

_Hypothesis 2b: Broad skill focus is a distinct construct from cognitive flexibility._

A third related concept, protean mindset, was introduced by Hall (2004) and was conceived of as a focus on achieving subjective career success through “self-directed vocational behavior” (Briscoe, Hall, & DeMuth, 2006, p. 31). Simply, protean theory shifts the focus from organizations being the driver of individual career development and success to the individual’s self-management of career. This self-managed career is generally characterized by greater and more frequent job mobility, and a more value-driven perspective on one’s career. Individuals
who are lower in protean mindset are more likely to reference the external environment (e.g., their organization, society) for thoughts and context on how to grow, develop, and succeed in their careers (Briscoe et al., 2006). In this sense, they are less agentic in their careers than individuals who score high in protean mindset.

Among job seekers who are unemployed (and even among those who are not), possessing a stronger protean mindset should translate into greater self-empowerment of individuals in seeking career opportunities in unexpected roles or places. This mindset may help these individuals understand that there are viable possibilities for work that sit outside their traditional or prescribed career paths. It is the potential for this realization that ties the protean mindset to a broad skill focus. To some degree, a protean mindset may assist in unlocking one’s ability (or receptivity) to see nontraditional applications of our job skills as realistic, because the mindset frees the job seeker of the narrow cognitive constraints of job seeking (e.g., “I am an IT specialist”). Thus it was hypothesized that:

*Hypothesis 3a: Broad skill focus is positively correlated with protean mindset.*

While this hypothesized positive correlation between broad skill focus and protean mindset would provide desired evidence of convergent validity, the relationship should also exhibit some degree of distinctness, as the two constructs are not theorized to be conceptually identical. This distinction should (as in Hypotheses 1 and 2 previously) be supported by a relationship that is not so strong that it suggests the measures are assessing largely the same theoretical constructs with little unique contribution. This finding of meaningful distinction would provide additional support for discriminant validity in that the measure of broad skill focus is not redundant, even with constructs that share some conceptual overlap. Given this expectation, it was hypothesized:
Hypothesis 3b: Broad skill focus is a distinct construct from protean mindset.

Finally, agreeableness was determined to be an acceptable construct to consider in the validation of this broad skill focus measure. Agreeableness (McCrae & Costa, 1985; Barrick & Mount, 1991) is a widely-known Big Five personality trait characterized by courtesy, flexibility, cooperation, and easygoing nature, among other generally positive and pleasant traits. Individuals high in agreeableness have been found to exhibit higher job and life satisfaction in meta-analytic studies (e.g., Judge, Heller, & Mount, 2002). Despite this potential impact on an individual’s job and career, the construct of agreeableness should be unrelated to the construct of broad skill focus. While both constructs are individual differences, broad skill focus should not be significantly related to agreeableness as it is a construct which speaks to a cognitive frame of reference about one’s job skills and their varied applications. Broad skill focus is not a personality characteristic, as is the case with agreeableness. In theory, the expanded frame of reference produced by a broad skill focus can be taught to and improved by an individual, while a personality characteristic demonstrates greater persistence and is not readily taught to someone. Given the hypothesized disconnect between broad skill focus and agreeableness, it was hypothesized:

Hypothesis 4: Broad skill focus is not significantly correlated with agreeableness.

Method

Participants. This validation phase utilized the same data set collected in Phase 2, with an emphasis on the validation data collected about the five constructs of interest. Two-hundred fifty-seven (257) participants (58% male, 42% female) were sourced from Amazon Mechanical Turk, a platform and service provided by Amazon for the targeted collection of research data. Participants were only allowed to participate in the study if they were 18 years or older and had a
“Worker Rating” (an MTurk score of response quality) of 97% or greater. Of all participants, 76% identified as being a paid employee, 17% identified as self-employed, and the remainder identified as not presently employed. With regard to race/ethnicity, 65% of the sample identified as White, 21% as Asian, 5% Black or African American, 4% Hispanic or Latino, and the remainder as Other or mixed race. Participation in this study was on a voluntary basis. Financial compensation ($2.00 for the estimated 15-20 minute task) for participation was granted through the MTurk platform.

**Measures and Materials.** All measures and materials are located in the Appendix.

*Tolerance of ambiguity scale* ($\alpha = .80$). This scale developed by MacDonald (1970; $\alpha = .86$) measures individual differences in tolerance of ambiguity. The measure contains twenty (20) items related to scenarios which are characterized by some degree of ambiguity (e.g., *A problem has little attraction for me if I don’t think it has a solution*). Respondents are typically asked to indicate whether they believe that each statement is *true* or *false*. However, to increase the potential variance exhibited by respondents during this validation study, the items were adapted to be administered with a five-point Likert scale (*strongly disagree* to *strongly agree*).

*Cognitive flexibility scale* ($\alpha = .85$). This measure is a 12-item scale developed by Martin and Rubin (1995), and later studied by Martin and Anderson (1998; $\alpha = .81$) on a sample of 678 undergraduate students, intended to evaluate one’s awareness that any situation presents alternative options (e.g., *I have many possible ways of behaving in a situation*), that one is willing to be flexible and adapt in considering such alternatives (e.g., *I have many possible ways of behaving in a situation*), and that one is good at doing so (e.g., *In any given situation, I am able to act appropriately*). Items are rated on a six point Likert scale from *strongly disagree* to *strongly agree*.
Protean career attitudes scale (α = .85). This measure is a 14-item scale assessing the extent of protean career attitudes in individuals. The scale contains two subscales: a self-directed career management subscale (e.g., *I am responsible for my own success or failure in my career*) and a values-driven subscale (e.g., *What’s most important to me is how I feel about my career success, not how other people feel about it*). Items are rated on a five-point Likert scale from To little or no extent to To a great extent.

Agreeableness subscale (α = .86). This measure is composed of the Agreeableness items from the Big Five Inventory (BFI; John et al., 1991; α = .72). The items are designed to measure agreeableness, one of the five primary personality traits outlined in the Big Five Personality model (McCrae & Costa, 1985; Barrick & Mount, 1991). The adapted scale consists of seven items (e.g., *I see myself as someone who is generally trusting*) rated on a five-point Likert scale from Disagree strongly to Agree strongly.

Demographics. Data were collected on participant age, level of education, race/ethnicity, sex, employment status, and industry of work/career. These variables were included as potential control variables if it was suspected that one or more of them were to impact or obfuscate the relationships between the constructs being studied.

Procedure. Participants completed the Phase 2 questionnaire comprising the broad skill focus items, a tolerance for ambiguity scale (MacDonald, 1970), a cognitive flexibility scale (Martin & Rubin, 1995), a protean career mindset scale (Briscoe & Hall, 2005), and an agreeableness scale (John et al., 1991). Following review of the data, two (2) responses were removed for beginning the survey but responding to zero items, and ten (10) responses were removed for failing the attention checks. This data cleaning yielded a final count of 245 responses for analysis.
Results

First, for any missing individual data points \( n = 43 \), the mean value of the scale within each participant was imputed. Then, items within each scale (broad skill focus, tolerance for ambiguity, agreeableness, protean mindset, and cognitive flexibility) were averaged to yield overall scale scores for each participant. The univariate normality of each of these scale scores was checked using a Shapiro-Wilk test (Shapiro & Wilk, 1965). Three of the scales exhibited a non-normal distribution (Table 5): broad skill focus, cognitive flexibility, and agreeableness. In response, Box-Cox transformations (Osborne, 2010; Bozdogan & Ramirez, 1986) were applied to these three scales to try and bring them closer to a state of normality. Following the transformations, these scale scores were correlated with one another to test the hypothesized convergence and discrimination (Table 6). Broad skill focus exhibited statistically significant correlations with every validation scale: including tolerance for ambiguity \( r = 0.14, p < .05 \), cognitive flexibility \( r = 0.54, p < .01 \), protean mindset \( r = 0.44, p < .01 \), and agreeableness \( r = 0.24, p < .01 \). The final step of the validation analysis included a five-factor confirmatory factor analysis (CFA) to further test for independence of the broad skill focus construct from the four validation constructs. Prior to entering the item-level data into the CFA, the assumption of multivariate normality was tested at the item level using the Mardia (1970) approach, which tests the normality of all variables (versus the univariate approach of the Shapiro-Wilks). The test indicated that the data did not exhibit multivariate normality, \( \gamma_{1,p} = 1502.046, p < .00, \gamma_{2,p} = 4678.045, p < .00 \). (Table 7), so a Box-Cox transformation was applied to the data to bring it closer to a “near-normal” state (Bozdogan & Ramirez, 1986). Following the transformation, the data were used as input for the CFA. The CFA was used to assess if items from the broad skill focus measure loaded onto a factor distinct from each of the validation constructs, \( \chi^2 (2005, N = \)
The hypothesized five-factor model exhibited weak fit (as per the available fit indices). Specifically, items from the tolerance for ambiguity measure did not show a pattern of significant loadings onto their own independent factor. As the tolerance for ambiguity scale was also weakly correlated with the broad skill focus measure ($r = .15$) and demonstrated the lowest reliability of all of the scales used in this study ($\alpha = .80$, albeit an appropriate alpha according to standards established by Nunnally, 1978), it was removed from the CFA and the model was re-tested, $\chi^2(939, N = 245) = 1736.416, p < .01$. Considering the calculated fit indices (Table 8), this model demonstrated more acceptable fit. To further verify the distinction of BSF as a construct, a series of two-factor CFAs were conducted pairing it with each of the validation constructs (all relevant fit indices are available in Table 8). As in earlier analyses, fit for the two-factor model of BSF and tolerance for ambiguity remained unsatisfactory. However, indices for all other two-factor models were just under or above the threshold for strong fit. Together, these results are argued to constitute sufficient evidence that broad skill focus as a construct is independent from three of the selected validation constructs: cognitive flexibility, protean mindset, and agreeableness.

Hypothesis 1a (that broad skills focus is related to tolerance for ambiguity) was tested by observing the correlation between broad skill focus and tolerance for ambiguity ($r = .15, p < .05$). Although the correlation was positive and found to be statistically significant, it was not in the moderate-to-strong range (above .50; Cohen, 1988) in magnitude. Thus, Hypothesis 1a was not fully supported. Hypothesis 1b (that broad skill focus is a construct distinct from tolerance for ambiguity) was supported, given that the correlation was not so strong (above .90) that it failed to prove enough conceptual distinction.
Hypothesis 2a (that broad skill focus is related to cognitive flexibility) was tested by observing the correlation between broad skill focus and cognitive flexibility ($r = .54$, $p < .01$). The correlation was positive, statistically significant, and moderate to strong (above .50; Cohen, 1988) in magnitude. As such, Hypothesis 2a was supported. Hypothesis 2b (that broad skill focus is a construct distinct from cognitive flexibility) was also supported, as the correlation was below .90.

Hypothesis 3a (that broad skill focus is related to protean mindset) was tested by observing the correlation between broad skill focus and protean mindset ($r = .34$, $p < .01$). The correlation was positive and statistically significant, but small to moderate in magnitude. As the desired threshold for testing these hypotheses was moderate to large (i.e., above .50; Cohen, 1988), this hypothesis was only modestly supported. Further, Hypothesis 3b (that broad skill focus is a construct distinct from protean mindset) was supported, as the correlation was below .90.

Lastly, Hypothesis 4 (that broad skill focus is not related to agreeableness) was tested by observing the correlation between broad skill focus and the measure of agreeableness ($r = .26$, $p < .01$). The hypothesis was not supported, as the correlation between these measures was statistically significant.

**Discussion**

The objective of this third and final phase of Study 1 was to assess the legitimacy of the broad skill focus construct by observing its relationship to and overlap with additional constructs selected based on theory and practice. Tolerance for ambiguity, cognitive flexibility, protean mindset, and agreeableness were all selected based on the theories in which these constructs are grounded, and their relevance in and potential to impact the career-related decisions of people.
Although the validation support for the stated hypotheses was mixed in nature, only Hypothesis 4 (no relationship between BSF and agreeableness) was definitively not supported.

Outside of Hypothesis 4, the evidence gathered regarding the other Hypotheses (1a, 1b, 2a, 2b, 3a, 3b) received varying degrees of support, ranging from modest to strong. In fact, Hypotheses 1b, 2a, 2b, and 3b were considered fully supported. Further, evidence specifically contradicting the independence of the broad skill focus construct (e.g., very strong relationships with validation constructs, correlations of .90 and above) was not found in any stage of the validation. Given the supporting results found in all of Phase 3, the working measure of broad skill focus was deemed suitable for use in studying the trainability of this construct and its relationship to employment outcomes. For reference, Table 9 contains a list of the items considered in the last round of measure development, with flags indicating items that made the final cut. Together, these twelve (12) flagged items form the final iteration of the broad skill focus measure. Subsequent studies in this dissertation used this measure in an empirical manner to study this alternative form of skill-based thinking.

**Study 2**

Much theory, presented previously, supports the suggestion that job seekers with a broad (versus narrow) skill focus should experience more positive psychological and employment outcomes. If this is true, the possibility of encouraging this perspective should greatly benefit individuals exploring the labor market. In fact, this knowledge is only practically useful if the perspective can be actively promoted or instilled in individuals who are likely to reap its benefits (e.g., job seekers, career changers, unemployed individuals). Previous empirical work in the realm of careers has supported the possibility that interventions can successfully create or alter individuals’ perspectives about their work and/or careers. For example, Marko and Savickas
succeeded in using an intervention (Savickas, 1991) to instill a future-oriented time perspective (i.e., emphasis of mental energy and focus on the future versus past or present) in research participants. Given this evidence that perspectives related to careers can be altered to an individual’s benefit through intervention, Study 2 attempted to validate a newly-created online exercise by studying its effectiveness at promoting greater broad skill focus among job seekers, and by tying it to resulting levels of employment expectancy.

**Broad Skills Awareness Training.** The Broad Skills Awareness Training (BSAT) is a self-guided, internet-based lesson divided into three modules, each with its own objective: (1) education, (2) elaboration, and (3) equipment. Each of the three modules is composed of a written introduction to the purpose of the module, a more thorough lesson covering the primary ideas and principles presented in the module, and in some cases accompanying visuals to further solidify the users’ understanding of the concepts being taught.

The *education* module of the BSAT aims to teach users the fundamental differences between broad and narrow notions of our job skills (and how our inclinations can impact which of these ways we tend to reflect). A series of brief readings outlines the distinction between these ideas and explains how the same underlying job skills can be conceived in different scopes (e.g., someone proficient in specific statistical analyses is likely also good at the broader skill of numerical reasoning). Further, the readings touch on the theorized reasons why thinking in terms of their broad skills can enhance success for job seekers, especially those who are struggling to find work (i.e., unemployed and underemployed). More specifically, it leverages relatable examples to explain the way that narrow skills or personal work histories are commonly associated with specific types and categories of jobs. When job searches are driven by this thinking, job seekers only see a subset of potential opportunities. The reading describes in detail
how ‘zooming out’ to a broad skill level can help job seekers realize they are more widely equipped for success in many other occupations. Figure 3 shows a sample screen capture of a reading from the education module of the BSAT. Following the reading, a series of seven multiple-choice test items about broad skill focus ask the user to identify the correct answer according to the material presented. Items range from asking the participant to identify a broad skill (e.g., Public Speaking) among several narrow skills (e.g., Relational Database Management) to selecting a multiple-choice response to a factual question related to the material presented. The intention of this brief test is to serve as an attention check and to verify the users’ understanding of the concepts presented within. If any test items are answered incorrectly, the participants are directed back to the reading and must try again. The education module ends by explaining that the following module (elaboration) will help the user better understand how broad skills could ‘open doors’ for him or her as a job seeker.

The elaboration module of the BSAT aims to introduce network visualization principles in an intellectually digestible manner (i.e., in layman’s terms, not jargon-ridden) to demonstrate how occupations can be theoretically connected by having substantial overlap in the broad skill sets that they require. Skill network visualization was the selected mode of explanation for the BSAT for the reasons discussed earlier in this paper; the primary reason being its exceptional utility in representing the conceptual interconnections and overlap exhibited by required skill sets of various occupations. In this module of the intervention, a series of graphics and examples demonstrate how a single occupation can be connected to one or more occupations by required skills, which are themselves connected to additional occupations or each other. This growing “web” of connections is most efficiently represented as a visual network (hence the use of this visual approach in the BSAT). It is then explained that by thinking of occupations in this
networked manner, job seekers can refer to the paths between occupations in this ‘skill network’ to see how similar or different two occupations are (and thus, how equipped someone with experience in one job might be for another job). While these skill networks can be used as a tool when available (as in the equipment module of the BSAT), the overarching goal of this elaboration module is to further emphasize the relationships and overlap between many occupations, independent of industry or specialty. Figure 4 shows one example of a screen capture from the elaboration module of the BSAT. To ensure its effectiveness, the module concludes with several multiple-choice survey items that ask the user about the general principles presented within (e.g., “How can it be useful to think about ‘skill networks’ when job seeking?”). If any test items are answered incorrectly, the participants are directed back to the reading and must try again.

Lastly, the equipment module of the BSAT allows participants to explore an interactive digital tool that uses data from O*NET Online (http://www.onetonline.org/) to dynamically display on-demand skill networks as queried by the participants. This tool was developed and published to the internet in 2014 by the principal investigator with support from a Graduate Center Provost’s Digital Innovation Grant. It is designed such that the user is able to query the skill network of any of the 953 available occupations in the O*NET Online 20.2 Production Database. Users can then click on any of the occupations in the queried network for an occupational description and a list of its top required skills (as well as well as the relative importance of each). In the standalone tool (i.e., outside of this research study), users have no time limit on their exploration of the tool. For the purposes of this study, participants were required to spend at least 15 minutes (with no maximum time spent) freely querying and exploring skill networks, after which they were prompted with a hyperlink to the final survey. It
is important to note that immediately prior to participants’ arrival at the tool’s website, all users received a brief introduction and orientation to the tool’s interface and search box. The broader goal of this *equipment* module is to provide job seekers with a standing resource and reference throughout their job search process. As the tool is capable of querying information about any occupation, it should remain useful to participants as they think creatively about new and promising work opportunities or come to realize new broad skills. Figures 5, 6, and 7 are sequential screenshots of the tool in use. Users can type the names of occupations into the search box and select from the suggestions (Figure 5). After selecting an occupation, the occupation’s skill network is generated based on the degree of similarity in required skillsets to other occupations (Figure 6). Other contextual information provided by the tools includes the rate of job growth through 2022 and the overall generalizability of an occupation’s skillset. Lastly, users can click on any occupation in a skill network to read a brief description about it, see its top three most important skills, and either opt to generate its skill network or open its detailed O*NET Online occupational profile (Figure 7). This process can be repeated as a user explores several occupations and develops a deeper understanding of the skills that tie occupations into these skill networks.

Simply, the three components of the BSAT framework (*education, elaboration, and equipment*) aimed to address the challenge posed by this research study: shifting the focus of job seekers from narrow skills to broad skills. This is an exceptionally unique challenge because broad skills are less immediately apparent, and less salient than narrow skills to an untrained individual. Due to its sheer obviousness, the previously referenced character “Sarah” is probably more likely to reflect on her ability to troubleshoot computers (her narrow skill) than her general problem-solving ability (her broad skill). The BSAT was designed to teach participants how to
mentally “scale up” their current skill set to adopt a broader perspective, and to provide a relevant informational tool which remains available to job seekers after the intervention has ended. These considerations and their utility for job seekers and career changes were all instrumental in the design of this intervention.

**Intervention impact.** The BSAT is designed to facilitate learning and thinking about the broad skill sets that participants possess, which should in turn enhance employment outcomes and feelings of job-related hopefulness (or expectancy). These outcomes are posited with support from the principles outlined by social cognitive career theory. As previously described, SCCT states that when deciding on future pursuits, individuals are likely to reference their sense of self-efficacy about salient career activities that they perform (Lent et al., 1994). However, the day-to-day work activities that are most salient are also likely narrow; while assisting a customer, Sarah is probably more likely to think “I am resolving a Microsoft Windows error” than “I am thinking critically,” As a result, Sarah’s self-efficacy about resolving Windows errors is more likely to increase than her self-efficacy for thinking critically. When Sarah later goes to search for a new viable opportunity, her Windows experience will likely drive her sense of competence more than her critical thinking experience. The BSAT attempts to adjust participants’ focus to a broader level of competence. The position of the principal investigator is that by enhancing the salience of participants’ broad skills in this manner, the BSAT will bolster their sense of self-efficacy for those skills (since it will presumably help them realize that they have been indirectly honing these broad skills for some time). Sarah should not only be thinking “I’m great at fixing technical problems,” but also “I’m an exceptional critical thinker!” Owing to this strengthened self-efficacy, Sarah should become more likely to use her broad skills as a source of information when searching for and pursuing new work opportunities. Thus, it was hypothesized:
Hypothesis 5: Relative to levels prior to receiving the intervention, individuals will report significantly greater broad skill focus following the intervention.

Stepping beyond the direct intention of the intervention to increase thinking about broad work skills, it should also enhance the psychological expectancy of achieving a desirable employment outcome. As discussed, SCCT supports the argument that the BSAT should encourage a refocusing of the feedback loop in which people primarily pursue opportunities which are most saliently tied to work-related self-efficacy. It is through this redefined social cognitive feedback loop that struggling job seekers can develop and reinforce (via the feedback loop) a sense of self-efficacy regarding their broader skillsets. By doing so, job seekers should begin to see broad skills as a new and rich source of information about which job opportunities are viable to search for and pursue. With this augmented self-efficacy about broad (and thus more generalizable) skills, job seekers should have a more mature understanding that the pool of possible work opportunities for which they are already primed for success is larger than they might otherwise have realized. For example, Sarah, with an expanded perspective of her skills, should develop or fortify her sense of self-efficacy regarding her broad skills (which include skills such as active listening, complex problem solving, and critical thinking). With enhanced confidence in her ability to demonstrate these skills, SCCT suggests she should be more inclined (relative to a job seeker with a very narrow view of skills) to search for and seek work opportunities amenable to her broad skills (e.g., searching keywords related to her broad skills). Since broad skills are inherently more generalizable than narrow (often industry-specific) skills, the range of actual possibilities for work is wider when the point of reference is one’s broad skills. As a consequence of this expanded pool of potential work, job seekers like Sarah should
exhibit greater expectancy about the possibility of finding a satisfactory employment arrangement. Thus it was hypothesized:

*Hypothesis 6: Relative to levels prior to receiving the intervention, job seekers will report significantly greater expectancy of employment within three months following the intervention.*

**Method**

**Participants.** The sample for Study 2 was composed of 132 participants (60% male, 40% female) gathered from Amazon’s Mechanical Turk (MTurk). The final sample’s self-reported race/ethnicity composition was 64% White, 14% Black or African American, 10% Asian, and 11% other selections. The precise sample size was calculated for tests in the *F*-family (more specifically, for the ANOVA variations proposed below) using G*POWER 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009). Participants were required to be at least 18 years of age, have at least one year of work experience, and have a “Worker Rating” (MTurk score of response quality) of 97% or greater. The sample was not, however, limited only to individuals actively seeking jobs, as this specific study’s aim was to assess the effectiveness of the intervention at promoting a broad skills-focused perspective, and the resulting expectancy of finding a job when they enter the labor market. Further, studying a variety of individuals with different career goals, degrees of job seeking behavior, and demographics was thought to provide greater clarity about the nature and extent of the intervention’s impact on this form of thinking. Participation in this study was on a voluntary basis. Financial compensation ($4.00 for the estimated 40 minute task) for participation was granted through the MTurk platform.

**Measures and Materials.**
Broad Skills Awareness Training (BSAT). Like the Savickas (1991) intervention, the Broad Skills Awareness Training (BSAT) is a guided presentation that (1) presents information about using skills rather than work history to inform job choices, and (2) uses interactive network visualization techniques to demonstrate how occupations can be “connected” through substantial overlap in required skillsets. The third and last component of the intervention introduces and allow participants to explore an interactive digital tool that uses data from O*NET Online (www.onetonline.org), an online occupational data warehouse, to display ‘occupational networks’ generated based on similarity in job skill requirements. This tool, developed and published by the present study’s principal investigator, was deployed in 2014 with partial support from a Graduate Center Provost’s Digital Innovation Grant. In this last component of the intervention, participants have the opportunity to freely interact with the tool for at least fifteen minutes (with no maximum). The number of minutes that users spent interacting with the tool was controlled to ensure a minimum of fifteen complete minutes spent interacting with and exploring it.

Broad skill focus scale (α = .92). The extent to which participants adopt a broad skill focus pre- and post- intervention was assessed using the author-developed measure from Study 1. This measure contains twelve (12) items which assess the degree to which a respondent adopts a broad (versus narrow) frame of reference when reflecting on his or her work-related skill set. Items are rated on a five point Likert scale from Strongly disagree to Strongly agree.

Employment expectancy. A single item assessed participants’ perceived probability of securing employment within three months of initiating a job search. The item asked participants to select the percent probability (0-100%) that they believed they could secure a job that they would be satisfied with within three months of searching.
Desired and intended career information. Two items asked participants to indicate which (1) occupation and (2) industry they had the greatest desire to work in. Two additional items asked participants to indicate which occupation and industry they have the greatest intention of pursuing. The intention of this set of similar items was to differentiate work that someone is pursuing from work that they would ideally be pursuing. These items (along with the participant’s location from the demographic survey) were collected to serve as possible controls to account for local industry and occupational factors in employment outcomes (though ultimately they were not needed in final analysis).

Demographics. Participants in both groups completed a self-report demographics questionnaire. This questionnaire aimed to capture information about the participants’ ethnicities, genders, age ranges, U.S. state, and predominant industry experience (if any).

Procedure. All participants began the study by completing the demographic and employment questionnaires, as well as the broad skill focus measure and the employment expectancy item. Participants then proceeded through all three modules of the BSAT intervention, and concluded the research study by again completing the broad skills focus questionnaire and employment expectancy item. A last open-response item asked for general reactions, comments, and thoughts about the intervention (for further developmental purposes).

Results

To assess for changes in broad skill focus and three-month employment expectancy following completion of the BSAT (Hypotheses 5 and 6, respectively), paired-samples t-tests were conducted to measure pre- and post- intervention levels.

First, the univariate normality of pre and post scores was checked using a series of Shapiro-Wilk tests (Shapiro & Wilk, 1965). Measurements at both time points exhibited non-
normality, so Box-Cox transformations (Osborne, 2010; Bozdogan & Ramirez, 1986) were applied. Following the transformation, the Shapiro-Wilk tests were re-run, again showing both measurements to exhibit non-normality (Table 10). Although normality is typically preferable, since the transformations were ineffective and existing evidence has shown t-tests to be fairly robust against violations of the normality assumption, the untransformed data was used to conduct the tests.

Regarding broad skill focus (BSF) levels, the paired-samples t-test highlighted a significant increase in the levels of broad skill focus prior to (M = 4.18, SD = .62) and following (M = 4.39, SD = .83) participant completion of the BSAT intervention; t(128) = -2.8276, p < .01). To address any possible range restriction issues among participants who exhibited high pre-test broad skill focus (over 4.0 to start), supplementary paired-sample t-tests were also conducted separately for those with pre-test scores from 1.0 to 4.0, and those with pre-test scores above 4.0. Among the group with pre-test BSF scores between 1.0 and 4.0, a statistically-significant increase in the levels of broad skill focus prior to (M = 3.59, SD = .56) and following (M = 4.01, SD = .85) participant completion of the BSAT intervention was detected; t(46) = -3.1095, p < .01). Among the group with high pre-test BSF scores over 4.0, no statistically-significant change in the levels of broad skill focus prior to (M = 4.53, SD = .30) and following (M = 4.62, SD = .74) participant completion of the BSAT intervention was detected, although directionally the mean difference was in the hypothesized direction; t(81) = -1.0101, p > .05). Given the results of both the initial and supplementary t-tests, it was determined that Hypothesis 5 was supported.

Regarding three-month employment expectancy hypothesis (Hypothesis 6), first the univariate normality of pre and post expectancy was checked using a series of Shapiro-Wilk tests (Shapiro & Wilk, 1965). Measurements at both time points exhibited non-normality, so Box-Cox
transformations were applied (as with broad skill focus). The Shapiro-Wilk tests were re-run and again exhibited non-normality (Table 10). As stated previously, although normality is typically preferable, existing evidence has shown $t$-tests to be fairly robust against violations of the normality assumption, so the untransformed data was used to conduct the tests.

The paired-samples $t$-test highlighted a significant increase in the levels of employment expectancy prior to ($M = 49.76$, $SD = 27.03$) and following ($M = 62.55$, $SD = 27.49$) participant completion of the BSAT intervention; $t(131) = -8.336$, $p < .01$. Given these findings, it was determined that Hypothesis 6 was supported. There did not appear to be any descriptive evidence for a restriction of range concern as with Hypothesis 5, so no additional $t$-tests were performed in support of this research question.

**Discussion**

The objective of Study 2 was to leverage the newly-developed measure of broad skill focus to measure the impact of a career-focused intervention on levels of broad skill focus and employment expectancy. According to social cognitive career theory (Lent et al., 1994), our most salient work experiences dictate the formation of our work-related self-efficacy; the BSAT intervention was developed with the intention of increasing the salience of broader and more generalizable notions of job skills, partly in the hopes of increasing a sense of possibility among job seekers.

The results of the accompanying analyses suggested that the intervention was, in fact, effective at increasing the breadth of thinking about one’s skills, as well as enhancing participants’ expectations that they will find satisfactory employment within three months of searching. Specifically, broad skill focus scale scores increased by about 5% (from 4.18 to 4.39) relative to pre-intervention levels. When parsing out participants with a greater range of
opportunity to improve (i.e., not participants who already index high on broad skill focus), BSF scale scores increased by nearly 12%. Regarding employment expectancy levels, participants’ reported belief in the probability of finding desirable work within three months of searching increased 13% (from 49.8% to 62.5%) after completing the BSAT.

All of the statistical evidence gathered during the analysis in Study 2 suggests that the BSAT intervention demonstrated a meaningful impact on both individual levels of broad skill focus and the three-month employment expectancy of participants. These findings together highlight the implications of an effective intervention: if a tool like the BSAT can inspire a greater broad skill focus among more vulnerable work populations (e.g., unemployed individuals), it might assist in expanding these job seekers’ ideas about what constitutes a plausible work opportunity. Study 2 deliberately solicited a sample of research participants without regard for their current employment status, as the objective was to identify the overarching impact of the intervention. With the BSAT intervention’s possible impact now supported, the next logical and final task was to allow actual unemployed participants to complete it, and evaluate the longitudinal impact of the intervention on real-life job search and employment outcomes.

Study 3

To extend this research on broad skill focus to a final, practical study, the longitudinal impact of the BSAT intervention will be monitored. Firstly, the BSAT intervention is intended to equip job seekers with the capability to think about their job-related skill sets in broader, and hence more generalizable, terms. Given the supporting theory and arguments outlined herein, there is no reason to suspect that broad skill focus is a fleeting state, attitude, or emotion. Rather, it is proposed as a frame of reference or perspective when thinking about one’s job skills. The
very implication of the BSAT intervention is that a broad skill focus can be taught, trained, perhaps even practiced. Thus, an individual who is able to think broadly about his or her job skills following adequate training should be able to again exercise that broader perspective at a later date.

Constructs such as broad skill focus, which are at their core individual perspectives or frames of reference (in this case, on the generalizability of one’s job skills), have been well-studied in intervention contexts before. Cited earlier, Markos and Savickas (1998) evaluated the effects of an intervention designed to increase an individual’s orientation to the future. At its essence, the purpose of this particular intervention was to alter an individual’s perspective and focus on their sense of time, much like the BSAT is intended to alter an individual’s perspective on their work skills. In the Markos and Savickas study, the Time Perspective Modification Interview (TPMI; Markos & Savickas, 1998) was administered to fifty-five (55) participants and subsequently found to significantly increase their orientation to the future of their careers. Given these findings, the scholars go on to explain that one’s initial orientation to time (with an emphasis on the past or present) is first initiated in our early years of life; often this orientation is passed on from others that surround us (e.g., parents, family, friends). However, interventions such as the TPMI can work to alter these perspectives and allow individuals to “re-focus” in a way that presumably benefits them. This idea put forth by Markos and Savickas (1998) that the initial life perspectives which we adopt come from others aligns well with theory addressed early in this dissertation; namely, theory outlining the possibility that the modern job search and many existing employment resources put enormous emphasis on narrow skills from very early in a job seeker’s working life. This pervasive emphasis on narrow skills may persist even when a job seeker’s idea of his or her specific skills have failed repeatedly to secure employment (e.g., when
an unemployed individual keeps looking for the same type of work). Based on SCCT, an instrumental factor in determining skill-related self-efficacy would be clarity about the possibility of success while exercising the skill/s. If no one and no thing is actively showing job seekers all of the opportunities for which their skills may be relevant, they will likely lean on the work contexts in which they are comfortable and confident.

The scholarly contributions of Marko and Savickas (1998) have made clear the potential for even simple and brief exercises in thought to influence the perspectives of individuals. The BSAT intervention, as a relatively brief and self-guided intervention aims to do just this. It aims to reshape the scope and perspective of thought about one’s own job skills, and ensure that any resulting changes in perspective persist long enough for a job seeker to derive true employment-related benefit. By adopting this longitudinal research approach to studying broad skill focus and the BSAT, the persistence and efficacy of this perspective and intervention can be tested several months following initial training. Given the hypothesized long-term nature of this trained broad skill focus, it is hypothesized:

Hypothesis 7: Individuals who complete the BSAT intervention will exhibit significantly greater BSF three months after the training as compared to individuals in a control group.

To extend this further, it is necessary to reemphasize that individuals with a focus largely on their broad skills during a job search should be able to explore and discover an expanded breadth of work opportunities that suit his or her skillset. This is because the same broad work skills can be useful and equally valuable to job roles in vastly different industries and career paths (e.g., computer support specialist and air traffic controller; National Center for O*NET Development, n.d., A, B). As per SCCT, individuals who understand this possibility are better
equipped to leverage it in their job search efforts as a result of their strengthened self-efficacy with regard to their broad skills. Specifically, SCCT posits that when people experience success or understand their work in a particular context to be successful, it bolsters their own self-image in that context and about doing that type of work (Lent et al., 1994). While earlier this idea was positioned as a reason that many people might have a narrow skill focus (i.e., job seekers conditioned to think narrowly, keyword-driven job searches reinforcing ideas about one’s specific skills, etc.), it can also work in favor of a broad skill focus. Specifically, when job seekers are provided with a deeper understanding of the broad skills that they already possess, and their attention is re-focused on that broad scope of skills (as it is taught in the BSAT), SCCT suggests that this will enhance a job seeker’s sense that he/she is capable of executing on those broad skills in practice. Further, the theory suggests that these job seekers will likely begin to identify and possibly seek actual (not merely perceived) opportunities which allow the job seeker to utilize those broad skills. In essence, if the BSAT intervention is effective, confidence about these broad skills should become well-integrated into a job seeker’s self-image, and perhaps their work identity. With this new and more productive lens for job search efforts, these job seekers should ultimately (a) exhibit greater employment expectancy and (b) yield better long-term employment outcomes (controlling for factors such as industry and frequency of job search behaviors). Owing to these theorized benefits of the intervention, it is hypothesized:

Hypothesis 8a: Relative to job seekers who have not received the intervention, those who have will report greater rates of employment expectancy immediately following training.

Hypothesis 8b: Relative to job seekers who have not received the intervention, those who have will report greater rates of employment three months following the intervention.
While the intervention should directly and effectively impact participants’ actual employment outcomes, the ultimate extent of the benefits derived from the BSAT could conceivably depend largely on one important individual difference. Specifically, it is crucial to account for the degree to which individuals are capable of anticipating (i.e., looking ahead), exploring, and adapting oneself to opportunities and the future. These capabilities are well-encapsulated in the psychological construct of career adaptability (Savickas & Porfeli, 2012). More formally, career adaptability has been defined as “readiness to cope with the predictable tasks of preparing for and participating in [a] work role and with the unpredictable adjustments prompted by changes in work and working conditions” (Savickas, 1997, p. 254). Effectively evaluating the efficacy of the BSAT, an intervention aimed at improving future career outcomes through perspective change, should depend largely on individuals’ abilities to anticipate and adapt lessons from the intervention to arising and changing work opportunities.

**Career adaptability.** The origin of the career adaptability construct is the notion that four types of adaptability resources are crucial for supporting processes characterized largely by self-regulation (e.g., job searches, career pursuit; Savickas & Porfeli, 2012). Those four resources are (1) concern, (2) control, (3) curiosity, and (4) confidence. *Concern* is posited as a resource which helps individuals anticipate and/or prepare for future (occasionally unexpected) scenarios. One example of a situation which drains concern resources is being laid off from one’s job, an unpredictable and difficult experience. *Control* speaks to an individual’s ability to meet the self-regulatory demands of the future. Control resources are incredibly helpful during processes like job searches, which sometimes require immense discipline and persistence to achieve success. *Curiosity* refers to the openness, willingness, and tendency to explore and consider multiple possible futures. In the context of work, curiosity resources become useful
when considering various different career and work alternatives. Finally, *Confidence* refers to the result of concern, control, and curiosity; an individual builds and reinforces confidence by deeply exploring and considering opportunities. In essence, career adaptability is a composite construct that encompasses each of these four essential components of adaptability (Savickas & Porfeli, 2012).

Career adaptability is exceptionally germane to the study of the BSAT intervention because each element of the construct relates to an essential part of the intervention’s real-world employment impact. To start, concern is crucial to the BSAT’s efficacy; a job seeker lacking in concern will not understand or see the utility of a broad skill focus, let alone a training designed to train it (i.e., if by nature they do not anticipate and prepare for various scenarios, there would be no use for the broader skill focus promoted by the BSAT). As suggested previously, control is also essential to an effective job search— a job seeker lacking in ability to sufficiently self-regulate will likely not be as persistent in their search, and should therefore take longer to become re-employed (Wanberg, Zhu, & Hooft, 2010). Thus, the BSAT likely cannot achieve maximum impact unless the individual also demonstrates control. Further, the intervention is intended to help job seekers to think more broadly and creatively about the application of their skills, which aligns strongly with the curiosity component. In other words, job seekers who are already inclined to openly explore a range of opportunities are likely to derive the greatest benefit from the BSAT, which equips them with a new broad skill based approach for doing so. Those low in curiosity should theoretically be less likely to conceive of or consider the alternative job options which the BSAT aims to promote. Lastly, as described, the *confidence* component is a product of the previous three components. An individual whom exhibits the first three components is likely to grow in the extent to which he or she is open to continuing a cycle
of exploration and growth. Confidence as a component of career adaptability is a crucial pre-requisite for the success of the BSAT, as a person who lacks career and adaptability-related confidence is not likely to (1) execute on what was learned in the BSAT, and (2) believe that he or she is capable of creative exploration of opportunities. Simply put, because the BSAT is an intervention designed to expand job seekers’ thinking about viable work opportunities, job seekers prone to these adaptability components are the most likely to absorb and subsequently implement what the intervention teaches them.

As the job search is an ever-changing, highly self-driven process, it can be logically argued that individuals with greater career adaptability are more likely to engage in and benefit from behaviors and initiatives intended to impact the future outcomes of their job search. This argument stems from the idea that those low in career adaptability (as defined by Savickas, 1997) should be less likely to identify opportunities to carry out future-focused strategies or leverage new job-seeking skills, largely because they do not invest as much attention or as many resources in anticipating and adjusting for the future. If opportunities to leverage adaptability strategies and skills are not discovered or explored, the initiatives which inspired those strategies and skills are likely to prove ineffective. Thus the BSAT, which equips participants with a broad skills focus to help them think more creatively about viable work opportunities, should bear the greatest actual employment impact among individuals high in career adaptability; these are the individuals who are most inclined to be seeking ways to control and improve their career development and outcomes. With these points in mind, it is hypothesized:

_Hypothesis 9: Career adaptability will moderate the impact of the intervention on three-month employment outcomes, such that the intervention will result in the strongest positive outcomes among those high (versus low) in career adaptability._
Method

Participants. The data collection effort for Study 3 consisted of two waves: one initial wave and one follow-up wave. The first wave of data collection involved administering all surveys and the online intervention to 209 registered users (38% male, 62% female) of Amazon Mechanical Turk (MTurk). The sample’s self-reported race/ethnicity composition was 67% White, 10% Black or African American, 10% Asian, and 13% other or mixed selections. The sample size was calculated using G*POWER 3.1 (Faul et al., 2009) for the specific proposed analyses of this study. Participants were required to be at least 18 years of age, be presently unemployed (self-reported on MTurk), have a “Worker Rating” (MTurk score of response quality) of 97% or greater, and be actively engaged in job seeking. Participation in this study was on a voluntary basis. Financial compensation for participation was granted through the MTurk platform in the amount of $2.50 for participation in wave one (~20-25 minutes), and $1.00 for participation in the follow-up (~2-3 minutes). Total compensation ($3.50) for the expected time invested approximated federal minimum wage.

The follow-up data collection occurred three months after completion of wave one and involved the completion of a single follow-up survey (administered through Amazon MTurk) by 150 of wave one participants (72% follow-up completion rate). The sample consisted of 99 (66%) female and 51 (34%) males. The race/ethnicity breakdown of the follow-up sample was 65% White, 12% Black or African American, 10% Asian, and 13% other. These breakdowns are largely representative of the demographic distributions in the wave one sample.

Study 3 was designed as a field quasi-experiment, with participants randomly assigned to either the experimental group or a control group. Participants in the experimental group completed the BSAT intervention, and participants in the control group completed an unrelated
career decision-making exercise. The study focused on observing actual employment outcomes three months after completion of the BSAT intervention, and comparing the outcomes of participants in the experimental to those in the control groups.

Measures and Materials.

Demographics. Participants in both groups completed the same self-report demographics questionnaire used in the previous studies. This questionnaire aimed to capture information about the participants’ ethnicities, genders, age ranges, and predominant industry experience (if any). One extra (non-demographic) item will be added for the three-month follow-up survey.

Broad Skills Awareness Training (BSAT). The intervention administered in Study 3 was identical to the intervention administered in Study 2. It consisted of the same three modules (education, elaboration, and equipment) of reading and knowledge checks.

Decision-making (control) exercise. The decision-making exercise administered only to the control group was presented in a similar format as the BSAT. Participants proceeded through a guided explanation of different phases in sound decision-making (e.g., defining the problem, identifying options, considering criteria, analyzing options, making a decision). The exercise encouraged participants to reflect on each phase as it relates to their career, and offered them the opportunity to explore occupational options using O*NET Online (www.onetonline.org). A short quiz following the exercise tested their understanding of the exercise and materials.

The purpose of this control exercise, which was created by the principal investigator, was to ensure that control participants had an experience largely similar in flow, look, and feel to participants in the experimental group, except for key BSAT intervention characteristics being studied (namely, an emphasis on one’s broad job skills, and the use of visual skill networks as a teaching tool). Specifically, both groups moved through reading materials that asked them to
reflect and complete short assessments of their retention of important concepts being presented. Additionally, participation in both conditions took approximately 30 minutes to complete. Controlling for these factors served to bolster confidence that any findings of impact could be attributed to the fundamental concepts and approach of the BSAT.

*Broad skill focus scale* (α = .92). The extent to which participants were inclined to demonstrate a broad skill focus was assessed with the validated author-developed measure from Study 1. This measure contains 12 items which assess the degree to which a participant adopts a broad frame of reference when reflecting on his or her job-related skill set. Items were rated on a five point Likert scale from *Strongly disagree* to *Strongly agree*.

*Career adaptability*. To assess career adaptability, participants completed the Career Adapt-Abilities measure, which was developed and validated by Savickas and Porfeli (2012) across thirteen countries. The 24-item measure comprises four six-item subscales, one for each component of career adaptability: concern (α=.83; e.g., “Thinking about what my future will be like”), control (α=.74; e.g., “Making decisions by myself”), curiosity (α=.79, e.g., “Investigating options before making a choice”), and confidence (α=.85; e.g., “Learning new skills”). These four subscales roll up to form the broader career adaptability construct (α=.92). Respondents are asked to rate how strongly they have developed each of the abilities described by the items on a five-point Likert scale ranging from *Not strong* to *Strongest*.

*Employment status*. The three-month follow-up survey contained a single binary item asking about a participant’s current employment status. Specifically, the item asked “Over the past three months, have you found satisfactory employment?”, and allowed responses of *Yes* and *No*. 
Employment expectancy. If a participant responded to the employment status item in the negative, a single conditional item assessed participants’ perceived probability of securing employment. The item asked participants to select the percent probability (0-100%) that they believed they could secure a job that they would be satisfied with within another three months of searching.

Industry/occupation of employment. Two items in the wave one survey asked the participants to indicate which (1) occupation and (2) industry they have the greatest desire to work in. Two additional items asked participants to indicate which occupation and industry they have the greatest intention of pursuing. Among respondents who indicated they secured employment during the three-month window, they were asked to report their industry and occupation of employment. Among respondents who indicate they did not secure employment, industry and occupation of interest were captured from the wave one survey. Industry and occupational options were selected from the defined list of industries and occupations available in the O*NET 20.2 Production Database.

Unemployment length and frequency. Two additional items in the wave one survey asked the participants to indicate (1) how long they have currently been unemployed (in weeks) and (2) the number of times that they have been unemployed. These data points were collected to serve as possible controls to account for individual differences in unemployment experience (i.e., longer unemployment may inspire looking elsewhere).

Job search behaviors. Job search behavior was evaluated as a potential control variable, and was measured using the Kopelman, Rovenpor, and Milsap (1992) measure, the Job Search Behavior Index (JSBI; \( \alpha = .73 \) to .86). The measure consists of 10 items asking respondents to indicate the frequency of a number of 10 specific job search behaviors (e.g., “Revised your
resume”, “Had interview”, “Talked to friends”). The purpose of this collecting this variable as a potential control was to account for the possibility that differences in effort in a job search also dictate employment success- a possible confound for broad skill focus.

**Desired and intended career.** Two items in the initial survey asked the participants to indicate which (1) occupation and (2) industry they have the greatest desire to work in. Two additional items will ask participants to indicate which occupation and industry they have the greatest intention of pursuing. As previously described, these data will be collected to serve as possible controls to account for industry and occupational trends in employment outcomes (e.g., if current or historical rates of employment between industries or job types differ). Each participant will have one imputed occupational growth number imputed, representing the respective forecasted growth of the occupation through 2026. These data will be imputed from the Bureau of Labor Statistics employment projections 2016-2026.

**Attention check items.** To follow recommendations by other scholars regarding the use of MTurk in research (Huang et al., 2012), several check items were planted throughout the survey to ensure that (1) participants are humans and not automated bots, and (2) human participants are paying attention to the survey. These items included a mix of attention checks (e.g., “If you are spending the time to read this item, select Strongly Disagree”, “I had a heart attack while taking this survey”). These items will be rated on the same five-point Likert scale from strongly disagree to strongly agree.

**Procedure**

Participants began by completing the demographic questionnaire and indicating their desired/actual industries and occupations. Next, participants completed the Career Adapt-Abilities measure (Savickas & Porfeli, 2012) and the broad skill focus (BSF) scale prior to
beginning the Broad Skills Awareness Training (BSAT). Once these scales were complete, participants were randomly assigned to either the experimental group or the control group. The experimental group then moved through the BSAT intervention and completed the final questionnaire, consisting of a repeat administration of the BSF scale and the employment expectancy item. Alternatively, the control group instead completed a decision-making exercise, and then proceeded to the final BSF questionnaire and employment expectancy item. Participants were then reminded that they will receive a brief follow-up survey by email three months from the current date, for which they can receive additional compensation administered through MTurk. This concluded the initial phase of the research study.

The follow-up survey was made possible by leveraging MTurk’s capability to mass contact participants who meet specific criteria (e.g., completed first wave of the study). This avoided the possibility of violating MTurk’s terms of service, which include a ban on collection of personal contact information (e.g., email address). The follow-up survey included the BSF scale, the career adaptability questionnaire, and the job search behavior measure. Follow-up participants were also asked to indicate their employment status, as well as their industry and occupation of employment if they secured a job during the study window. Participants who indicated they remained unemployed were asked to complete the employment expectancy item again as a follow-up. Following the completion of this follow-up survey battery, the participants were thanked for their time and commitment to the study, and were compensated through MTurk.

**Results**

First, all data collected in Study 3 was cleaned according to recommendations by Huang et al. (2012) for processing MTurk survey data. Zero (0) respondents provided an incorrect or
impossible response to any attention check item (e.g., responding ‘Agree’ to an item requiring you to select ‘Strongly Disagree’), so no responses were removed from inclusion for this reason. Further, as there was 28% attrition between the first and follow-up waves of data collection, a series of t-tests were conducted to determine if those who did not complete the follow-up survey differ significantly on critical scale scores from the participants who did complete the second part of the study. No significant differences were found between follow up respondents and non-respondents on pre-intervention levels of broad skill focus; $t(100.53) = -0.87235, p > .05$). Additionally, no significant differences were found on post-intervention levels of broad skill focus; $t(125.52) = -0.25945, p > .05$). Lastly, no significant differences were found between follow-up respondents and non-respondents on levels of career adaptability; $t(93.574) = -1.2159, p > .05$).

Before beginning the planned analysis of the data, the normality states of all relevant variables were tested using Shapiro-Wilk tests. As in Study 2, both broad skill focus and employment expectancy exhibited non-normality both before and after Box-Cox transformations (Table 11). Specifically, the BSF measure exhibited a left-skewed distribution at all time points, suggesting that respondents tended to self-rate on the high end of broad skill focus. This pattern could have been a result of response leniency, as the items are related to one’s own propensity for thinking broadly about skills. It was not anticipated that this distribution would disrupt the testing of the stated hypotheses. In turn, employment expectancy exhibited a shape resembling a uniform distribution, with consistent dispersion across the scale. Although a uniform distribution was not anticipated, its presumed impact was merely in providing additional response variance for testing hypotheses. Further, given the previously-cited empirical suggestions that $t$-tests are
rather robust against normality assumption violations, it was decided to utilize the raw, non-transformed data in testing.

To understand the impact of the BSAT intervention on broad skill focus over time, \( t \)-tests were conducted to test BSF levels pre-intervention, post-intervention, and during the follow-up period. The results of these preliminary tests can be seen in Table 12, and suggest that there was no significant difference in BSF level pre-intervention, but a significant elevation in BSF was evident following completion of the BSAT (M = 4.64, SD = 0.46) relative to control exercise participants (M = 4.25, SD = .70); \( t(139.71) = -4.0583, p < .01 \). Further, in support of Hypothesis 7, these elevated levels of broad skill focus remained higher three months later among those completing the BSAT (M = 4.49, SD = .43) relative to those who completed the control exercise (M = 4.13, SD = .67); \( t(138.27) = -3.9241, p < .01 \). The significant differences detected post-intervention and during the follow-up persisted even after a standard statistical correction for multiple tests (e.g., Bonferroni). Given the available evidence, Hypothesis 7 was considered supported by these analyses.

With regard to employment expectancy, as with broad skill focus, \( t \)-tests were conducted at all three time points to assess the impact of each condition over time (Table 13). At no time point was employment expectancy significantly different between the BSAT and control conditions; pre-intervention, \( t(146.77) = 0.43301, p > .05 \), post-intervention, \( t(146.91) = -0.63302, p > .05 \), and follow-up, \( t(141.30) = 1.4147, p > .05 \), were all equivalent across groups.

Given the nonsignificant results of this series of \( t \)-tests, a secondary set of nonparametric tests were utilized to ensure the non-significance was not the product of insufficient power resulting from non-normal data. Three Mann-Whitney-Wilcoxon rank sum tests (i.e., non-parametric alternative to a \( t \)-test) were conducted on all three time points, again exhibiting no
statistical significance across pre-intervention, \( U = 2888, p > .05 \), post-intervention, \( U = 2663, p > .05 \), and follow-up, \( U = 3177.5, p > .05 \), phases of data collection.

Specifically, the two tests evaluating the differences in employment expectancy across during the post-intervention phase served as an evaluation of Hypothesis 8a. Contrary to the hypothesized effect, no statistically-significant difference in employment expectancy was detected (by either parametric and nonparametric test) between participants who completed the BSAT intervention and those who completed the control exercise immediately following their completion of the assigned condition. Thus, it appears that Hypothesis 8a was not supported by the available data.

To test Hypothesis 8b, differences in actual employment outcomes across the experimental and control groups after a three-month period were evaluated. Of 69 follow-up respondents who were in the BSAT condition, 26 (17%) of them identified as securing satisfactory employment three months later. In contrast, 20 of 81 (13%) control condition respondents reported having secured satisfactory employment on the three-month follow-up. Although the crosstab of experimental condition and employment status showed counts in the hypothesized direction, applying a chi-square test to the crosstab determined the difference in proportion of employed to unemployed respondents in the follow-up was not dependent on condition; \( \chi^2 (1, N = 150) = 2.9569, p > .05 \). In an effort to control for industry-specific factors, a supplementary logistic regression was conducted, leveraging projected employment change by occupation (imputed using the participant-selected desired occupations) as a covariate (Table 14). The results of this test mirrored those of the earlier chi-square test, specifically that employment outcome was not significantly predicted by experimental condition, even after
controlling for employment growth numbers, $\chi^2 (1, N = 148) = 2.6933, p > .05$. Given the results of these two test approaches, Hypothesis 8b was not fully supported by the data.

Lastly, Hypothesis 9 proposed a moderation effect between career adaptability and experimental condition on employment outcomes, such that participants exhibiting greater career adaptability would be subject to greater positive influence of the BSAT intervention. A logistic regression model (see Table 15) including the interaction term of interest revealed significant main effects of intervention on employment outcomes, $\beta = 7.4383, t(149) = 3.112, p < .01$, as well as career adaptability on employment outcomes, $\beta = 1.5886, t(149) = 3.214, p < .01$. Further, a significant interaction effect between intervention and career adaptability was found in the opposite direction than hypothesized, $\beta = -1.9109, t(149) = -2.937, p < .01$. A follow-up simple slopes analysis (Table 16 and Figure 8) clarified the nature of this relationship, suggesting that employment outcomes of those already high in career adaptability were not significantly impacted by completion of the BSAT, $t(146) = -0.9802, p > .05$, while those low in career adaptability reaped the most positive and statistically-significant employment outcomes, $t(146) = 3.1811, p < .01$. Thus Hypothesis 9, which predicted the opposite interaction effect, was not supported by this analysis.

**Discussion**

The primary objective of Study 3 was to evaluate the efficacy of the Broad Skills Awareness Training (BSAT) for improving the longitudinal levels of broad skill focus and employment outcomes of individuals who complete the training readings and exercise. Within the study were also hypothesized effects of the training on employment expectancy: not merely actual employment outcomes but also perceived possibility of positive outcomes. Careful study revealed that the BSAT did in fact increase the reported broad skill focus levels above and
beyond a control career-centered decision making exercise. Not only was this conditional change in broad skill focus levels statistically significant, but the evidence gathered points to the possible longevity of this change in individuals’ frames of reference about their skills. The duration of Study 3 was three months, suggesting that at a minimum the intervention’s effects may not degrade for at least that long.

Hypothesis 8a was not supported and Hypothesis 8b was not definitively supported. One implication of these findings is that the BSAT did not appear to exhibit any meaningful influence on the self-perceived expected success of unemployed job seekers. Further, there was not sufficient statistical support for the predicted improved employment outcomes of participants completing the BSAT. While support was not achieved, the available data did trend in the hypothesized direction, suggesting that additional data collection may allow for greater confidence one way or the other.

Finally, given principles outlines in social cognitive career theory (SCCT), it was suspected but ultimately not supported that individuals who exhibit greater levels of career adaptability would have the most to gain from the training (Hypothesis 9). In fact, the results demonstrated the opposite effect, with higher levels of career adaptability meaning little or no impact of the BSAT on outcomes. While this finding ran contrary to the hypothesized interaction, it may be relatively simple to explain: perhaps those high in career adaptability already possess characteristics that make them more successful in the job search; this is evidenced by their higher overall employment success rate independent of experimental condition, relative to those with moderate or low levels of career adaptability (this can be seen in Figure 8). With regard to those with low levels of career adaptability, there was a significant difference in employment success between participants who completed the BSAT versus the
control exercise. This finding arguably highlights this key audience for the BSAT, who may have the most to gain from completing it. Ultimately, although three of four hypotheses in Study 3 did not receive sufficient statistical support, there appears to be an argument one could make that the utility of the BSAT for enhancing the employment outcomes of specific audiences (i.e., individuals who are unemployed and low in career adaptability) has great merit. This argument is further discussed in the following section.

**General Discussion**

This series of studies was intended to serve three primary purposes. First, as a measure development and validation exercise, designed to capture a new career-related construct: broad skill focus (Study 1). Second, as an effort to build and test an internet-based educational intervention as a means of improving knowledge and understanding of one’s own broad skills, and as a result increase one’s broad skill focus (Study 2). Finally, with the objective of validating the intervention and construct of broad skill focus itself as a means of enhancing actual employment outcomes of unemployed individuals (Study 3). At the conclusion of all of the planned analysis, it is apparent that each study and their respective hypotheses received varying levels of support; some remained unsupported, some modestly supported, and others fully-supported. These results, along with related insights, implications, and opportunities for future research on these topics are discussed.

The measure development and validation process carried out in Study 1 was designed to mirror the development principles and processes established by numerous prior scholars (e.g., Eby et al., 2008, Shockley et al., 2016). The data gathered throughout each of the study’s three phases of development were considered to constitute meaningful support for the structure, uniqueness, and utility of the broad skill focus construct. From a structural perspective,
confirmatory factor analyses were conducted to test for the hypothesized unidimensional nature of this new construct, and helped to refine the final broad skill focus instrument. Further, the accompanying scree plot (Figure 2) provided very compelling descriptive support for a single-factor structure, with the inflection point of the chart occurring immediately after the first factor; this observation can be interpreted as evidence that the first factor captures the most substantial portion of the observed variance. Such support suggested that, as proposed, broad skill focus is a unitary construct embodied as a frame of reference to perceiving solely one’s work skills.

Taking the measure development one critical step further, the convergent and discriminant validation work established that broad skill focus exists as a construct distinct from others. As hypothesized, broad skill focus was found to be related to the three selected constructs: tolerance for ambiguity, cognitive flexibility, and protean mindset. Each of these relationships, small to moderate in magnitude but all statistically-significant, supported the notion that these constructs together formed a plausible nomological network while not exhibiting so much overlap that it would suggest broad skill focus is conceptually redundant. For example, tolerance for ambiguity, as a descendent of rigidity (Schultz & Searleman, 2002) but now considered the extent to which ambiguous situations are perceived negatively (Budner, 1962), was expected to be related to broad skill focus. It was posited that tolerance for ambiguity would be partially indicative (or related to) of an individual’s degree of comfort with perceiving job skills as viable in new, unfamiliar (and therefore ambiguous) work contexts. The statistical evidence gathered generally supported this hypothesized relationship, although the magnitude of this relationship, as the smallest of all scale inter-scale correlations, did not align with expectations (it was hypothesized to be stronger). The smaller-than-expected relationship may be explained by looking more closely at the language used in the Tolerance of Ambiguity Scale.
(AT-20; MacDonald, 1970); the subjects of the items vary widely across possible ambiguous scenarios. For example, one item refers to “betting on a long shot versus a probable winner”, one to “vague and impressionistic pictures”, and another to a “clear difference between right and wrong”. While each of these items refers to a unique facet of tolerance of ambiguity, arguably zero items explicitly mention work or job-related ambiguity. While the hypothesized relationship should not necessarily require exclusively work-related items, it is conceivable that 20 items referencing 20 different forms of ambiguity could dilute the relationship between broad skill focus and tolerance of ambiguity in job-related contexts.

Cognitive flexibility was also selected to serve as a second useful construct for the validation of broad skill focus. Cognitive flexibility represents the ability to understand, contemplate, and make decisions about alternatives and options (Martin & Rubin, 1995; Martin & Anderson, 1998). As the nature of work and employer-employee relationships continues to evolve, being comfortable evaluating a range of possible career-related choices will become increasingly critical for individuals in the workforce. Possessing a broad skill focus is also tied to the inclination to perceive a range of opportunities or contexts in which a particular skill may be applied, inspiring the hypothesis of its relationship to cognitive flexibility. In contrast to the BSF-ambiguity relationship, the correlation between BSF and cognitive flexibility was the strongest in magnitude of all correlations calculated during the validation process. Both this magnitude and its statistical significance ultimately established full support for the associated hypotheses.

Finally, protean mindset was selected as a third construct for establishing convergent validity evidence. A strong protean mindset is theorized to steer the focus of a worker’s career growth and development away from the institution and toward the self (Hall, 2004; Briscoe &
Hall, 2005). This self-reflection and empowerment was hypothesized to demonstrate some observable relationship to the introspective and agentic properties of a broad skill focus (e.g., inspiring broader and more generalizable ideas about what constitutes a possible application of one’s own job skills). As with tolerance for ambiguity, the hypotheses about the relationship between protean mindset and broad skill focus received partial support; the relationship was significant and in the predicted direction, but despite being over double the magnitude of the BSF-ambiguity relationship, it did not meet the Cohen (1988) threshold to qualify as a moderate-to-large effect size ($r = .50-.80$). While the correlation was still notable as the second-strongest relationship with BSF ($r = .34$), it is possible that the relationship is slightly weaker than expected due to the emphasis of protean mindset on the broader career trajectory (versus the career skill set).

While these three constructs primarily exhibited the hypothesized relationships to BSF, agreeableness was an additional construct hypothesized to have no relationship to BSF. The agreeableness scale (John, Donahue, & Kentle, 1991), which was included to represent an unrelated (and therefore discriminant) construct, did not quite demonstrate the expected relationship. It turned out that broad skill focus was statistically related the agreeableness scale, albeit rather weakly. There is a possible explanation about why this scale may have exhibited this unexpected relationship. Agreeableness has been characterized as an “interpersonal orientation, ranging from soft-hearted, good-natured, trusting, and gullible at one extreme to cynical, rude, suspicious, and manipulative at the other” (Siebert & Kraimer, 2011). In a review of the literature by Feldman and Ng (2007), the authors point out that although numerous scholars have tested for it in varying ways, very little scholarly work has firmly established a relationship between agreeableness and job mobility or related career concepts.
More distal research, however, has linked agreeableness to career interests and RIASEC interest (Holland, 1997) focused self-efficacy. For example, research has supported positive and significant relationships between agreeableness and social self-efficacy (Nauta, 2004; Rottinghaus, Larson, & Borgen, 2003), as well as agreeableness and enterprising self-efficacy (Rottinghaus et al., 2003). Given earlier explanations of social cognitive career theory, which leans heavily on self-efficacy as a driving force of career decision-making, it is conceivable that agreeableness is related to one’s broad skill focus through specific forms of enhanced self-efficacy (e.g., social and enterprising self-efficacies). In such a case, one’s level of agreeableness (which, alongside other Big Five traits, is generally considered stable for moderate periods of time; Cobb-Clark & Schurer, 2012), may result in the growth or bolstering of job-related self-efficacies in a fashion similar to and probably influencing one’s broad skill focus (hence, the relationship discovered in the data). This extant research, though slightly peripheral to the subject of this study, offers a possible explanation for the unexpected relationship unveiled between broad skill focus and agreeableness.

Following all three phases of this measure development and validation process, the broad skill focus (BSF) measure was considered complete. The measure is intended to offer an additional psychological perspective to career, occupation, and unemployment research: the capture of individual variance in the perspective adopted about the broader value and potential applicability of one’s skill set. Surely, as demonstrated here, it is a useful data point for better understanding a new introspective angle of the job search. As such, it is the intention of the principal investigator to provide other researchers with open access to the BSF measure following the completion of this series of studies (e.g., through platforms like the American Psychological Association’s PsycTests).
The second study was designed to test the assumption that a broad skill focus can be augmented or instilled in individuals if they are prompted to contemplate their job-related skill set in a more generalizable way. To achieve this, the Broad Skills Awareness Training (BSAT) was developed to facilitate learning and encourage reflection about participants’ existing skill sets and their potential applicability outside of traditional contexts (i.e., how and where the skills were learned). It was ultimately theorized, based on the principles posited by social cognitive career theory (SCCT), that if the intervention were to successfully increase the level of broad skill focus in a participant, it would also result in greater positive feeling of job-related hopefulness (or ‘employment expectancy’).

The statistical evidence gathered strongly supported the efficacy of the BSAT for increasing levels of both broad skill focus and employment expectancy. On average, broad skill focus scale scores increased between 5% and 12% following completion of the BSAT, depending on a participants’ baseline levels of BSF. Further, participants’ self-reported expectancy of securing satisfactory employment within three months increased 13% following completion of the BSAT. These results appear to indicate that the BSAT intervention is, in fact, effective at expanding an individual’s palette of perceived opportunity given their current set of skills. This should not be surprising given the established tenets of SCCT; as cited previously, the theory suggests that when they make decisions about future career-related pursuits, job seekers are likely to turn to introspective processes, implicitly drawing on their various forms of self-efficacy as they relate to job tasks and activities. If these forms of self-efficacy are largely founded by increased exposure and mere familiarity (Lent et al., 1994), then a training such as the BSAT, which focuses on encouraging more expansive thinking about job skill applicability,
should operate to increase the sense of familiarity about these “nontraditional” occupational prospects.

The BSAT achieved this in part by introducing to job seekers the concept of a skill network (Knudsen, 2014), which presents a set of skills and their traditional associated occupation/application context, as a part of a larger “web” or network of possible applications of that skill (a sample visual can be seen in the screenshot in Figure 6). If a job seeker feels he or she is capable of leveraging a particular skill in one context, and they are introduced to a multitude of additional contexts in which the same skill can be applied, this should (and appears to have successfully) expand his or her range of possibility. Thus, the BSAT attempts to dial up a participant’s focus on skills to a vaster and more comprehensive level of competence. As outlined previously, SCCT would suggest this is occurring because the BSAT and visual skill networks are increasing the salience and familiarity of one’s broad skills (which are typically contemplated more narrowly), and this new perspective bolsters and enlarges one’s range of self-efficacy. Given the results of this study, the BSAT appears to join a body of literature showing fairly robustly that various forms of self-efficacy can be enhanced in this manner in variety of arenas like education (Jackson, 2002), athletics (Feltz, Landers, & Raeder, 1979), and even the workplace (Parker, 1998).

Further, though secondary to broad skill focus as an outcome of interest, employment expectancy is arguably of exceptional importance in this study given the possible mental health implications of low expectancy. A meta-analysis of 318 studies conducted by Paul and Moser (2009) established that the relationship between unemployment and mental distress is of a greatly concerning magnitude ($d = .51$). Further, the longitudinal studies included in the meta-analysis confirmed that a meaningful portion of said distress is tied to the experience of
unemployment. This highlights the criticality of identifying means of (1) reducing unemployment, and (2) reducing the distress caused by the experience of unemployment. The meta-analysis went on to support interventions targeted at unemployed people, finding that they were moderately effective \((d = -0.35)\) at reducing unemployment-related distress. Given the evidence gathered in this study, there appears to be potential for the BSAT to join the ranks of such interventions through its meaningful enhancement of employment expectancy. It is conceivable that by increasing employment expectancy, the resulting hopefulness about possible opportunities for future work could reduce an individual’s distress (highlighting a potential opportunity for future research).

While the BSAT may hold possible promise for decreasing unemployment-related distress, the true objective (and practical application) of the intervention in the context of these studies was to test its efficacy for reducing actual unemployment. The third and final study served as a longitudinal assessment of this very hypothesis. In the same vein as previous successful career interventions (e.g., Savickas, 1991), the BSAT again (as found in Study 2) proved to be effective at acutely increasing broad skill focus. Further, this increased level of broad skill focus appeared to be persistent even three months after completion of the intervention (with no revisiting of BSAT content). One potential implication here is that once a broad skill focus is learned, it is a sustainable frame of reference about one’s skills. In other words, if an individual can be trained to adopt a skills-based perspective consistent with that of a broad skill focus, it may be relatively natural or fluid for those individuals to re-ignite that thought process when needed again.

In contrary to earlier findings in Study 2, employment expectancy was not impacted by the BSAT in Study 3. This finding calls into question some of the possible benefits assumed at
the conclusion of Study 2, warranting additional research to better understand and parse these inconsistencies. The only known difference in the administration of the BSAT between Study 2 and Study 3 were the participation requirements. In Study 2, participation was not limited only to unemployed individuals. The purpose of the study was to assess the effectiveness of the intervention at universally promoting a broad skills-focused perspective and higher employment expectancy, thus the sample was not limited to those who identified as unemployed. Study 3, however, was limited only to participants who self-reported through Amazon MTurk that they are presently unemployed. As the key difference in the sample, it is possible that it is this characteristic variation that impacted the efficacy of the BSAT for enhancing expectancies. In other words, while initial evidence gathered indicated that the BSAT was effective at enhancing expectancy among a less targeted sample (i.e., likelihood that anyone, employed or not, could find a job they would be satisfied with), it appears the intervention did not improve employment expectancy when a person was already unemployed (i.e., likelihood of going from no job to a satisfying job).

There are a couple of potential reasons that the BSAT could be more effective at increasing expectancy for a broad sample than an unemployed one. To start, it’s possible that individuals who presently have jobs are not experiencing the distress (Paul & Moser, 2009) and multitude of negative well-being outcomes associated with unemployment (McKee-Ryan, Song, Wanberg, & Kinicki, 2005). These outcomes could be damaging to the hopefulness of employment expectancy, and therefore counteract any positive impact of an intervention. If one considers job searching as a skill in and of itself, an employed individual is probably likely to experience a greater level of search-related self-efficacy due to their prior successes in securing employment. Perhaps this, in turn, increases receptivity to new and unconventional ideas like
those presented throughout the BSAT. Unemployed individuals, on the other hand, have been less or altogether unsuccessful in finding work, and may thus experience lower search-related self-efficacy. The result of this may thus be lower receptivity to nontraditional approaches to the job search. Further, it is plausible that presently-employed individuals experience the safety and confidence encouraging them to take risks by adopting less traditional approaches and perspectives about their future job prospects. In contrast, unemployed individuals may feel particularly risk averse, investing their limited time in seemingly proven methods and approaches that are familiar and are not accompanied by a new learning curve.

Although the descriptive evidence gathered suggested that 17% of BSAT completers versus 13% of control completers secured employment during the three-month duration of the study (i.e., the result was directionally aligned with the employment outcome hypothesis), this difference in outcomes did not exhibit statistical significance. Thus, no definitive conclusions can be drawn yet about the ultimate efficacy of the BSAT on employment outcomes.

This outcome warrants a brief discussion of one side of the employment equation not yet discussed: the role of a prospective employer. While job search and choice models grounded in the organizational and psychological sciences (e.g., Schwab et al., 1987) often anchor on affect, behavior, and cognition of individual job searchers, the reality is employment can only be secured if a prospective employer makes the decision to hire. That is, a job seeker can exhibit all of the best and most conscientious behaviors typical of effective job searches, and that person may still fall short of securing employment. Broad skill focus, as a cognitive construct, is highly individual in nature; the premise underlying the efforts to improve thinking about broad skills is that it expands internal understanding and openness to new and sometimes unexpected opportunities based on one’s skill set. However, in order for a higher broad skill focus to
translate into improved employment outcomes, employers must also exhibit an openness and receptivity to job applicants who may not offer a history of work identical or intuitively connected to the job being applied. While job seekers may be able to explain the broader relevance of their work history in their first conversation with an organization, the first touchpoint with an organization is rarely a conversation.

Traditionally, an organization (or its recruiters, more specifically) will conduct a cursory screen of job candidates’ resumes. During this screen, recruiters primarily reference factual information presented via the resume and make decisions about whether or not the candidate is suitable for the role (Cole, Feild, Giles, & Harris, 2009). It is presumably during this screen when the resume and application of an applicant contemplating broad career options may be deemed a poor fit for the role. Further, various biases are widely known to occur during this phase of job candidacy, adding an additional obstacle on the employer side. Specifically, there exist decades of research on the biases that can steer decisions about resumes and job applications (McIntyre, Moberg, & Posner, 1980; Neumark, Bank, & Van Nort, 1996; Bertrand & Mullainathan, 2004; Oreopoulos, 2011). In these studies, both gender and ethnicity (often inferred from name or location on the candidate's resume) have been documented as resulting in biased decision-making at the application review phase. There also exists the possibility that organizations are more comfortable taking “risks” on specific groups of people, despite not having proven effective at generalizing their job skills. In light of these points, it must be considered that adopting a broad skill focus may be necessary but is not sufficient for securing alternative employment.

There are several ways that the employer conundrum can be minimized. The first is organizational education: to reap the benefits of broader thinking about work skills,
organizations will need to be educated or encouraged to consider the potential value of considering job seekers from outside of the traditional career paths they’re used to seeing in their talent pipeline. Much popular press literature has considered the value of looking outside of industry for skills, ideas, and innovation (e.g., Heller, 2017, Gallo, 2017), but the academic literature (particularly in industrial-organizational psychology) does not seem to have done much exploration of this idea. Independent of the gap in academic work, it would be critical to educate organizations about the potential value of open-mindedness about the capabilities of unconventional job seekers. This could perhaps be achieved by educating employers about the rationale behind skill generalizability, as well as drawing on any concrete examples or anecdotes of success recruiting job candidates in this manner. A second possible approach to improve employment outcomes, and one within the control of job seekers, would be to encourage their use of free-form or qualitative mediums like cover letters to explain the reasoning and justification behind their interest in the role. Additionally, the pursuit of jobs through personal or interactive means like networking would allow for forums in which a job seeker could proactively explain or prove their worthiness and value as a prospective employee, pre-empting any organizational concerns associated with their lack of relevant role-specific experience. Finally, unintended bias occurring during the resume screen process can be reduced by implementing “blind” reviews of resumes that have been stripped of any information that could potentially point to identifying characteristics like gender and ethnicity. This method has produced documented success in reducing adverse outcomes for historically under-selected groups (Goldin & Rouse, 2000). These strategies are illustrations of potential ways that improved employment impact of a high broad skill focus can be realized.
Despite the uncertain results regarding longitudinal employment impact, they seem to change when accounting for the role of career adaptability in this process. Earlier it was cited that those low in career adaptability should be less likely to identify opportunities to practice future-focused strategies or leverage new job-seeking skills, largely because they do not invest as much attention in anticipating future scenarios. As a result, it was hypothesized that those high in career adaptability would be more receptive to the teachings of the BSAT, and thus would reap greater positive outcomes resulting from completion of the intervention. Interestingly, study results resoundingly supported just the opposite: individuals lower in career adaptability experience greater, and statistically significant gains in employment outcomes as a result of the BSAT.

A simple slopes analysis (Figure 8) drilled down into this relationship a bit further. Specifically, among those high in career adaptability (defined as one standard deviation above the mean), 40-45% of control participants secured employment versus 30-35% of those completing the BSAT. This specific difference did not exhibit statistical significance. In contrast, among those low in career adaptability (defined as one standard deviation below the mean), less than 10% of control participants secured employment versus 40-45% of BSAT participants. This particular difference was supported by compelling statistical significance. What these findings appear to suggest is that the BSAT seems to close the gap in employment outcomes between those with low and high career adaptability. While this insight opposes the initial hypothesis, it is arguably a reality that highlights a key benefit of the BSAT mentioned in earlier discussion: it may help to remedy some of the employment gaps experienced by those who are low in career adaptability. Simply put, this preliminary evidence seems to suggest that the BSAT intervention “levels the playing field” for job seekers spanning the spectrum of career adaptability.
While these results run counter to the theoretical arguments outlined in justification of the associated hypothesis (Hypothesis 9), in the earlier discussion it was suggested perhaps those high in career adaptability already possess characteristics that make them more successful in the job search. For this group, the lack of meaningful difference in employment between experimental conditions (substantiated by a smaller difference between lines/conditions in the high-adaptability group than conditions in the low adaptability, see Figure 8) supports the notion that they exhibit higher and more consistent rates of employment success. Some published research has supported this idea, finding that career adaptability is a proxy for an individual’s mental readiness to engage in different job-search strategies (Koen, Van Vianen, Zikic, & Nauta, 2010). The primary implication of this work for the present study is that individuals high in career adaptability may already be engaging in several alternative approaches to the job search. Thus, these individuals may experience diminishing returns of adding one more “alternative” approach to their job search toolkit. Those low in career adaptability, however, likely have a less robust set of tools and strategies for the job search, as they are not inclined to pursue or explore these alternative strategies independently. The BSAT, however, serves to introduce them to an alternative job search paradigm. As one of fewer (or perhaps even their first) alternative perspectives in their job search “playbook”, it is believable that there is greater room for BSAT impact on their job search outcomes. This is one viable and modestly-supported explanation of this counter-hypothesized effect.

One final potential explanation of the differential impact of the BSAT on actual outcomes is grounded in the tenets of motivation. Simply, job seekers may vary in their types and level of motivation to secure employment. While all participants in Study 3 were unemployed at their time of BSAT completion, the motivation of these individuals may be impacted by important
characteristics of their unemployment stretch. For example, how long the individual has been unemployed, how instrumental his or her income is in supporting oneself or one’s dependents, and how much value an individual puts into holding a job are three factors which may result in differing levels of motivation to secure employment. In fact, extant motivation research on job seekers has supported the notion that the value unemployed people attach to having a job was a positive predictor of past job search behavior (Vansteenkiste, Lens, Witte, & Feather, 2005). The same study posited that individuals who reported greater optimism about finding employment actually demonstrated fewer job search behaviors, perhaps a result of overconfidence. A meta-analysis by Kanfer, Wanberg, and Kantrowitz (2001) found that both financial need and commitment to employment were significantly related to job search behavior ($r = .21$ and $.29$, respectively). Interestingly, financial need was found to have a significant negative relationship with subsequent employment status ($r = -.11$) while employment commitment exhibited a positive relationship ($r = .19$) with it. Optimism about finding employment was found not to have a significant relationship with job search behavior, which is counter to later findings by Vansteenkiste et al. (2005). These relationships clearly illustrate that such variables may play a meaningful role throughout the process of the job search.

**Limitations**

While this series of studies produced several useful insights and learnings in the form of both supported and unsupported hypotheses, the studies were not without limitations. To start, a number of the samples collected throughout the studies were gathered using Amazon’s Mechanical Turk (MTurk). While many researchers now consider MTurk to be a viable and credible research platform, it remains enough a part of the methodology conversation happening today that it warrants mention here. While scholars have debated the benefits and drawbacks of
MTurk as a sample collection tool, research has found that such samples are generally more ethnically diverse and have more work experience than traditional research samples (Behrand, Sharek, Meade, & Wiebe, 2011). The MTurk platform also offers a convenient and dependable way to manage the follow-up survey process while maintaining the Amazon-mandated confidentiality of participants’ contact information. Further, sample reliabilities tend to be greater in crowdsourced samples (Behrand et al., 2011) relative to commonly-used sample sources like undergraduate student populations. A large proportion of regular MTurk users are also engaged in the service because they are either unemployed or underemployed (Shapiro, Chandler, & Mueller, 2013). Since these precise populations were the target sample for this study, it was determined that these studies constituted an appropriate application of MTurk for collecting sample data.

With regard to the “increased diversity” of MTurk samples suggested by previous literature, the present studies were found to provide mixed support for this. In both Study 2 and Study 3, relative to representation in the national workforce (Bureau of Labor Statistics, 2016), there was accurate representation of White and African-American participants, but under-representation of Hispanic participants and over-representation of Asian participants. Precisely how these race/ethnicity distributions would compare to alternative sample approaches is unknown (since no alternative approaches were leveraged). The one other sample available for comparison is the undergraduate sample collected in Phase 1 of Study 1. In this sample, Asians were severely over-represented and all other major group under-represented (ranging from slightly to largely under-represented). With this in mind, the MTurk samples were actually more representative than the known alternative (available undergraduate population).
Another possible limitation of the study is the self-guided nature of the Broad Skills Awareness Training (BSAT). Since it was designed as an online-only training, users guide themselves through the training and knowledge/attention checks throughout. While e-learning and online training is becomingly increasingly common (Welsh, Wanberg, Brown, & Simmering, 2003), the absence of an instructor means one fewer resource for participants to ask questions and gain clarity about training content. Naturally, if a participant has an unanswered question that is critical to processing and internalizing the training material, the impact of the intervention may be reduced. In the case of the BSAT, the content and concept of broad skill focus may be entirely unfamiliar to some job seekers (especially those low in career adaptability), so ensuring understanding of the material is essential. While certain measures were put in place (e.g., attention checks, periodic knowledge tests, etc.) to test for or eliminate confusion, there is little guarantee in a fully-digital context that participants did not have lingering questions about the concepts being taught. This could be remedied in a non-research context by providing a point of contact as a resource for participants, and by eliminating the time constraints required for this research study (which ranged from 30-45 minutes to keep the time commitment from participants reasonable and to control research costs).

In addition, in the absence of the career adaptability interaction effect, the test of the pure main effect between experimental condition (BSAT vs control exercise) and the employment check was not statistically significant (as per a chi-square test). However, the count data was trending in the hypothesized direction. Thus, the sample size of the follow-up may have been a limiting factor in the assessment of this particular relationship, which happens to be among the most important relationships in the study. Given the attrition rate of 28% between the initial study and follow-up study, it could be helpful to collect additional data using the same method to
either further solidify the absence of an independent main effect here, or to see if with additional data a meaningful relationship between BSAT participation and employment outcomes is realized.

Another possible limitation is the relative transparency of the intervention and its objectives. Throughout the intervention, it is made clear through the content and exercises that the intention of the program is to broaden one’s thinking about the application of extant skill sets. In psychological research, promoting such clarity about the purpose of an experiment could conceivably elicit demand characteristics (i.e., participants know how the researcher would like them to respond to yield desired results). Following completion of the intervention, the BSF measure is administered to measure this expanded understanding of one’s skills, and employment expectancy was measured as a secondary related outcome.

In reviewing the results of Study 3, it appears that we might possibly have seen such demand characteristics, but primarily for employment expectancy and not broad skill focus. Prior to completion of any experimental/control condition, participants in each group did not significantly differ on levels of broad skill focus nor employment expectancy. Despite both conditions being somewhat obviously about increasing optimism and understanding of career possibilities and choices, only participants completing the BSAT exhibited significantly higher levels of BSF than control participants (as hypothesized). In the instance that these participants were responding to the BSF measure with demand characteristics, it is likely both groups would have seen meaningful elevation of broad skill focus in unison. The control exercise (career reflection and decision-making), while equally transparent about its goals, did not yield broader and more optimistic perspectives according to the BSF measure.
In contrast, both experimental and control groups saw a very similar uptick in employment expectancy following participation, such that there still remained no significant difference between BSAT completers and control completers following conclusion of the exercise (unlike with broad skill focus). These findings may reflect true increases in expectancy among all participants, or they may be the product of demand characteristics, such that participants feel compelled to indicate they have greater hopefulness about finding gainful employment (a perceived objective of the training they have just completed). Reduction or elimination of demand characteristics concerns can be achieved through thoughtful methodological design, a necessity for future research in this area.

As an additional limitation, it should be noted that although the theoretical foundation of this work was grounded in SCCT and self-efficacy, the construct of self-efficacy was never measured directly. This absence of measurement was a challenge resulting from the nature of the BSF construct, as well as the research design. Inherent in adopting a broader skill focus is the increase of one’s self-efficacy in new domains, or for new and uncharted applications of one’s skills. Thus, a pre-post design to monitor self-efficacy would have reduced utility, primarily because the subject or domain of the self-efficacy has changed or expanded. As self-efficacy is widely considered a task- or domain-specific construct (Lent et al., 1994), it would be exceptionally difficult to take multiple self-efficacy measurements and preserve confidence in their relative measurement equivalence. In fact, if accurate, the suspected impact of BSF on self-efficacy would mean that the measurements would expectedly (and preferably) be nonequivalent. Given these conceptual and measurement challenges, self-efficacy was used merely as a theoretical underpinning for the proposed hypotheses throughout these studies.
Finally, there is more than one possible source of unemployed research participants: unemployment careers and online (as used in these studies) are other two possible sources. Any systematic differences in characteristics of the various possible sources are unknown. For example, if it was found that samples from brick-and-mortar unemployment counseling centers are systematically older and less tech-savvy than sample from online sources, this may be relevant information for understanding the universal impact of the BSAT and a broad skill focus on employment success. As this series of studies leveraged only MTurk-sourced unemployment samples, this gap in representation of the full unemployed force remains unknown. The same research would have to be replicated with varied or blended unemployed samples to ensure that the effects uncovered in the present study apply universally to all unemployed samples, not just “young” or “tech-savvy” populations (to draw on the earlier illustrative example).

**Future Research**

These studies inspire a wide variety of new and related research questions about the construct of broad skill focus (and the efficacy of the BSAT). To start, much of the theoretical foundation cited to explain the benefits of the BSAT on broad skill focus is based on an assumption of enhanced self-efficacies. In other words, the BSAT is designed to promote expanded thinking about the utility of job skills across industries and in job roles that they were not originally learned for or in. At its essence, this assumption is grounded in the thought that by expanding one’s thinking about the applications of skills, self-efficacy in each of these skill areas is increased, which in turn inspires an expanded job search. However, as the focus of these studies was to validate the BSF construct and the BSAT training, self-efficacy was not a focal construct. This leaves a gap that should be filled by future research. It is conceivable that work-related self-efficacy could operate as a moderator or a mediator of the relationship between the
BSAT and actual employment outcomes. Such research would help clarify the precise mechanism/s through which the BSAT (and resulting change to broad skill focus) acts on employment outcomes. As self-efficacy is an instrumental construct in the larger supporting theory of SCCT (Lent et al., 1994), the study of its role is both a natural and essential next step in research related to broad skill focus and further validation of the BSAT.

Another opportunity to expand upon this work is to measure and explore the suspected role of self-efficacy in the relationship between BSF and outcomes of interest. Specifically, the theory detailed throughout this paper positions self-efficacy as the mediating mechanism for these relationships (i.e., increased broad skill focus results in a greater variety and level of self-efficacy, resulting in improved employment expectancy and outcomes). For reasons outlined previously, self-efficacy was not explicitly measured in these studies despite being foundational to the theory supporting their hypotheses. Future researchers should explore possible ways to overcome this measurement challenge while accounting for the fact that the self-efficacy target may be fluid and changing as one adopts a broad skill focus. While doing so, these researchers should take care not to the dilute the task- and domain- specific nature of the self-efficacy construct. Rather, the researchers should aim to incorporate its measurement in a way that accounts for new and changing domains of self-efficacy resulting from the change in BSF, yet still proves useful in revealing the mechanism between BSF and outcomes of interest.

Additionally, agreeableness exhibited an interesting and unexpected relationship with the construct of broad skill focus. Put simply, it appeared that agreeableness unexpectedly exists fairly closely within the nomological network of broad skill focus, so its position and role relative to other constructs in the BSF network should be clarified. While some theory was outlined to offer a possible explanation for the relationship, further study to verify the nature of
the link is necessary; it would certainly not be the first time personality was linked to the job search (e.g., Boudreau, Boswell, Judge, & Bretz, 2001, Kanfer et al., 2001). Some possible questions to ask may include: which construct drives which? What is the role or impact of each within a job search context (versus a non-job search context)? Are they both valuable predictors of job outcomes? Given the positive direction of the relationship, it might be hypothesized that those who are high in agreeableness are also open and easy to inspire to consider alternative or nontraditional approaches to securing employment.

Finally, in Study 3 it was determined that, unlike in Study 2, the BSAT did not impact employment expectancy of unemployed individuals above and beyond an alternative career exercise. Given the more promising results produced by Study 2, it seems possible that the BSAT is an effective means of increasing employment expectancy for certain populations more than others. Future research should aim to further parse the relationship between the BSAT and employment expectancy to further understand for whom this intervention is beneficial (in terms of enhanced expectancy) and for whom it isn’t. This is important for two reasons: (1) it could allow for more informed targeting of the intervention to those that it greatly impacts, and (2) the intervention could be adapted for different audiences to ensure optimal impact for all.

Additionally, the role of motivation should be accounted for in future research that aims to delineate the relationship between the intervention and employment-related outcomes. If the impact of the intervention varies by factors such as one’s financial need and the personal value placed on employment, this suggests that there is room for greater clarity about the optimal audience for such an intervention. Further, considering that only the perspectives and experiences of presently-unemployed people were included in the third study, it is also important to gain greater clarity about the motivational forces at work for those who are currently
employed but still seeking a new job. The BSAT intervention, and potentially the BSF construct itself, may produce different results and behaviors when considered more deeply in motivational contexts not involving unemployed individuals. Specifically, motivation theories like expectancy-value (Wigfield, Tonks, & Klauda, 2009) and self-determination theory (Deci & Ryan, 2011) may provide a strong foundation on which to study the interplay between motivation, BSF, and the BSAT in job seeking context. This line of future research actually offers arguably some of the greatest theoretical and practical promise with regard to the BSAT.

**Practical Implications**

One can rather readily understand the practical implications of the BSAT and broad skill focus, as both are very applied topics in nature. If the BSAT could be refined, iterated, and studied in a manner that maximizes its efficacy at promoting expansive thinking about jobs, the training has the potential to inform the career trajectories of many people. By no means should any career decision or change be made on the basis of a single thought exercise, but the BSAT provides a unique supplementary lens of consideration in job-related decision-making. If the BSAT were to be implemented or recommended/distributed as a tool at unemployment centers or as a part of other career counseling efforts, its potential reach could grow to be pretty wide, and meaningful impact on careers could be made (assuming promising BSAT outcomes are replicated and supported).

Further, the BSAT is an intervention designed specifically for administration to prospective or current job seekers, but not exclusively unemployed populations. While the present studies spoke largely of the utility and potential gain for unemployed individuals following completion of the BSAT, opening the training up beyond unemployed individuals would enable more comprehensive research about effective applications of it. Unemployed
populations served as an appropriate initial sample for this research, as they are considered vulnerable and in great need (and thus may have the most to gain from participation in the training). However, it is easy to consider how the same or a similar approach to training might be of great benefit to populations of students. In such an application, the intervention might be aimed at conditioning undergraduate or graduate students to contemplate their developing skill sets in a broader, more generalizable way. Career centers at colleges might leverage the training just like unemployment centers, with an emphasis on helping students maintain an open mind about career exploration.

Finally, while some specific and statistically-significant impacts resulted from participation in the BSAT, the practical significance of these effects is yet undetermined. For example, in Study 2, from pre-intervention to post-intervention participants’ BSF increased 5-12% depending on their opportunity to increase (i.e., restriction of range). Further, a 13% gain in employment expectancy was realized following the completion of the BSAT. While these changes were statistically-significant, what these numbers mean in a real-world career and job search context is unknown. This implication is alluded to in earlier discussion of the existence of disproportionate distress among unemployed individuals; if the positive measured outcomes of the BSAT can be tied to real experiences, the field will begin to understand the true influence of such interventions on peoples’ lives.

Conclusion

In the opening of this paper, it was stated that job searches are complex self-regulatory processes (Kanfer, Wanberg, & Kantrowitz, 2001; Horvath, 2015). Further, a model of the job search process posited by Schwab et al. (1987) was argued to be partly incomplete, in that it focuses on behavioral aspects of the job seeker with insufficient emphasis on the cognitive
elements of the experience. At the conclusion of this series of studies, there appears to be some empirical promise of the utility of the broad skill focus construct for studying one key cognitive part of the job search process. Further, given this early evidence of the advantages of a greater broad skill focus, the BSAT intervention served as a litmus test for the viability of manipulating upward a broad skill focus among people. Despite showing promise, some of the results were mixed or inconclusive (e.g., lack of definitive evidence about the efficacy of the BSAT for improving actual employment outcomes). These uncertainties leave to future research the continued opportunity to improve clarity about the nature of this new career construct, and how it integrates into the nomological networks of extant career constructs.

These studies serve as but a mere introduction to a new lens through which to study the job search process and job seeker experience. With additional focus on how levels of this construct impact this experience and how the BSAT does (or does not) impact broad skill focus, the organizational sciences can turn their attention to specific populations in need (e.g., unemployed workers) who have the greatest potential to gain from adopting new and unconventional job search strategies.
Figure 1

*Schwab et al. (1987) model of job search and choice.*
Figure 2

_Scree plot of explained variance for Study 1 confirmatory factor analysis_
Job Skills

Job skills can be defined as talents and expertise, ranging in specificity, which help a person succeed at achieving a job-related task or goal. Examples of the range and variety of job skills including public speaking, research design, and Microsoft Excel skills. Read those skills again. Did you notice a range of specificity in these examples? Which skill was the most specific (or "narrow")? Which was the most general (or "broad")?

If you selected Microsoft Excel as the narrow skill, you're right! Microsoft Excel is a specific software program commonly used for managing data. While many jobs use Excel, there are many other software options that serve the same or a similar purpose. To say that you "have Microsoft Excel skills" is to point to a single tool in a larger set of data management tools and state your proficiency for that specific one. What you're saying (but perhaps should be) is that you have experience in data management, which is a broader version of what you really mean when you say "I have Microsoft Excel skills."

If you selected public speaking as the broadest skill, you're right! Public speaking skills extend beyond any specific type of job and often even touch our personal lives as well. There are many varieties of public speech and there can be different reasons you may end up speaking publicly. When you state you're "experienced in public speaking," you're focusing on a broader version of smaller and more specific experiences you may have had (e.g., speaking at conferences, writing speeches).

As you can see, the ways in which you and others can think about job skills may vary in specificity.

**How do you think about your job skills?**

- **Narrow Thinking**
  - Microsoft Excel
  - Cold-calling
  - Drafting press releases

- **Broad Thinking**
  - Numerical reasoning
  - Persuasion
  - Written and verbal communication

Figure 3

*Sample screenshot from the Education module of the Broad Skills Awareness Training (BSAT).*
Figure 4

*Sample screenshot from the Elaboration module of the Broad Skills Awareness Training (BSAT).*
Figure 5

*Screen capture of the online tool in the Equipment module of the Broad Skills Awareness Training: Searching for an occupation.*
Figure 6

_Screen capture of the online tool in the Equipment module of the Broad Skills Awareness Training: Viewing an occupation’s skill network._
Figure 7

Screen capture of the online tool in the Equipment module of the Broad Skills Awareness Training: Exploring occupational profiles of related and alternative jobs.
Figure 8

*Barplot of simple slopes analysis showing interaction between condition and career adaptability.*
Figure 9

*Multiplot of response histograms for all remaining BSF measure items*
### Table 1

**Study 1 Phase 1 Item Relevance Ratings**

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe most job skills can be valuable in other roles *</td>
<td>4.34</td>
</tr>
<tr>
<td>My skill set can be useful across a wide number of industries *</td>
<td>4.19</td>
</tr>
<tr>
<td>If my industry disappeared, I believe my skills would suit me in another one *</td>
<td>4.13</td>
</tr>
<tr>
<td>I feel that most job skills can be applied across many jobs *</td>
<td>4.00</td>
</tr>
<tr>
<td>I'm able to apply my skills in many different ways to work *</td>
<td>3.97</td>
</tr>
<tr>
<td>I believe that my job skills are transferable across unrelated jobs and industries *</td>
<td>3.94</td>
</tr>
<tr>
<td>I believe that my work skills could generalize to other types of jobs *</td>
<td>3.94</td>
</tr>
<tr>
<td>Job skills will never become obsolete if you're creative about how you use them *</td>
<td>3.91</td>
</tr>
<tr>
<td>I believe my work skills can be useful in jobs I've never tried before *</td>
<td>3.91</td>
</tr>
<tr>
<td>Learning to solve problems in one job could help solve problems in an unrelated job *</td>
<td>3.91</td>
</tr>
<tr>
<td>I could go into many different lines of work with the skill set I have *</td>
<td>3.91</td>
</tr>
<tr>
<td>With some thought, I could figure out how to apply my skills in a new, unrelated job *</td>
<td>3.75</td>
</tr>
<tr>
<td>It could be helpful to my career to think creatively about job skills *</td>
<td>3.69</td>
</tr>
<tr>
<td>I can understand other jobs in related fields by thinking about my skills *</td>
<td>3.66</td>
</tr>
<tr>
<td>A lack of creative thinking about one's skill set limits work opportunities more than the skill set itself *</td>
<td>3.63</td>
</tr>
<tr>
<td>I understand which broader qualities of mine make me good at the specific work I do *</td>
<td>3.34</td>
</tr>
<tr>
<td>I wonder if my job experience could be applied to a different industry *</td>
<td>3.19</td>
</tr>
<tr>
<td>My job skills are too highly specialized to be useful in other jobs *</td>
<td>3.16</td>
</tr>
<tr>
<td>General skills (e.g., effective communication) are not as useful in job-seeking as specific skills (e.g., cold-calling) *</td>
<td>3.13</td>
</tr>
<tr>
<td>I don't think very broadly about other jobs in which I could apply my skills *</td>
<td>3.09</td>
</tr>
<tr>
<td>My skills do not fit well in many other lines of work *</td>
<td>3.09</td>
</tr>
<tr>
<td>If I were put into a completely different job, my current skill set would not help me at all *</td>
<td>3.06</td>
</tr>
<tr>
<td>My skills are specific to the work I do *</td>
<td>3.03</td>
</tr>
<tr>
<td>Skill sets are often relevant only for a few specific jobs *</td>
<td>3.03</td>
</tr>
<tr>
<td>I believe I could 'sell' my skills to hiring managers if I tried to make a career change</td>
<td>2.97</td>
</tr>
<tr>
<td>My education provided me skills that can be applied to many lines of work</td>
<td>2.97</td>
</tr>
<tr>
<td>I feel that I could still thrive if I were placed into an entirely different job</td>
<td>2.97</td>
</tr>
<tr>
<td>I enjoy thinking about different jobs that I might be good at</td>
<td>2.97</td>
</tr>
<tr>
<td>When learning new tasks, I think about how they relate to my current skills</td>
<td>2.94</td>
</tr>
<tr>
<td>I feel most comfortable applying my training in the few ways I know best</td>
<td>2.88</td>
</tr>
<tr>
<td>When necessary, I can think 'outside the box' about jobs I could pursue</td>
<td>2.87</td>
</tr>
<tr>
<td>When interviewing for jobs, I focus on my specific skills (e.g., cold calling) rather than my broader competencies (e.g., effective communication)</td>
<td>2.72</td>
</tr>
<tr>
<td>My skill set is tailored to my occupation</td>
<td>2.59</td>
</tr>
</tbody>
</table>
Without further training, I could not work in an industry different from my current one 2.41
Given my current skill set, I would be doomed if I had to find a different line of work 2.38
I fear that my skills are becoming obsolete 2.34
I rarely consider what other types of work I might be qualified for 2.25
I'm not confident that I'm well equipped to try a new line of work 2.25
I feel limited in the number of jobs that I qualify for 2.25
I don't spend much time thinking about other work I might be qualified work 2.13
I'm only able to apply my skills in a limited number of ways 2.00
My education only prepared me for a specific line of work 1.97
I sometimes feel pigeon-holed in my line of work 1.94
I don't understand how some people can switch to a completely different job and do well at it 1.91
A lot of my skills would be useless outside of my line of work 1.91
I don't think I have the skills for any other job 1.84
If someone is a weak writer, they're probably a bad communicator 1.84
My job skills have made it difficult to find work 1.69
I don't make an effort to learn new skills that are not clearly related to my job 1.59
* item retained for relevance
### Table 2

*Study 1, Phase 2: Broad Skill Focus Item Correlations*

<table>
<thead>
<tr>
<th></th>
<th>BSF1_R</th>
<th>BSF2</th>
<th>BSF3</th>
<th>BSF4</th>
<th>BSF5</th>
<th>BSF6</th>
<th>BSF7</th>
<th>BSF8</th>
<th>BSF9</th>
<th>BSF10</th>
<th>BSF11</th>
<th>BSF12</th>
<th>BSF13</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BSF1_R</strong></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSF2</strong></td>
<td>-0.07</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSF3</strong></td>
<td>0.07</td>
<td>0.60</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSF4</strong></td>
<td>-0.02</td>
<td>0.57</td>
<td>0.64</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSF5</strong></td>
<td>-0.02</td>
<td>0.65</td>
<td>0.53</td>
<td>0.56</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSF6</strong></td>
<td>0.17</td>
<td>0.57</td>
<td>0.67</td>
<td>0.58</td>
<td>0.63</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSF7</strong></td>
<td>0.02</td>
<td>0.52</td>
<td>0.55</td>
<td>0.54</td>
<td>0.61</td>
<td>0.64</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSF8</strong></td>
<td>0.10</td>
<td>0.50</td>
<td>0.64</td>
<td>0.57</td>
<td>0.54</td>
<td>0.72</td>
<td>0.64</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSF9</strong></td>
<td>0.08</td>
<td>0.43</td>
<td>0.48</td>
<td>0.43</td>
<td>0.53</td>
<td>0.50</td>
<td>0.60</td>
<td>0.57</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSF10</strong></td>
<td>-0.10</td>
<td>0.44</td>
<td>0.35</td>
<td>0.41</td>
<td>0.49</td>
<td>0.41</td>
<td>0.46</td>
<td>0.32</td>
<td>0.41</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSF11</strong></td>
<td>0.04</td>
<td>0.44</td>
<td>0.65</td>
<td>0.54</td>
<td>0.53</td>
<td>0.65</td>
<td>0.56</td>
<td>0.58</td>
<td>0.48</td>
<td>0.45</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSF12</strong></td>
<td>0.10</td>
<td>0.50</td>
<td>0.52</td>
<td>0.51</td>
<td>0.50</td>
<td>0.56</td>
<td>0.57</td>
<td>0.51</td>
<td>0.58</td>
<td>0.50</td>
<td>0.59</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>BSF13</strong></td>
<td>0.10</td>
<td>0.47</td>
<td>0.37</td>
<td>0.50</td>
<td>0.51</td>
<td>0.53</td>
<td>0.57</td>
<td>0.46</td>
<td>0.49</td>
<td>0.44</td>
<td>0.48</td>
<td>0.48</td>
<td>0.60</td>
</tr>
<tr>
<td><strong>BSF14_R</strong></td>
<td>0.32</td>
<td>0.23</td>
<td>0.21</td>
<td>0.25</td>
<td>0.20</td>
<td>0.32</td>
<td>0.18</td>
<td>0.24</td>
<td>0.19</td>
<td>0.15</td>
<td>0.13</td>
<td>0.24</td>
<td>0.32</td>
</tr>
<tr>
<td><strong>BSF15_R</strong></td>
<td>0.15</td>
<td>0.25</td>
<td>0.31</td>
<td>0.29</td>
<td>0.22</td>
<td>0.29</td>
<td>0.27</td>
<td>0.27</td>
<td>0.21</td>
<td>0.25</td>
<td>0.31</td>
<td>0.28</td>
<td>0.29</td>
</tr>
<tr>
<td><strong>BSF16</strong></td>
<td>-0.02</td>
<td>0.44</td>
<td>0.38</td>
<td>0.39</td>
<td>0.47</td>
<td>0.44</td>
<td>0.42</td>
<td>0.45</td>
<td>0.46</td>
<td>0.47</td>
<td>0.33</td>
<td>0.39</td>
<td>0.39</td>
</tr>
<tr>
<td><strong>BSF17</strong></td>
<td>-0.05</td>
<td>0.47</td>
<td>0.42</td>
<td>0.40</td>
<td>0.43</td>
<td>0.36</td>
<td>0.44</td>
<td>0.42</td>
<td>0.47</td>
<td>0.43</td>
<td>0.39</td>
<td>0.51</td>
<td>0.42</td>
</tr>
<tr>
<td><strong>BSF18_R</strong></td>
<td>0.19</td>
<td>0.27</td>
<td>0.35</td>
<td>0.39</td>
<td>0.29</td>
<td>0.39</td>
<td>0.35</td>
<td>0.40</td>
<td>0.30</td>
<td>0.25</td>
<td>0.39</td>
<td>0.34</td>
<td>0.38</td>
</tr>
<tr>
<td><strong>BSF19</strong></td>
<td>0.01</td>
<td>0.14</td>
<td>0.03</td>
<td>0.07</td>
<td>0.11</td>
<td>0.06</td>
<td>0.11</td>
<td>0.07</td>
<td>0.18</td>
<td>0.21</td>
<td>0.13</td>
<td>0.23</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>BSF20_R</strong></td>
<td>0.10</td>
<td>0.41</td>
<td>0.50</td>
<td>0.47</td>
<td>0.37</td>
<td>0.53</td>
<td>0.45</td>
<td>0.52</td>
<td>0.38</td>
<td>0.30</td>
<td>0.44</td>
<td>0.34</td>
<td>0.34</td>
</tr>
<tr>
<td><strong>BSF21</strong></td>
<td>-0.03</td>
<td>0.43</td>
<td>0.37</td>
<td>0.41</td>
<td>0.37</td>
<td>0.36</td>
<td>0.44</td>
<td>0.30</td>
<td>0.33</td>
<td>0.34</td>
<td>0.34</td>
<td>0.34</td>
<td>0.38</td>
</tr>
<tr>
<td><strong>BSF22</strong></td>
<td>-0.11</td>
<td>0.12</td>
<td>0.08</td>
<td>0.05</td>
<td>0.14</td>
<td>0.07</td>
<td>0.09</td>
<td>0.09</td>
<td>0.13</td>
<td>0.16</td>
<td>0.01</td>
<td>0.11</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>BSF23</strong></td>
<td>0.04</td>
<td>0.51</td>
<td>0.47</td>
<td>0.49</td>
<td>0.46</td>
<td>0.56</td>
<td>0.45</td>
<td>0.46</td>
<td>0.35</td>
<td>0.42</td>
<td>0.50</td>
<td>0.50</td>
<td>0.45</td>
</tr>
<tr>
<td><strong>BSF24_R</strong></td>
<td>0.05</td>
<td>0.20</td>
<td>0.08</td>
<td>0.23</td>
<td>0.20</td>
<td>0.21</td>
<td>0.22</td>
<td>0.26</td>
<td>0.26</td>
<td>0.24</td>
<td>0.10</td>
<td>0.18</td>
<td>0.27</td>
</tr>
<tr>
<td><strong>BSF25_R</strong></td>
<td>0.15</td>
<td>0.32</td>
<td>0.32</td>
<td>0.42</td>
<td>0.42</td>
<td>0.40</td>
<td>0.31</td>
<td>0.38</td>
<td>0.36</td>
<td>0.25</td>
<td>0.35</td>
<td>0.29</td>
<td>0.33</td>
</tr>
<tr>
<td>BSF14_R</td>
<td>BSF15_R</td>
<td>BSF16</td>
<td>BSF17</td>
<td>BSF18_R</td>
<td>BSF19</td>
<td>BSF20_R</td>
<td>BSF21</td>
<td>BSF22</td>
<td>BSF23</td>
<td>BSF24_R</td>
<td>BSF25_R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
<td>-------</td>
<td>-------</td>
<td>---------</td>
<td>-------</td>
<td>---------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>---------</td>
<td>---------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>0.49</td>
<td>-</td>
<td>0.14</td>
<td>0.08</td>
<td>0.41</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00</td>
<td>0.08</td>
<td>0.14</td>
<td>0.30</td>
<td>0.38</td>
<td>0.39</td>
<td>0.06</td>
<td>0.26</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.42</td>
<td>0.42</td>
<td>0.52</td>
<td>0.31</td>
<td>0.36</td>
<td>0.10</td>
<td>0.03</td>
<td>0.05</td>
<td>0.04</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.26</td>
<td>0.26</td>
<td>0.35</td>
<td>0.44</td>
<td>0.45</td>
<td>0.11</td>
<td>0.44</td>
<td>0.44</td>
<td>-0.03</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.38</td>
<td>0.38</td>
<td>0.28</td>
<td>0.21</td>
<td>0.27</td>
<td>0.40</td>
<td>0.11</td>
<td>0.35</td>
<td>0.16</td>
<td>-0.04</td>
<td>0.16</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.41</td>
<td>0.41</td>
<td>0.38</td>
<td>0.30</td>
<td>0.27</td>
<td>0.51</td>
<td>0.01</td>
<td>0.49</td>
<td>0.27</td>
<td>-0.06</td>
<td>0.36</td>
<td>0.32</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3

Goodness-of-fit indices for single-factor broad skill focus model.

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-factor</td>
<td>420.930**</td>
<td>135</td>
<td>.879</td>
<td>.863</td>
<td>.096**</td>
</tr>
<tr>
<td>Two-factor</td>
<td>265.739**</td>
<td>136</td>
<td>.932</td>
<td>.921</td>
<td>.073**</td>
</tr>
</tbody>
</table>

**$p < .01$
Table 4

*Standardized single-factor $R^2$ values for remaining BSF measure items*

<table>
<thead>
<tr>
<th>Item</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSF2</td>
<td>.515</td>
</tr>
<tr>
<td>BSF3</td>
<td>.569</td>
</tr>
<tr>
<td>BSF4</td>
<td>.526</td>
</tr>
<tr>
<td>BSF5</td>
<td>.548</td>
</tr>
<tr>
<td>BSF6</td>
<td>.662</td>
</tr>
<tr>
<td>BSF7</td>
<td>.598</td>
</tr>
<tr>
<td>BSF8</td>
<td>.580</td>
</tr>
<tr>
<td>BSF9</td>
<td>.444</td>
</tr>
<tr>
<td>BSF10</td>
<td>.316</td>
</tr>
<tr>
<td>BSF11</td>
<td>.573</td>
</tr>
<tr>
<td>BSF12</td>
<td>.545</td>
</tr>
<tr>
<td>BSF13</td>
<td>.518</td>
</tr>
<tr>
<td>BSF16</td>
<td>.312</td>
</tr>
<tr>
<td>BSF17</td>
<td>.333</td>
</tr>
<tr>
<td>BSF18</td>
<td>.361</td>
</tr>
<tr>
<td>BSF20</td>
<td>.397</td>
</tr>
<tr>
<td>BSF23</td>
<td>.452</td>
</tr>
<tr>
<td>BSF25</td>
<td>.261</td>
</tr>
</tbody>
</table>
Table 5

*Results of Shapiro-Wilk tests on Study 1, Phase 2 scale scores*

<table>
<thead>
<tr>
<th>Scale</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad skill focus</td>
<td>.948**</td>
</tr>
<tr>
<td>Tolerance for ambiguity</td>
<td>.992</td>
</tr>
<tr>
<td>Cognitive flexibility</td>
<td>.972**</td>
</tr>
<tr>
<td>Protean mindset</td>
<td>.989</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>.947**</td>
</tr>
</tbody>
</table>

**p < .01
Table 6.

Pearson correlation table of validation scale scores.

<table>
<thead>
<tr>
<th></th>
<th>BSF</th>
<th>AMB</th>
<th>COG</th>
<th>PRO</th>
<th>AGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSF</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMB</td>
<td>0.15*</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COG</td>
<td>0.54**</td>
<td>0.22**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRO</td>
<td>0.34**</td>
<td>0.09</td>
<td>0.63**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>AGR</td>
<td>0.26**</td>
<td>0.07</td>
<td>0.51**</td>
<td>0.39**</td>
<td>-</td>
</tr>
</tbody>
</table>

* p < .05, ** p < .01, BSF = Broad skill focus, AMB = Tolerance of ambiguity, COG = Cognitive flexibility, PRO = Protean mindset, AGR = Agreeableness
Table 7.

Mardia tests of multivariate normality.

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mardia skew</td>
<td>61333.53***</td>
</tr>
<tr>
<td>Mardia kurtosis</td>
<td>27.09***</td>
</tr>
</tbody>
</table>

***p < .01
Table 8.

*Goodness-of-fit indices for validation confirmatory factor analyses.*

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four-factor</td>
<td>1736.416***</td>
<td>939</td>
<td>.847</td>
<td>.059***</td>
</tr>
<tr>
<td>Five-factor</td>
<td>3925.788***</td>
<td>2005</td>
<td>.728</td>
<td>.063***</td>
</tr>
</tbody>
</table>

**Two-factor Models**

| BSF ~ TFA       | 1182.220***  | 463 | .764   | .080***|
| BSF ~ CF        | 547.930***   | 251 | .895   | .069***|
| BSF ~ PROT      | 640.449***   | 298 | .886   | .068***|
| BSF ~ AGREE     | 354.690***   | 151 | .918   | .074***|

***$p < .01$; BSF = broad skill focus, TFA = tolerance for ambiguity, CF = cognitive flexibility, PROT = protean mindset, AGREE = agreeableness***
Table 9.

Broad Skill Focus Items, Final Selection

1. My skills are specific to the work I do
2. I believe most job skills can be valuable in other roles*
3. My skill set can be useful across a wide number of industries*
4. If my industry disappeared, I believe my skills would suit me in another one*
5. I feel that most job skills can be applied across many jobs*
6. I believe that my job skills are transferable across unrelated jobs and industries*
7. I'm able to apply my skills in many different ways to work*
8. I believe that my work skills can be useful in jobs I've never tried before*
9. Learning to solve problems in one job could help solve problems in an unrelated job*
10. Job skills will never become obsolete if you're creative about how you use them
11. I could go into many different lines of work with the skill set I have*
12. I believe my work skills can be useful in jobs I've never tried before*
13. With some thought, I could figure out how to apply my skills in a new, unrelated job*
14. My job skills are too highly specialized to be useful in other jobs
15. I don't think very broadly about other jobs in which I could apply my skills
16. It could be helpful to my career to think creatively about job skills
17. I can understand other jobs in related fields by thinking about my skills
18. If I were put into a completely different job, my current skill set would not help me at all (R)
19. A lack of creative thinking about one's skill set limits work opportunities more than the skill set itself
20. My skills do not fit well in many other lines of work (R)
21. I understand which broader qualities of mine make me good at the specific work I do
22. I wonder if my job experience could be applied to a different industry
23. I believe I could "sell" my skills to hiring managers if I tried to make a career change.*
24. General skills (e.g., effective communication) are not as useful in job-seeking as specific skills (e.g., cold-calling)
25. Skill sets are often relevant only for a few specific jobs (R)

*Item retained for final Broad Skill Focus measure
(R) Reverse-scored item
Table 10.

Study 2 Normality Tests, Pre- and Post- Transformation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Transformation Stage</th>
<th>Time Point</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad skill focus</td>
<td>PRE</td>
<td>Pre-exercise</td>
<td>.904**</td>
</tr>
<tr>
<td>Broad skill focus</td>
<td>PRE</td>
<td>Post-exercise</td>
<td>.703**</td>
</tr>
<tr>
<td>Broad skill focus</td>
<td>POST</td>
<td>Pre-exercise</td>
<td>.973*</td>
</tr>
<tr>
<td>Broad skill focus</td>
<td>POST</td>
<td>Post-exercise</td>
<td>.894**</td>
</tr>
<tr>
<td>Employ. Expectancy</td>
<td>PRE</td>
<td>Pre-exercise</td>
<td>.971**</td>
</tr>
<tr>
<td>Employ. Expectancy</td>
<td>PRE</td>
<td>Post-exercise</td>
<td>.933**</td>
</tr>
<tr>
<td>Employ. Expectancy</td>
<td>POST</td>
<td>Pre-exercise</td>
<td>.976**</td>
</tr>
<tr>
<td>Employ. Expectancy</td>
<td>POST</td>
<td>Post-exercise</td>
<td>.939**</td>
</tr>
</tbody>
</table>

* p < .05  
** p < .01
Table 11.

*Study 3 Normality Tests, Pre- and Post- Transformation*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Transformation Stage</th>
<th>Time Point</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad skill focus</td>
<td>PRE</td>
<td>Pre-exercise</td>
<td>.918**</td>
</tr>
<tr>
<td>Broad skill focus</td>
<td>PRE</td>
<td>Post-exercise</td>
<td>.828**</td>
</tr>
<tr>
<td>Broad skill focus</td>
<td>PRE</td>
<td>Follow Up</td>
<td>.916**</td>
</tr>
<tr>
<td>Broad skill focus</td>
<td>POST</td>
<td>Pre-exercise</td>
<td>.952**</td>
</tr>
<tr>
<td>Broad skill focus</td>
<td>POST</td>
<td>Post-exercise</td>
<td>.884**</td>
</tr>
<tr>
<td>Broad skill focus</td>
<td>POST</td>
<td>Follow Up</td>
<td>.950**</td>
</tr>
<tr>
<td>Employ. Expectancy</td>
<td>PRE</td>
<td>Pre-exercise</td>
<td>.954**</td>
</tr>
<tr>
<td>Employ. Expectancy</td>
<td>PRE</td>
<td>Post-exercise</td>
<td>.958**</td>
</tr>
<tr>
<td>Employ. Expectancy</td>
<td>PRE</td>
<td>Follow Up</td>
<td>.883**</td>
</tr>
<tr>
<td>Employ. Expectancy</td>
<td>POST</td>
<td>Pre-exercise</td>
<td>.954**</td>
</tr>
<tr>
<td>Employ. Expectancy</td>
<td>POST</td>
<td>Post-exercise</td>
<td>.956**</td>
</tr>
<tr>
<td>Employ. Expectancy</td>
<td>POST</td>
<td>Follow Up</td>
<td>.883**</td>
</tr>
</tbody>
</table>

* p < .05
** p < .01
Table 12.

*Study 3 t-tests on Three Time Points on Broad Skill Focus*

<table>
<thead>
<tr>
<th>Time point</th>
<th>BSF Mean (SD) of BSAT Condition</th>
<th>BSF Mean (SD) of Control Condition</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-intervention</td>
<td>4.29 (.53)</td>
<td>4.14 (.71)</td>
<td>145.16</td>
<td>-1.4345</td>
</tr>
<tr>
<td>Post-intervention</td>
<td>4.64 (.46)</td>
<td>4.25 (.70)</td>
<td>139.71</td>
<td>-4.0583**</td>
</tr>
<tr>
<td>Follow up</td>
<td>4.49 (.43)</td>
<td>4.13 (.67)</td>
<td>138.27</td>
<td>-3.9241**</td>
</tr>
</tbody>
</table>

**p < .01**
Table 13.

*Study 3 t-tests on Three Time Points on Employment Expectancy*

<table>
<thead>
<tr>
<th>Time point</th>
<th>Mean (SD) of BSAT Condition</th>
<th>Mean (SD) of Control Condition</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-intervention</td>
<td>44.84 (28.43)</td>
<td>46.93 (30.49)</td>
<td>146.77</td>
<td>0.43301</td>
</tr>
<tr>
<td>Post-intervention</td>
<td>56.91 (27.09)</td>
<td>54.00 (29.21)</td>
<td>146.91</td>
<td>-0.63302</td>
</tr>
<tr>
<td>Follow up</td>
<td>28.91 (32.01)</td>
<td>36.15 (30.25)</td>
<td>141.30</td>
<td>1.4147</td>
</tr>
</tbody>
</table>

Note: no *t*-tests exhibited statistical significance.
Table 14.

*Logistic Regression Output, Controlling for Projected Employment Growth*

<table>
<thead>
<tr>
<th>Term</th>
<th>Estimate</th>
<th>SE</th>
<th>z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>-1.15</td>
<td>0.28</td>
<td>-4.16</td>
<td>0.00</td>
</tr>
<tr>
<td>Employment Change</td>
<td>0.01</td>
<td>0.02</td>
<td>0.33</td>
<td>0.74</td>
</tr>
<tr>
<td>condition</td>
<td>0.59</td>
<td>0.36</td>
<td>1.63</td>
<td>0.10</td>
</tr>
</tbody>
</table>
Table 15.

*Logistic Regression of Employment Outcome on Condition & Career Adaptability (Hypothesis 9)*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE</th>
<th>z value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>-6.813147</td>
<td>1.8632095</td>
<td>-3.656672</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Condition</td>
<td>7.438312</td>
<td>2.3903155</td>
<td>3.111854</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Career Adaptability</td>
<td>1.588626</td>
<td>0.494257</td>
<td>3.214171</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Condition*Career Adaptability</td>
<td>-1.910853</td>
<td>0.6506979</td>
<td>-2.936621</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>
Table 16.

*Slope Analysis of Career Adaptability Moderation of BSAT-Employment Outcome Relationship*

<table>
<thead>
<tr>
<th>Moderator Value</th>
<th>Estimate</th>
<th>SE</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ 1 SD (4.16)</td>
<td>-0.5078</td>
<td>.5181</td>
<td>-0.9802</td>
<td>.327</td>
</tr>
<tr>
<td>Mean (3.44)</td>
<td>0.8566</td>
<td>.4026</td>
<td>2.1278*</td>
<td>.033</td>
</tr>
<tr>
<td>- 1 SD (2.73)</td>
<td>2.2210</td>
<td>.6982</td>
<td>3.1811**</td>
<td>.001</td>
</tr>
</tbody>
</table>

* p < .05
** p < .01
Appendix

1. **Tolerance of Ambiguity Scale (AT-20; MacDonald, 1970)**

   Please do not spend too much time on the following items. There are no right or wrong answers and therefore your first response is important. Be sure to answer every question.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree or disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
</table>

1. A problem has little attraction for me if I don't think it has a solution. (R)
2. I am just a little uncomfortable with people unless I feel that I can understand their behavior. (R)
3. There's a right way and a wrong way to do almost everything. (R)
4. I would rather bet on a long shot than on a probable winner.
5. The way to understand complex problems is to be concerned with their larger aspects instead of breaking them into smaller pieces.
6. I get pretty anxious when I'm in a social situation over which I have no control. (R)
7. Practically every problem has a solution. (R)
8. It bothers me when I am unable to follow another person's train of thought (R)
9. I have always felt that there is a clear difference between right and wrong. (R)
10. It bothers me when I don't know how other people react to me. (R)
11. Nothing gets accomplished in this world unless you stick to some basic rules. (R)
12. If I were a doctor, I would prefer the uncertainties of a psychiatrist to the clear and definite work of someone like a surgeon.
13. Vague and impressionistic pictures really have little appeal for me. (R)
14. If I were a scientist, it would bother me that my work would never be completed (because science will always make new discoveries). (R)
15. Before an examination, I feel much less anxious if I know how many questions there will be. (R)
16. The best part of working a jigsaw puzzle is putting in that last piece. (R)
17. Sometimes I rather enjoy going against the rules and doing things I'm not supposed to do.
18. I don't like to work on a problem unless there is a possibility of coming out with a clear-cut and unambiguous answer. (R)
19. I like to fool around with new ideas, even if they turn out later to be a total waste of time.
20. Perfect balance is the essence of all good composition. (R)
2. Cognitive Flexibility Scale (Martin & Rubin, 1995)

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Slightly disagree</th>
<th>Slightly agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
</table>

1. I can communicate an idea in many different ways.
2. I avoid new and unusual situations. (R)
3. I feel like I never get to make decisions. (R)
4. I can find workable solutions to seemingly unsolvable problems.
5. I seldom have choices when deciding how to behave. (R)
6. I am willing to work at creative solutions to problems.
7. In any given situation, I am able to act appropriately.
8. My behavior is a result of conscious decisions that I make.
9. I have many possible ways of behaving in any given situation.
10. I have difficulty using my knowledge on a given topic in real life situations. (R)
11. I am willing to listen and consider alternatives for handling a problem.
12. I have the self-confidence necessary to try different ways of behaving.
3. Protean Career Attitude scale (Briscoe & Hall, 2005)

<table>
<thead>
<tr>
<th>To little or no extent</th>
<th>To a limited extent</th>
<th>To some extent</th>
<th>To a considerable extent</th>
<th>To a great extent</th>
</tr>
</thead>
</table>

1. When development opportunities have not been offered by my company, I’ve sought them out on my own.
2. I am responsible for my success or failure in my career.
3. Overall, I have a very independent, self-directed career.
4. Freedom to choose my own career path is one of my most important values.
5. I am in charge of my own career.
6. Ultimately, I depend upon myself to move my career forward.
7. Where my career is concerned, I am very much “my own person.”
8. In the past I have relied more on myself than others to find a new job when necessary.
9. I navigate my own career, based on my personal priorities, as opposed to my employer’s priorities.
10. It doesn’t matter much to me how other people evaluate the choices I make in my career.
11. What’s most important to me is how I feel about my career success, not how other people feel about it.
12. I’ll follow my own conscience if my company asks me to do something that goes against my values.
13. What I think about what is right in my career is more important to me than what my company thinks.
14. In the past I have sided with my own values when the company has asked me to do something I don’t agree with.

Self-Directed Career Management Subscale: Items 1-8
Values-Driven Subscale: Items 9-14
4. Agreeableness Subscale (adapted from Big Five Inventory; John et al., 1991)

Disagree strongly  Disagree a little  Neither agree nor disagree  Agree a little  Agree strongly

I see myself as a someone who...
1. Is helpful and unselfish with others
2. Is generally trusting
3. Can be cold and aloof (R)
4. Is considerate and kind to almost everyone
5. Tends to find fault with others (R)
6. Starts quarrels with others (R)
7. Has a forgiving nature
5. Career Adapt-Abilities Inventory (Savickas & Porfeli, 2012)

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.

<table>
<thead>
<tr>
<th>Not strong</th>
<th>Somewhat strong</th>
<th>Strong</th>
<th>Very strong</th>
<th>Strongest</th>
</tr>
</thead>
</table>

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
5. Planning how to achieve my goals
6. Concerned about my career
7. Keeping upbeat
8. Making decisions by myself
9. Taking responsibility for my actions
10. Sticking up for my beliefs
11. Counting on myself
12. Doing what’s right for me
13. Exploring my surroundings
14. Looking for opportunities to grow as a person
15. Investigating options before making a choice
16. Observing different ways of doing things
17. Probing deeply into questions I have
18. Becoming curious about new opportunities
19. Performing tasks efficiently
20. Taking care to do things well
21. Learning new skills
22. Working up to my ability
23. Overcoming obstacles
24. Solving problems
6. **Job Search Behavior Index (JBSI; Kopelman et al., 1992)**

Items are rated on the following five-point frequency scale:

<table>
<thead>
<tr>
<th>Never</th>
<th>Rarely</th>
<th>Occasionally</th>
<th>A moderate amount</th>
<th>A great deal</th>
</tr>
</thead>
</table>

During the past three months have you:

1. Read a book about getting a new job?
2. Revised your resume?
3. Sent copies of your resume to a prospective employer?
4. Contacted an employment agency or executive search firm to obtain a job with another organization?
5. Read the classified/help wanted advertisements in the newspaper?
6. Gone on a job interview?
7. Talked to friends or relatives about getting a new job?
8. Sought to transfer to a new job within your organization?
9. Talked to co-workers about getting a job in another organization?
10. Made any telephone inquiries to prospective employers?
References


