THE DEVELOPMENT AND VALIDATION OF
THE ASSESSMENT OF HUMAN AGENCY
EMPLOYING ALBERT BANDURA’S HUMAN AGENCY THEORY

A Dissertation in
Workforce Education and Development

by

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Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Doctor of Philosophy

August 2011
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ABSTRACT

The purpose of this study was to develop and validate a measurement tool that assesses the four core features of human agency: intentionality, forethought, self-reactiveness, and self-reflectiveness, based on Bandura (2001). To accomplish this, the study first developed a preliminary version of the assessment of human agency (AHA) with 28 items and validated it using a sample of 725 participants in a large public university in the Eastern United States. Specifically, this study looked at: 1) exploratory factor analyses (EFA); 2) internal consistency reliability analyses; 3) confirmatory factor analyses (CFA); 4) convergent validity tests using correlations, and 5) criterion validity tests with a structural equation modeling (SEM) mediation model containing human agency, age, career decision self-efficacy (CDSE), and vocational identity (VI).

Through the EFAs, the AHA with 12 items was identified. Cronbach’s alpha coefficients for the overall scale were .88 (N = 345) and .90 (N = 380). CFA results revealed that the 4-factor model with 12 items has a good fit with the data, based on the practical fit indices with a second order solution: NNFI=.96, CFI=.97, and RMSEA=.054. The correlations of the AHA with other related measures also turned out to be sound; for example, the Hope-Centered Career Inventory (.819) and the Adult Hope Scale (.664). The criterion validity with a SEM mediation model revealed that the AHA has an excellent validity in predicting CDSE by controlling age and VI. Overall, the AHA was judged to have sound reliability and validity. Conclusions, plus discussions and future recommendations for research and practice, are provided.
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ACKNOWLEDGMENTS

I feel privileged to have met great mentors and to have encountered many opportunities through them in my journey of graduate study at Penn State. I am also grateful to record this moment formally for posterity.

I feel indebted to my committee members. I would like to begin by thanking Dr. William Rothwell, my advisor, for inspiring and motivating me throughout my study. Without his flexibility and openness to my changing agenda and situations, I could not have finished this dissertation. I also have special memories of all my committee members. I cannot express enough my gratitude to Dr. Spencer Niles, who guided me to the field of career development from my first semester and worked with me on important research initiatives regardless of my major. He is the most humble professor that I have ever met. I would also thank Dr. Judith Kolb for allowing me to advance my career development model and a training program using the concept of human agency, which is the main focus of this dissertation, as part of class projects. I deeply appreciate Dr. JoLynn Carney for her complete positive attitude. I started to develop the assessment of human agency (AHA) as a class assignment during spring 2008. My experience with the AHA has evolved into the recent development of the hope-centered career development inventory (HCCI). Without her assignment, this progression would not have been possible. I would like to express special thanks to Dr. Wesley Donahue, who has been my boss as well as my friend for three and a half years. Because of his emotional, financial,
and professional support, I was able to accomplish many meaningful things without worrying about security.

I would like to take this opportunity to thank other faculty members who mentored and guided me. Dr. Edgar Farmer has been a great motivator for me. He always expressed his genuine interest in my future and inspired me to live my dream. Dr. Judy Ettinger, my first career development teacher, at the University of Wisconsin-Madison, gave me an invaluable opportunity to gain experience as a career development instructor, which has been my passion and my motivation for coming to the United States. I also deeply appreciate Dr. Hoi Suen for giving me valuable suggestions whenever I needed his expertise in measurement. His guide to the world of validity and measurement helped me gain necessary perspectives, skills, and knowledge. I thank as well Dr. Jack Rayman for granting me an internship opportunity as a career counselor at Penn State Career Services and also for helping me with this research by contacting Dr. John Holland before Dr. Holland passed away in 2009. I also deeply appreciate our staff members’ help. I thank Carol Fantaskey, Laurel Schreffler, and Cindy Bierly for their support. They made my life easier. I deeply thank my friends and students here at Penn State. I carry each of your names in my heart.

I always thank Drs. Dae Bong Kwon and Beon-Seok Shin, who are leaders in human resource development (HRD) in Korea for their ignition of my passion for HRD and career development. Twelve years ago, Dr. Kwon’s course assignment helped me craft my life plan, when I was only 20. That was the most powerful intervention that I have received in my life as a career development researcher and practitioner.
Finally, I want to express my deepest thanks to my family. A big thank-you to my parents, Won Sik Yoon and Sung Won Lee, for their encouragement and support throughout my life. I acquired a positive attitude and learned the way to pursue inner joy from them. I would like to express my biggest thank-you to the love of my life, my wife, Tae Hee Kim. Without her, finishing my degree and completing this dissertation would not have been possible. Thank you for always being with me. This dissertation I dedicate to my son, who was born in May 2011, in my hopes that his life and his generation’s lives will be hopeful and bright.
Chapter 1

INTRODUCTION

The world’s economy has changed dramatically over the last two decades. Organizations and jobs are no longer stable because of the constant flux in the workplace and global market shifts. Mergers and acquisitions, downsizings, and “rightsizings” take place frequently. Individuals’ careers are therefore becoming increasingly boundary-less (Arthur & Rousseau, 1996)—i.e., people move from one company to another frequently, and individuals have started to feel the need to take charge of their own careers. Scholars have shown that in order to successfully manage one’s career in a self-directed way, one must develop self-identity and adaptability (Hall, 1996). More recently, Briscoe and Hall (2006) defined the characteristics of a protean career as values-driven and self-directed.

These protean career competencies have much in common with human agency. Human agency is a characteristic of people who realize their goals. Bandura's (2001) four core features of human agency—intentionality, forethought, self-reactiveness, and self-reflectiveness—encompass the elements of a protean career. For example, identity and values could be acknowledged or strengthened by self-reflection; intentionality and forethought are examples of self-directedness and are based on values and identity; and adaptability is exhibited when agents execute, monitor, and adapt their goals and plans (self-reactiveness). According to Bandura (2001), human agency enables one’s adaptation, self-development, and self-renewal over time.

Human agency seems to be effective in helping individuals achieve their career goals; however, human agency is a characteristic held not only by individuals but also by
collectives, including organizations and nations. Bandura (2001) conceptualized the three modes of agency: personal agency, proxy agency, and collective agency. These modes are almost parallel to the three areas of human resource development (HRD): individual development, career development, and organization development. Human agency is driven by goals and intentions, and thus both individuals and organizations could benefit from applying the concept of human agency to their attempts to achieve their strategic goals.

The concept of human agency has not been explored in the field of workplace learning and performance (WLP; also known as HRD), although it seems to have potential implications for WLP. Human agency, however, has been discussed in many other fields and subfields, including management, geography, career counseling, information technology, secondary education, sociology, psychology, and economics (see Bandura, 2001; Boudreau & Robey, 2005; Brown & Redmond, 2008; Cochran, 1997; Colomy, 1998; Eisenhardt, 1989; Gregory, 1981; Hernandez & Iyengar, 2001; Yu, 2009). Beyond these applications, human agency can be an important concept for various purposes within the areas of WLP, such as improving human performance, facilitating organizational change, coaching, and career planning and talent management.

Assessing individuals’ degree of human agency could be beneficial in reaching the individuals’ goals, because individuals would be able to discover their developmental needs and how to further improve themselves. Perhaps for this reason, human agency has received growing attention in career development over the last few decades (Chen, 2006). In order to understand the agential behaviors in career development, Betz and Hackett
developed the Career Decision Self-Efficacy Scale (Chen, 2006). Solberg, Good, and Nord (1994) also developed the Career Search Self-Efficacy Scale. Self-efficacy (Bandura, 1977; 1989; 1992), which refers to individuals’ beliefs regarding their ability to perform a given task or behavior successfully, was a key construct for these assessments.

Self-efficacy is not human agency, even though scholars have attempted to relate self-efficacy to human agency. Self-efficacy is a critical factor that affects human agency (Bandura, 1992; 2001). The four features of human agency differ in quality from the characteristics of self-efficacy. Whereas self-efficacy is the positive self-confidence of succeeding at a certain task, the elements of human agency are actual behaviors that individuals engage in to achieve their goals. In order to assess an individual’s human agency, one must apply the elements of the intended construct, not self-efficacy.

This study attempted to develop the assessment of human agency (AHA) to use it in conjunction with career development interventions. Although there is no empirical research regarding the relationship between career development and human agency, Cochran (1997) mentioned that career counseling helps one develop a sense of agency. There was no instrument that measures one’s human agency in A Counselor’s Guide to Career Assessment Instruments (Whitfield, Feller, & Wood, 2009), which lists more than 300 career-assessment tools. The development of the AHA can contribute to conducting empirical research by using the concept of human agency.
Statement of the Problem

There are no instruments that aim to measure directly human agency. Prior measurements (e.g., Betz & Hackett, 1986; Solberg et al., 1994) that attempted to correspond with human agency do not directly measure human agency, because those assessments primarily measure one’s self-efficacy. Therefore, developing and validating a tool that assesses one’s degree of human agency is necessary. Besides the fact that there is no existing system for measurement, developing this measure can help individuals achieve their goals by assessing their degree of human agency. Whereas most career development assessments are geared toward helping one’s self-reflection by identifying interests, values, and skills, the AHA purports to measure essential components of attaining one’s goals.

Purpose of the Research

This research aims to develop and validate the AHA in a higher education setting by applying Bandura's (2001) concept of human agency. More specifically, this research pursues the following objectives:

1. Develop a reliable and valid scale that measures characteristics of human agency according to Bandura (2001).

2. Explore concurrent validity by comparing the results of the AHA with other similar measures such as the hope-centered career inventory (HCCI), the adult hope scale (AHS), and the career decision self-efficacy (CDSE).

3. Establish criterion validity by examining the relationship between human agency, the CDSE, and vocational identity (VI).
Research Questions

This research seeks three types of validity evidence: test content (i.e., content validity), internal structure (i.e., construct validity), and relations to other variables (i.e., criterion validity and convergent/discriminant validity). These three were selected from the five different types of validity evidence (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 1999). The following research questions will guide this validation process:

1. To what extent can a reliable measure of human agency be developed based on Bandura’s (2001) concept of human agency?
2. To what extent can evidence of internal structure validity be identified for the newly developed AHA?
3. To what extent are there similarities among the constructs of the AHA, the CDSE, the HCCI, and the AHS?
4. What are the relationships of human agency with other constructs in a conceptual nomological net in terms of predicting career decision self efficacy and vocational identity?

Significance of the Study

The AHA will be the first that measures the four core features of human agency based on Bandura (2001). At this moment, no measure assesses human agency, although many self-efficacy assessment tools were developed by also employing Bandura’s (1977, 1989, 1992) conceptualizations. Those instruments measure general self-efficacy as well
as task-specific self-efficacy, such as skills, career decision-making, computer use, and alcohol abstinence (e.g., Betz, Klein, & Taylor, 1996; Chen, Gully, & Eden, 2001; Compeau & Higgins, 1995; DiClemente, Carbonari, Montgomery, & Hughes, 1994; Harmon et al., 1996; Murphy, Coover, & Owen, 1989; Ryckman, Robbins, Thornton, & Cantrell, 1982; Schwarzer & Jerusalem, 1995). More specifically, in the career development field, self-efficacy measures, such as the CDSE scale (Taylor & Betz, 1983) and the Career Search Efficacy Scale (CSES; Solberg, Good, Nord, et al., 1994), were developed to increase individuals’ human agency. However, having confidence in one’s ability, which means self-efficacy, may not be sufficient for acquiring the characteristics of human agency.

The development of the AHA can contribute to research. Because the AHA aims to measure a relatively newly crystallized human agency theory (see Bandura, 2001, 2006a), it will contribute to enhancing the theory. Scholars including Bandura talked about the relationships between human agency and self-efficacy, though empirical evidence has not been established. For example, in the field of career development, the social cognitive career theory (SCCT; Lent, Brown, & Hackett, 1994) was developed by applying Bandura’s theory; however it was before Bandura crystallized the human agency theory with the four core features. Therefore, there is room for theory advancement with the AHA in exploring the relationships between related variables.

From a practical standpoint, the AHA can be used throughout career development interventions as opposed to being used only as a diagnostic tool at an early stage of the intervention. In contrast to existing career assessment tools, the AHA can be used in two
situations. First, it can be used at the very beginning of career counseling (coaching or workshops) as a diagnostic tool for an entire session. Second, it can be used immediately before clients set their career goals to help them stay on track in their pursuits. Practitioners might also use the AHA both at the beginning of the process and also revisit it just before the goal-setting stage.

Assumptions

The following assumptions will be used in this study:

1. Development of new and reliable forms of measurement should rely on the judgment of a researcher and subject matter experts (SMEs), given that proof of the validity and reliability of the instrument do not exist.

2. Participants will honestly and accurately respond to items on the AHA, so that answers on the AHA reflect their human agency.

3. The AHA that will be developed and validated in this study will accurately measure human agency of students and staff members at a large public university in the Eastern United States.

Limitations

This study has potential limitations. First, this study is limited to undergraduate and graduate students and staff members of a large state university in the Eastern United States. Therefore, it may be difficult to generalize the findings of the study to other population groups in other institutions in different regions. Second, the results of this study cannot be generalized to other cultural contexts because this study will be conducted in the United States. Third, study participation was voluntary; therefore,
collected data may not adequately represent those who are unlikely to participate. Fourth, measurement errors may have an effect on the data collected and used in this study.

**Definition of Terms**

The following terms are important to this study:

**Human Agency.** Human agency refers to “the capacity to exercise control over the nature and quality of one’s life” (Bandura, 2001, p. 1). Human agency has the following four core features: “intentionality, forethought, self-reactiveness, and self-reflectiveness” (Bandura, 2004, p. 618).

**Intentionality.** “[I]ntentionality is the power to originate actions for given purposes” (Bandura, 2001, p. 6). “People form intentions that include action plans and strategies for realizing them” (Bandura, 2006, p. 164; italics added).

**Forethought.** *Forethought* involves “the temporal extension of agency” and “set[ting] goals and anticipat[ing] likely outcomes of prospective actions to guide and motivate their efforts” (Bandura, 2006, p. 164).

**Self-Reactiveness.** “[S]elf-reactiveness is to motivate and regulate the execution of action plans” (Bandura, 2001, p. 8; italics added).

**Self-Reflectiveness.** Self-reflectiveness involves reflection on “their personal efficacy, the soundness of their thoughts and actions, and the meaning of their pursuits” (Bandura, 2006a, p. 165).

**Validity.** Validity refers to “the degree to which evidence and theory support the interpretations of test scores entailed by proposed uses of tests” (American Educational Research Association (AERA) et al., 1999, p. 9).
Content Validity. Content validity refers to “the degree to which the sample of items, tasks, or questions on a test are representative of some defined universe or domain of content” (American Psychological Association [APA], American Educational Research Association [AERA], & National Council on Measurement in Education [NCME], 1985, p. 10). Content validity is identical to evidence based on test content using AERA et al.’s (1999) classifications of validity evidence.

Construct Validity. “Construct validity focuses primarily on the test score as a measure of the psychological characteristic of interest” (APA et al., 1985, p. 9). Construct validity includes both evidence based on internal structure and evidence based on relations to other variables using AERA et al.’s (1999) classifications. The evidence based on relations to other variables includes convergent validity, discriminant validity, and criterion validity.

Criterion Validity. “Criterion validity demonstrates that the test scores are systematically related to one or more outcome criteria” (APA et al., 1985, p. 11). Using AERA et al.’s (1999) classifications, criterion validity is part of the evidence based on relations to other variables.

Reliability. Reliability refers to “the degree to which test scores for a group of test-takers are consistent over repeated applications of a measurement procedure and hence are inferred to be dependable, and repeatable for an individual test taker; the degree to which scores are free of errors of measurement for a given group” (AERA et al., 1999, p. 180).
Theoretical Framework

Human agency theory (Bandura, 2001, 2006a) provides the theoretical framework for this development and validation study of the AHA. Bandura (2001) defined human agency as a mixture of human capacity and potential that supports individual strategies for manipulating the circumstances of a person’s life to improve its quality. The concept of human agency in vocational psychology emerges from Bandura’s (1977; 1986) social cognitive theory (Chen, 2006). Bandura (2001) summarized the core features of human agency as different from self-efficacy. It is important to stress that the four components of human agency—intentionality, forethought, self-reactiveness, and self-reflectiveness—are interrelated. For example, individuals can develop intentionality by practicing forethought or reflecting on oneself (self-reflectiveness) while monitoring one’s own plans and actions (self-reactiveness) (Bandura, 2001).
Chapter 2

REVIEW OF RELATED LITERATURE

In order to develop the assessment of human agency (AHA) to be a valid measure of human agency, it is necessary to address the concept and implications of human agency, variables related to human agency, and noteworthy validity guidelines. The first section will discuss the relationship between human agency and workforce education and development. The second section will review constructs and measures that are related to human agency. Those constructs include self-efficacy and hope. The third section discusses the outcome measure of human agency in the context of career development. The fourth and final section explores the most recent literature concerning validity and its implications for the validation of the AHA.

Human Agency and Workforce Education and Development

The concept of human agency has not been explored in the field of workforce education and development (WFED), including workplace learning and performance (WLP) and career and technical education (CTE). Human agency, however, has been discussed in the related fields of geography, career counseling, information technology, secondary education, sociology, psychology, and economics (e.g., Bandura, 2001; Boudreau & Robey, 2005; Brown & Redmond, 2008; Cochran, 1997; Colomy, 1998; Gregory, 1981; Hernandez & Iyengar, 2001; Yu, 2009). Human agency can also be a very useful concept in WFED and can be applied in many different situations, such as instruction, career facilitation, individual development, and organization development.
This section will discuss the importance of human agency in the field of WFED and demonstrate the implications of human agency on it by providing a review of literature on human agency. Accordingly, this section will review and discuss 1) the concept of human agency and its importance in WFED; 2) the relationships between human agency and two missions of WFED; and 3) the applications of human agency competencies for satisfying the missions of WFED.

The Concept of Human Agency and Its Importance in WFED

**Definition and elements of human agency.** In the field of educational psychology and vocational psychology, scholars have been using self-efficacy and human agency interchangeably. For example, Betz and Hackett (1986) developed the career decision self-efficacy (CDSE) scale to understand agentic behaviors in career development. Similarly, Solberg et al. (1994) developed the career search self-efficacy (CSSE) scale, trying to link it with human agency. According to Bandura (1989), “Among the mechanisms of personal agency, none is more central or pervasive than people's beliefs about their capabilities to exercise control over events that affect their lives” (p. 1175). As the developers of the self-efficacy measures explained human agency, so Bandura too theorized that this was very closely related to self-efficacy. However, the characteristics of self-efficacy differ from human agency. Self-efficacy is about a person’s beliefs about certain tasks, whereas human agency is their actual ability to control the tasks.

After about three decades, Bandura (2001) finally refined the concept of human agency. He explained that human agency is “the capacity to exercise control over the
nature and quality of one’s life” (p. 1). Human agency is also defined as the characteristics of people who achieve what they desire (Bandura, 2001). He proposed four core features of human agency as follows:

- Intentionality: having an intention, goal, or vision in mind;
- Forethought: looking ahead and imagining the consequences of one’s plans;
- Self-reactiveness: executing and monitoring one’s goals or plans;
- Self-reflectiveness: thinking about one’s interests, thoughts, or the results of your behaviors.

Bandura (2001) further explained three modes of human agency: 1) personal agency, 2) proxy agency, and 3) collective agency. Personal agency is at an individual level, where one creates his or her own directives and achieves one’s goals. Proxy agency is an interaction between an individual and a higher level of entity including other individuals, groups, organizations, and nations. Individuals with proxy agency do not pursue their own personal goals but the related entity’s goals. Collective agency is agency shared and pursued within a collective entity. The collective could be a group, team, organization, culture, or nation. These modes of human agency are critical, since WFED addresses all three.

**Significance of human agency in WFED.** WFED scholars and practitioners must keep up with the latest career and work-related needs in this rapidly changing world. In addition, the profession needs to develop new theories and interventions that address these issues. Rothwell, Prescott, and Taylor (1998, 2008) identified six key factors driving the emerging trends in the workplace through analyzing a total of 158
trends and receiving HR experts’ ratings on the list. The six key workplace trends are: 1) changing technology; 2) increasing globalization; 3) continuing cost containment; 4) increasing speed in market change; 5) growing importance of knowledge capital; and 6) increasing rate and magnitude of change (Rothwell, Stavros, & Sullivan, 2009, p. 18). WFED professionals need to prepare our current/future workers and workplaces so that our students or clients can quickly adapt to the changing world by developing new skills and knowledge.

For this purpose, assessing the human agency of workers and workplaces is essential because human agency plays an important role in one’s 1) adaptation; 2) self-development; and 3) self-renewal over time (Bandura, 2001). Individuals are responsible for coping with their changing work environment (Hall, 1996) because organizations no longer guarantee employees job security and future careers, and people no longer expect lifetime employment with a single employer. Therefore, people need to learn how to transform themselves to have fruitful future careers by developing their human agency.

Bandura (2001) expands the general sense of the personal level of human agency into the concept of group or organizational agency, which he calls collective agency. Assuming that WFED includes organization development (OD) at a group, organizational, national, or global level (Marquardt & Berger, 2003), the concept of collective agency is very useful to OD because individuals’ directions and behaviors need to be aligned with their organization’s goals in order to realize the organization’s vision.

One popular area of interest among scholars in WLP is the learning organization (e.g., Confessore & Kops, 1998; Ellinger, Ellinger, Yang, & Howton, 2002; Griego,
Geroy, & Wright, 2000; Marsick & Watkins, 1994, 2003; Swanson, 1995). Human agency, and especially collective agency, is key for a learning organization because those who have high human agency try to learn effectively to achieve their goals. Obviously, a shared vision, which is really a collective form of forethought, is a critical element of learning organizations (Senge, 1990). WFED researchers and practitioners could work to articulate and achieve national and global vision by adopting the concept of collective agency.

Thus, human agency can be a vital element to increase individual opportunities and prepare workers and workplaces.

The Relationships between Human Agency and the Missions of WFED

According to Gray and Herr (1998), there are two missions of WFED: 1) “to promote individual [career] opportunity” (p. 21) and 2) “to promote economic growth [by developing the workforce]” (p. 21). This section discusses the links between human agency and these two missions.

Promoting individual career opportunities. The concept of human agency can be applied to career development, which focuses on helping individuals maximize their career opportunities. In the career counseling field, Cochran (1997) was likely the first person to emphasize the importance of human agency and design a relevant approach. He views human agency as a combination of human intention and action that results in making things happen. More concretely, Cochran (1994) presented three criteria for human agency: 1) a unifying theme of meaning based on personal history; 2) contextualization that enables the creation of personal meaning in work and personal life;
and 3) achievable or doable future narratives. He maintained that career counseling can enhance an individual’s sense of agency, which is vital for creating and maximizing career opportunities (Cochran, 1997).

Other interventions, such as career workshops and general classroom instruction, can enhance human agency if teachers adopt the concept of human agency. Brown and Redmond (2008) indicated the possibility that CTE and WLP practitioners can use human agency as an instructional principle. Human-agency principles can play a role in face-to-face classrooms or virtual settings as well. If we structure the human agency approach into instructions more explicitly, it could be more effective than the more general application of the concept in their study. For example, instructors can begin their instructions by tapping into students’ motivations through a short reflection moment (self-reflectiveness) and by helping the students set goals for the class (intentionality). In addition, instructors can ask students to think about future situations where the contents of the day’s lessons could be applied (foresight). With an eye to future goals, students might develop action plans for their homework (intentionality). Then, students can carry out their plans and monitor whether their goals are being met (self-reactiveness).

There are other components of human agency that can be applied to the current environment. Recently, Bandura (2006a) added some more insights with regard to managing fortuity (luck) and dealing with diversity. The agentic management of fortuity can illuminate the solutions to problems and issues in a highly uncertain, changing world. This characteristic helps individuals and organizations find potential opportunities when
faced with unintended and unforeseen events. In all these ways and more, the evolving concept of human agency can help individuals to find career opportunities.

**Developing the nation’s workforce.** To develop the nation’s workforce, it is essential to look at WFED from both organizational and national perspectives. According to Gray and Herr (1998), the nation needs to prepare a world-class workforce, prevent labor shortages, and make employers more competitive. However, to make this mission and vision come true, it is necessary to infuse human agency into organizations and, through them, into the national economy. In this respect, it is possible that organization development (OD) practitioners or national/organizational leaders can use the concept of human agency as a central tool for their initiatives.

The philosophies of human agency and OD have much in common. For example, human beings initiate changes through communication with external environments. In OD, the term change agent is used to represent people initiating such changes in an organization (Rothwell et al., 2009). Drucker (2004) maintains that organizations need to become change agents to create their futures.

Scholars have traced several good applications of the human agency concept in organizations. Colomy (1998) conceptualized the role of human agency in institutional change, arguing that entrepreneurs and change agents are people with human agency in an organizational setting. They create new competitive opportunities and productive futures. However, Colomy also observed that an environment affects social transformation and entrepreneurs’ projects and their capabilities. This observation makes sense because human beings are engaged in social and environmental interactions, and
yet, the environment is certainly something that we play a role in shaping over time. Hernandez and Iyengar (2001) compared personally agentic motivation and collectively agentic motivation in different cultural and contextual backgrounds. Hernandez and Iyengar advocate accommodating cultural, i.e., individualistic vs. collectivistic, orientations of employees in an organization.

In order to develop a strong nation with a robust workforce in this global economy, it seems helpful to consider the perspective of the international trade field. Yu (2009) argued that the nation is not a human agent, although a nation is the basic unit of analysis in neoclassical international economics. Yu views the agent who makes international trade as a human who connects two or more nations with goods and services. He expanded economics into the realms of learning, knowledge management, and entrepreneurship, in the process giving meaning to trading through his human agency approach. Yu maintained that people in an organization or an organization itself constitute a human agent, which implies that his concept can be applied to OD. Organizations and nations should be aware of the importance of human agency in the individuals that constitute them. It is crucial to recruit and retain highly creative people equipped with human agency in this changing, global economy to remain competitive (Florida, 2007).

Application of Human Agency Competencies in Satisfying the Missions of WFED

The previous section developed the relationships between the missions of WFED and human agency; this section explores in more detail how the applications of human
agency competencies (or skills) can serve the mission of WFED. Each mission is discussed in light of utilization of human agency for individuals and organizations.

**Promoting individual career opportunities.** The way that human agency actually promotes individual career opportunities can be explained in two parts: 1) assessments and 2) career facilitation strategies. Although there are many assessments that can be used for subjective quantitative studies of human agency (Alkire, 2005), no scale directly measures human agency. The outcome of this study, the validated assessment tool using Bandura’s (2001) four core features of human agency, can be used in counseling sessions or workshops.

The second approach for promoting individual career opportunities is to apply the human agency concept to counseling or training through career facilitation. To this end, Yoon and Hutchison (2010) developed the Human Agency Based Individual Transformation (HABIT) model (see Figure 2.1). The HABIT model is also based on Bandura’s human agency theory as well as recent theories in the field of career development, such as narrative approach, cognitive information processing approach, and values based approach.

In developing their model, Yoon and Hutchison changed the order of Bandura’s four core features. Whereas the original order was intentionality, forethought, self-reactiveness, and self-reflectiveness (Bandura, 2001), the cyclical process of the HABIT is as follows: 1) self-reflectiveness; 2) forethought; 3) intentionality; and 4) self-reactiveness. The first step (self-reflectiveness) involves identifying one’s interests, values, abilities, thoughts, and behaviors through reflection. The outcome of the first step
is having a clear self-concept with a statement of life themes or values. The second step (forethought) is to create future stories, known as “visioning” in popular terminology. The third step (intentionality) is to develop goals and plans based on the client’s vision. The last step (self-reactiveness) is to execute and monitor the goals or plans. After completing the last step, the client will revisit the first step—self-reflection. Although Yoon and Hutchison developed the HABIT model for individual and group career counseling situations, it can also be applied to workshops and classroom instruction.

![Diagram of the HABIT model]

Figure 2.1. Human agency–based individual transformation model

**Developing the nation’s workforce.** As noted earlier, the development of the nation’s workforce is related to OD at an organizational, national, and global level. The process of applying OD efforts to the concept of human agency is the same as the process for individual career development and involves the same four steps: 1) self-reflectiveness; 2) forethought; 3) intentionality; and 4) self-reactiveness. This cycle is
very similar to the “4D cycle” model of appreciative inquiry: discover, dream, design, and destiny (Cooperrider & Whitney, 2005). The four steps are almost the same for the HABIT model (Yoon & Hutchison, 2010). Research related to appreciative inquiry has been conducted in chosen settings such as interviews, community development, and tourism by applying the 4D cycle (Akdere, 2005; Raymond & Hall, 2008; Michael, 2005). Although the authors identified the possibility and the impact of using appreciative inquiry, they did not discuss the theoretical background of appreciative inquiry. Given the similarity between the 4D cycles of appreciative inquiry and elements of human agency, strengthening the theoretical base of appreciative inquiry seems possible with abundant research on human agency in a variety of fields.

Following are some more details about using human agency elements for OD efforts. The first step (self-reflectiveness) is to collaboratively identify an organization’s strengths and weaknesses, values, core-competencies, and missions. The second step (forethought) is to co-construct the organization’s future stories, which is collaborative visioning. The third step (intentionality) is to develop specific goals and strategies to achieve the vision. This step should include (re)designing the organizational or national policy. The last step (self-reactiveness) is to execute and monitor the goals or plans. Organizations should create a mechanism to collaboratively monitor progress towards goals using such tools as scorecards, dashboards, and performance management systems.

By applying the human agency concept, organizations and nations will be able to identify what to focus on in order to realize their visions, e.g., creating a world-class workforce, preventing labor shortages, and making employers competitive. Organizations
and nations are ultimately collectives of human beings with important goals to achieve. Developing and exercising human agency, which is the essence of human nature (Bandura, 2001), seems critical for all human enterprises. Human values should be re-assessed so that organizations consider human beings as critical assets, as opposed to the Industrial Revolution, when men were considered mere resources, comparable to machines. In the future, a more comprehensive and critical literature review on human agency should be conducted. In addition, researching and building empirical evidence dealing with human agency in the WFED field is required to expand the use of the human agency approach in this field.

**Constructs and Measures Related to Human Agency**

This section reviews two major constructs, self-efficacy and hope, which are related to human agency. Self-efficacy is perceived as a central concept in human agency. According to Bandura (1999), “perceived self-efficacy is the foundation of human agency” (p. 214). Hope contains agency thinking (Snyder, 1991), which is a similar concept to human agency.

**Self-Efficacy**

The definition of perceived self-efficacy is “people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances” (Bandura, 1986, p. 391). There are two types of instruments that measure self-efficacy: 1) general self-efficacy (GSE); and 2) specific self-efficacy (SSE). GSE measures include the self-efficacy scale (Sherer et al., 1982), generalized self-efficacy scale (Schwarzer & Jerusalem, 1995), and the new general self-efficacy scale
(Chen et al., 2001). Some examples of SSE instruments include: computer self-efficacy (Compeau & Higgins, 1995); job self-efficacy (Spreitzer, 1995); alcohol abstinence self-efficacy (DiClemente et al., 1994); skills confidence (Harmon et al., 1996); and physical self-efficacy (Ryckman et al., 1982). Using these instruments, self-efficacy has been widely researched in various fields including education, psychology, sociology, and management.

**Self-efficacy in career development.** Self-efficacy also has been studied extensively in the field of career development since the foundational work of Hackett and Betz (1981) that applied the theory of self-efficacy (Bandura, 1977; 1982). The following are some examples: self-efficacy for specific occupations or occupational titles (Betz & Hackett, 1981; Turner & Lapen, 2002); self-efficacy for the Holland themes (Betz, Harmon, & Borgen, 1996; Lenox & Subich, 1994; Turner & Lapen, 2002); career search efficacy (Solberg, Good, Nord, et al., 1994); mathematics self-efficacy (Lopez, Lent, Brown, & Gore, 1997); career decision self-efficacy (Luzzo, 1993; Taylor & Popma, 1990); and self-efficacy for doing career counseling (Lent, Brown, & Hackett, 1994; O’Brien & Heppner, 1996; Perrone, Perron, Chan, & Thomas, 2000).

The concept of self-efficacy is also explored in the career development of various populations. They include women (Betz & Hackett, 1981; Hackett & Betz, 1981); persons with disabilities (Luzzo, Hitchings, Retish, & Shoemaker, 1999); racial and ethnic minorities (Gloria & Hird, 1999; Hackett & Byars, 1996; Tang, Fouad, & Smith, 1999); and elderly people (Cousins, 1997). All studies showed the positive effect of self-efficacy in managing one’s career effectively.
**Career Decision Self-Efficacy (CDSE).** Career decision self-efficacy (CDSE; Betz & Hackett, 1981) has been related to different types of career behaviors because of its implications regarding career interventions and career decision-making (Betz, Hammond, & Multron, 2005). CDSE was developed by Taylor and Betz (1983) as the individual’s belief that he or she can successfully complete tasks necessary to making career decisions. CDSE has task domains including goal selection, gathering occupational information, accurate self-appraisal, problem solving, and planning. Sample items, which begin with “You could…,” are as follows (Betz, Klein, & Taylor, 1996):

- Goal selection: Accurately assess your abilities.
- Gathering occupational information: Use the Internet to find information about occupations that interest you.
- Goal selection: Select one major from a list of potential majors you are considering.
- Planning: Make a plan of your goals for the next five years.
- Problem Solving: Determine the steps to take if you are having academic trouble with an aspect of your chosen major.

**Career Search Efficacy Scale (CSES).** Like the CDSE, the career search efficacy scale (CSES; Solberg, Good, Fischer, Brown, & Nord, 1995) is another major self-efficacy scale. Career search efficacy addresses individuals’ expectations with regard to their capacity to perform, succeed at achieving, and complete a variety of career development activities, such as job searches, career explorations, and personal exploration (Solberg, Good, & Nord, 1994). These intentional tasks required for
conducting a career search directly involve engaging proactive behavior patterns that are considered rooted in human agency (Bandura, 1986; Betz & Hackett, 1987).

Human agency is important for career search efficacy research in that career agency may be expected to evolve from human agency (Bandura, 1992; Betz & Hackett, 1987). Solberg et al. (1994) have proposed that career agency is constructed primarily of career self-efficacy expectations. In order to examine the relationship between human agency and career search efficacy, Solberg et al. (1994) conducted a principal component analysis of personality indices associated with measures of career efficacy and human agency. As a result, two separate constructs were developed. Factor one was representative of career efficacy, and factor two was human agency, which involved assertiveness, instrumentality, and social facility. Furthermore, through additional hierarchical regression analyses, Solberg et al. (1995) found that career search efficacy mediated human agency with career development. However, the human agency constructs included three measures—instrumentality, assertiveness, and interpersonal facility—that are different from Bandura (2001).

While the CDSE aims to measure the relationship between self-efficacy and career decision-making tasks, the CSES was developed to assess the three components that comprise career search efficacy: personal exploration, career exploration, and job search efficacy (Solberg, Good, Nord, et al., 1994). Additionally, construct validity procedures to delineate which measures do not tap into the construct of career self-efficacy were performed to answer the first challenge made by Lent and Hackett (1987). The CSES is meaningful to this research because the CSES initially attempted a measure
of human agency, even though they do not officially include the human agency construct in their interpretation.

**Hope**

Hope has a positive correlation with achievement. Snyder et al. (2002) found that college students with higher levels of hope achieved better academic results including dismissal rates, graduation rates, and GPA through a six-year longitudinal study. In his research, the adult hope scale (AHS; Snyder, Harris, et al., 1991) was used to measure the level of hope. In order to measure the effect of hope, the American College Testing (ACT) scores of participants were controlled. Similar to Snyder et al. (1991), Curry, Snyder, Cook, Ruby, and Rehm (1997) observed the positive relationship between hope and academic/sport achievement.

**Adult Hope Scale.** Snyder et al. (1991) and Snyder (2000) explain that hopeful thoughts consist of pathway thoughts and agency thoughts. According to Snyder, Irving, and Anderson (1991), hope is defined as “a positive motivational state that is based on an interactively derived sense of successful (a) agency (goal-directed energy) and (b) pathways (planning to meet goals)” (p. 287). In Snyder’s schema, agency is related to goals and intentions, and pathways is related to actual paths or ways to reach those goals. These two elements, agency and pathways, constitute the AHS (Snyder, C. Harris, et al., 1991).

The AHS has 12 items including four on agency, four on pathways, and four on dummy items. Cronbach’s Alphas ranged from .74 to .85, .71 to .76, and .63 to .80 for the total scale, agency subscale, and pathways subscale, respectively (Snyder, C. Harris, et
al., 1991). Evidence on factor structure consistently showed the distinctions between agency and pathways components. In terms of convergent validity, the AHS correlated .60 and .50 with an optimism scale in two studies: .54 with a control measure, and .62 with a problem-solving measure. The correlations between the AHS and self-consciousness subscales were not significant, which show its discriminant validity (Snyder, C. Harris, et al., 1991). Overall, the AHS is found to be valid and reliable.

**Hope-Centered Career Inventory.** The hope-centered career inventory (HCCI; Niles, Yoon, Balin, & Amundson, 2010) has been developed to assess clients’ or students’ degree of hope-centered career development competencies. The target population of HCCI is adults who are aged 18 and older. HCCI adopted the six hope-centered career development competencies: hope; self-reflection; self-clarity; visioning; goal setting and planning; and implementing and adapting. HCCI measures seven constructs rather than six, because implementing and adapting are different concepts and thus separated. HCCI has 28 items; sample items for each construct are as follows:

- **Hope:** I am hopeful when I consider my future.
- **Self-Reflection:** I look for the underlying patterns of my preferences.
- **Self-Clarity:** I can list at least five things that I am good at.
- **Visioning:** I often imagine possible future events in my life.
- **Goal Setting and Planning:** I set goals with a concrete timeline.
- **Implementing:** I act on what to do next to meet my goals.
- **Adapting:** I am flexible in improving my plan.
Response options are based on a 4-point Likert scale (1 = definitely false to 4 = definitely true).

HCCI has excellent reliability and validity evidence with a sample of 382 undergraduate and graduate students at a large public university in the United States (Niles et al., 2010). Cronbach’s Alpha for total scale was .924, and individual scales’ coefficients ranged from .743 (self-reflection) to .859 (visioning). In terms of confirmatory factor analysis (CFA), the goodness-of-fit indices suggested that the 7-factor structure of the HCCI fits excellently with the data: RMR = .045, CFI = 1.00, and NNFI = 1.00.

Career Outcome Measurement as a Criterion of Human Agency

The present study selected the vocational identity (VI) scale of the My Vocational Situation (MVS; Holland, Daiger, & Power, 1980), although there could be other outcome measures. The VI scale has been studied in more than 50 studies in the 12 years after the MVS measure was created in 1980 (Holland, Johnston, & Asama, 1993). The main reason of this selection is because the VI scale is one of the most widely used outcome measures in career development research (for recent examples, see: Gushue, Clarke, Pantzer, & Scanlan, 2006; Hargrove, Creagh, & Burgess, 2002; Johnson, Nichols, Buboltz, & Riedesel, 2002; Ochs & Roessler, 2001; Scott & Ciani, 2008; Vondracek & Skorikov, 1997). The subjects of those studies included Latino high school students, African American students, college students, and students with disabilities. Moreover, the CDSE also employed the VI scale for its criterion validity. Therefore, for the purposes of
this initial validation of the AHA, the VI scale was found to be the most appropriate outcome measure.

The VI scale has 18 true-false items, and sample items are shown below (Holland et al., 1980):

- I need reassurance that I have made the right choice of occupation.
- I am concerned that my present interests may change over the years.
- I am uncertain about the occupations I could perform well.
- I don’t know what my major strengths and weaknesses are.
- The jobs I can do may not pay enough to live the kind of life I want.

Test-retest reliability coefficient of the VI scale ranged from .51 to .93, depending on the time interval (from seven days to one year) and gender. With a short time interval, two to three weeks, the coefficient ranged from .63 (7 days, \( N = 48 \)) to .93 (two weeks, \( N = 161 \)). Considering the number of participants, the VI scale was found to be moderately or sufficiently reliable.

Responding to these questions with “No” indicates a higher vocational identity, which means having a well-developed sense of identity, hopefulness, positive beliefs about career decision-making, and being less susceptible to barriers (Holland et al., 1993). According to Holland et al. (1993), “the evidence about the Identity scale implies that it is a general measure of psychological health, although it was developed to assess only vocational decision-making difficulties and related problems.” (p. 8). Therefore, using the VI scale may direct the array of human agency research to various possibilities and implications in a career development context as well as other psychological domains.
Recent Development of Validity Guidelines

The most prominent authorities in validity are Kane (2006) and AERA et al. (1999) (H. K. Suen, personal communication, March 9, 2009). Thus, this section summarizes and contrasts the descriptions of validity proposed by Kane (2006) and AERA et al. (1999). After that, this section discusses the results of the analyses, considering in particular the implications of this work for the development, refinement, and validation of the AHA. The following areas will be explored in detail: the definition of validity; the key elements of each position on validity; the validation procedure that each resource suggests; the difference regarding fairness of tests between the two parties; and the next steps for the development and validation of the AHA.

Definition of Validity

According to AERA et al., (1999), validity refers to “the degree to which evidence and theory support the interpretations of test scores entailed by proposed uses of tests” (p. 9). However, Kane (2006) did not offer a parallel definition of validity. Instead, he explained validation in two ways: validation (1) “involves the development of evidence to support the proposed interpretations and uses [of measurements]” (Kane, 2006, p. 17); and (2) “is associated with an evaluation of the extent to which the proposed interpretations and uses are plausible and appropriate” (Kane, 2006, p. 17).

Kane’s and AERA’s approach to validity have one similarity and two important distinctions between them. The similarity is that both focus on evaluating the proposed interpretations of test scores. The first difference is that Kane emphasizes both the uses of tests and the evaluation of proposed interpretations of test scores, while AERA et al.’s
approach only includes the latter. Basically, researchers and practitioners evaluate the uses of tests based on the evidence of the test scores. Kane’s addition of “uses of tests” to the definition of validity makes researchers and practitioners look at the uses of tests a priori. The second difference is that Kane’s expression, validation, as opposed to the term validity employed by AERA et al., contains an action verb. Kane’s validation guidelines focus on “how to” rather than “what to” validate. Although there is a difference between validation and validity, this study uses validity as a representative terminology.

**Key Elements of Validity**

AERA et al. (1999) outlined the five sources of validity evidence as follows: 1) evidence based on test content; 2) evidence based on response processes; 3) evidence based on internal structure; 4) evidence based on relations to other variables; and 5) evidence based on consequences of testing. Next, AERA suggested that “ultimately, the validity of an intended interpretation of test scores relies on all the available evidence relevant to the technical quality of a testing system” (AERA et al., 1999, p. 17). Given this interpretation, it is clear that gathering substantial evidence is crucial.

Kane’s (2006) key elements are very different from those of AERA et al. (1999). He provided clear guidance as to “how” to validate the uses and interpretations of measurements. His central term is “argument,” and he continued on to propose the use of interpretative arguments and validity arguments. Interpretative arguments include laying out the network of a number of assumptions and inferences of tests and test results. Validity arguments subsequently evaluate the interpretive arguments. The typical elements for interpretative arguments are: 1) scoring; 2) generalization; 3) extrapolation;
4) decision; and/or 5) implication. Under each element, the test developer should describe inferences and assumptions convincingly. Then, critics are expected to challenge those inferences and assumptions based on the data collected.

Kane does not mention what sources of validity evidence are necessary, unlike AERA et al. (1999). Instead, Kane (2006) implies that the different kinds of validity models, such as criterion validity, content validity, and construct validity, have evolved over time, rather than existing in an a priori sense. In addition, rather than using such terms as content validity and construct validity, Kane names his concept of validity “argument-based validity,” which requires the process of considering and preparing interpretative arguments and validity arguments.

**Validation Procedure**

AERA et al. (1999) do not explicitly delineate the validation procedure, even though their standards seem to be very situation specific. For example, standard 1.7 (AERA et al., 1999, p.19) describes that scholars need to demonstrate the qualifications and experience of judges when using expert judges, observers, or raters.

In contrast, Kane (2006) proposes a distinctive three-step procedure for validation: 1) preparing a clear statement of the proposed uses and interpretations of measurements; 2) committing to the interpretative argument; and 3) committing to the validity argument. Kane (2006) further depicted the use of interpretative arguments and validity arguments, using the example of a placement testing system and a trait interpretation.
**Fairness of Test**

AERA et al. (1999) present several views of test fairness: 1) fairness as lack of bias; 2) fairness as equitable treatment in the testing process; 3) fairness as equity in testing outcomes; and 4) fairness as opportunity to learn. Moreover, AERA et al. listed different kinds of bias that can be associated with test content and response processes. Then, AERA et al. provided 12 standards that ensure fairness. They also included a sample analysis using very specific situations, such as public policy use, cultural differences, and the degree of demand of linguistic or reading ability.

On the contrary, Kane (2006) did not include a section addressing fairness. However, he did allude to the concern of fairness in two places. One is his economic perspective—for example, the idea that “Resources are always limited, and choices have to be made” (Kane, 2006, p. 26). Here, the amount of argument and evidence necessary or possible depends on the situation and context, even with regard to fairness. For example, in the case of high-stakes testing, a more extensive appraisal is needed (p. 26) because there are a large number of stakeholders and the consequences will be huge.

The second time that Kane’s work alludes to fairness is in his discussion of standardization. The need for fairness goes up, as mentioned above, when the test is high-stakes. Even though “the form of the assessment and the shape of the interpretive argument do not necessarily change, . . . the need to document the procedures being used and to provide backing for the warrants being applied increases” (Kane, 2006, p. 50). Therefore, more standardization is required to achieve adequate standards of fairness, especially in high-stakes situations. Kane’s (2006) basic concern seems to be minimizing
the controversy surrounding a test, i.e., maximizing and economizing arguments to keep tests productive, even in fairness-related situations.

**Directions for Refinement of the AHA**

In order to satisfy the guidelines of both AERA et al. (1999) and Kane (2006), a synthesis of both frameworks would aid the further validation of the AHA. Based on AERA et al.’s manual, the following tasks must be completed to validate the AHA:

A1. accumulate as much validity evidence as possible;
A2. create interpretations of the AHA;
A3. prepare the rationale of relevance between the proposed interpretation and the use of the AHA;
A4. clarify the AHA’s scope of use (target population and setting);
A5. develop a conceptual framework using a nomological net;
A6. define variables related to human agency;
A7. describe different perspectives on human agency in terms of career counseling, industrial and organizational psychology, and human resource development;
A8. devise mechanisms for preventing distortion of the meanings of variables;
A9. examine studies about human agency and related variables;
A10. collect data from diverse populations and identify differences among the groups;
A11. prepare expert panel analyses for the AHA constructs and items;
A12. identify and use various measures for convergent and discriminant validity;
A13. identify outcome variables; and

A14. brainstorm the consequences of administering the AHA, considering implications on the individual, societal, and national level.

The following are the desirable tasks for validation of the AHA, according to Kane’s (2006) guidelines:

K1. define the context(s) in which the AHA will be implemented;

K2. develop a clear statement of the AHA’s proposed uses and interpretations;

K3. develop inferences and assumptions according to a) scoring, b) generalization, c) extrapolation, and d) implication;

K4. identify the necessary evidence for defending challenges;

K5. collect the necessary evidence; and

K6. commit to the validity argument to evaluate the dependability of generalization across situations;

The tasks generated from Kane’s (2006) approach seem logically clear and easy to follow, although the number of tasks is smaller than those derived from AERA et al. (1999). On the one hand, the steps based on Kane’s (2006) approach could integrate AERA et al. (1999). On the other hand, the guidelines of AERA et al. (1999) would be very helpful when encountering any challenges, because of the specificity of its directives for particular situations.

**Summary of Comparison and Contrast**

Table 2.1 shows the summary and contrast of Kane’s and AERA et al.’s guidelines for validation. This table would be helpful in guiding the validation of the AHA in the
face of criticism. AERA et al.’s standard might not fit a wide variety of situations because it addresses specific situations; however, Kane’s model could be adapted for any context, because it has an encompassing viewpoint. To some extent, one can infer the more particular standards of AERA et al. (1999) from Kane’s (2006) overarching principles. Therefore, the validation process of the AHA should be primarily based on Kane’s system, while utilizing the concrete sources of evidence proposed by AERA at al.

Although AERA et al. (1999) listed specific guidelines for use in various situations, Kane’s (2006) model is more situation-based. The necessary degree of argument varies depending on the situation in which the test is implemented. Therefore, the validation strategy and amount of effort should differ according to the degree of the stakes of the test. From Kane’s (2006) economic viewpoint, collecting all kinds of evidence based on AERA et al.’s (1999) suggestions can be time consuming. As a result, scholars may want to determine the scope and consequences of the test first, before they actually commit to the validation research.

There are certainly challenges in using Kane’s model. Test development will be more difficult and strict because of the need to list explicitly all possible assumptions and explanations about the uses of the tests and test results. To make the tests valid, validation studies should employ an argument, not necessarily mathematical, though potentially incorporating mathematics. In addition, validation studies should put the argument explicitly on the table and openly address any criticisms. These are the challenges of following Kane’s (2006) validation model. However, these processes will strengthen the validity of the test that the study is attempting to validate.
Table 2.1. Summary of Comparison between AERA et al. and Kane

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</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition of validity</strong></td>
<td>• Focuses on the evaluation of the interpretations of test scores</td>
<td>• Focuses on the plausibility of proposed uses as well as interpretations</td>
</tr>
<tr>
<td><strong>Key elements</strong></td>
<td>• evidence based on: - test content - response processes - internal structure - relations to other variables - consequences of testing</td>
<td>• Argument - Interpretative argument - Validity argument - Criticism</td>
</tr>
<tr>
<td><strong>Validation procedure</strong></td>
<td>• Does not provide explicit sequence - Rather, it is tactical and situation based - alludes to the importance of argument</td>
<td>• Prepare a clear statement of the proposed uses and interpretations - Commit to interpretative argument - Commit to validity argument</td>
</tr>
<tr>
<td><strong>Fairness of Test</strong></td>
<td>• Fairness as - lack of bias - equitable treatment in process - equity in testing outcomes - opportunity to learn - Bias associated with test content and response processes</td>
<td>• Does not mention fairness specifically - Effort varies depending on situation - Economic and flexible viewpoint - Standardization is also situation-specific</td>
</tr>
<tr>
<td><strong>Directions for AHA</strong></td>
<td>• Accumulate evidence - Create interpretations - Consider relevance of proposed interpretation and use - Define the clear scope of human agency - Develop a conceptual framework - Define related variables - Describe different perspectives - Examine related literature carefully - Test with diverse populations - Prepare expert panel analyses - Select measures for convergent and discriminant validities - Select outcome variables - Collect consequences of the AHA</td>
<td>• Define the contexts in which the AHA will be implemented - Develop a fairly clear statement of the AHA's proposed uses and interpretations - Develop inferences and assumptions according to 1) scoring, 2) generalization, 3) extrapolation, and 4) implication - Identify the necessary evidence for defending challenges - Collect the necessary evidence - Commit to the validity argument to evaluate the dependability of generalization across situations</td>
</tr>
</tbody>
</table>
Construct Validity and AHA

Evolution of Construct Validity

Lee Cronbach is best known as an expert in reliability, as he invented Cronbach’s Alpha. However, Cronbach has also made an important contribution to validity measures, especially construct validity (H. K. Suen, personal communication, April 17, 2009). Cronbach’s view on construct validity has changed over time, from slightly passive to active, from being central to being one among important considerations, and from generalization to falsification. The following details these changes.

The second shift of Cronbach’s construct validity was from being central to being one among other important considerations. In 1988, Cronbach mentioned construct validity as one of five perspectives, including functional, political, operational, economic, and explanatory perspectives. His concept of construct validity is presented as part of explanatory validity (Cronbach, 1988). It would seem that his viewpoint has expanded, although he maintains construct validity as an important concept for validity writ large.

The final change was from generalization to falsification. In 1955, Cronbach focused on building a sound nomological network and on proving the relationships among constructs. In 1975, he noted that generalizations decay, mentioning, “At one time a conclusion describes the existing situation well, at a later time it accounts for rather little variance, and ultimately it is valid only as history” (Cronbach, 1975, pp. 122-123). Moreover, as he moved on to the kind of argument-based validity discussed by Kane (2006), he became radical, valuing the “falsification” of a theory (Cronbach, 1989). The following passage shows his sense of the benefits of falsification: “[S]erious validation
gives a construction a hard time by searching out conditions under which it breaks down and by looking into plausible alternative interpretations” (Cronbach, 1989, p. 153). In addition, he also valued pluralism, noting that “the proper rule for interpretation of the test score is not the same for every subject or for the same subject on all occasions” (Cronbach, 1989, p. 153). In summary, he viewed that constructs are unstable over time and available for different interpretations depending on time frame, subjects, and contexts (Cronbach, 1989). Construct validation has become more complicated as scholars such as Cronbach have multiplied the different aspects that need to be considered.

**Nomological Net**

The nomological network has been Cronbach’s central concept of validity for more than 30 years. Therefore, it is important to review the network and identify its implications for the AHA. A nomological net is a picture of the relationships among the variables surrounding a target construct. Researchers evaluate the validity of the construct based on the network. According to Cronbach and Meehl (1955), “unless the network makes contact with observations, and exhibits explicit, public steps of inference, construct validation cannot be claimed” (p. 291).

The following are principles for developing a nomological net (Cronbach & Meehl, 1955). The first principle is to clarify the construct and its relationships with other constructs. Second, the related constructs can be “(a) observable properties or quantities to each other; or (b) theoretical constructs to observables; or (c) different theoretical constructs to one another” (p. 290). Third, one should be able to make predictions about observables regarding constructs in a nomological net. Fourth, the quantity and quality of
constructs in a nomological net depends on the quality of one’s understanding of the constructs. Fifth, an enrichment of the net or the decision whether or not to keep the constructs depends on observations. Sixth, judgments about variables depend upon the amount of inductive support.

In spring 2009 at a validity class, 11 doctoral students and a professor of education brainstormed the following constructs that could be viewed as related to human agency: motivation (7); self-efficacy (5); insight (4); planning (2); self-awareness (2); obsessiveness/compulsiveness; punctuality; career success; plotting; depression; patience; secure attachment; agentic parents; mentally healthy/sane; resources; observant; accomplishment; self-regulations; a dream; support and resources; capable; social economic status; self-esteem; determination; happiness; creativity; knowledge of own skills; knowledge of own interests; dedication; discipline; balance; learned helplessness; mentorship; social support; confident; impulsivity; self-control; money; grounded; self-concept; drive; creativity; imagination; positiveness; strong work ethic; idealism; and thoughtfulness (numbers are frequencies of the construct; items with no numbers were only suggested once). Based on the brainstorming, a tentative nomological network for human agency was developed (see Figure 2.2), using most but not all of the constructs derived from the brainstorming. However, it is desirable to find theoretical and empirical evidence in order to intensify the argument by simplifying the relationships.

**A Simplified Nomological Net for This Research**

Figure 2.3 represents the SEM model, which is a simplified version of the complex nomological net. People with high human agency are likely to have high VI,
because they control their lives. Second, it is hypothesized that age will impact VI. The rational is that five to ten years of work experience is necessary in order for individuals to be sure about their directions (Schein, 2006). As people gain work experience, they are likely to gain a higher level of VI.

*Figure 2.2. The initial nomological net of human agency*

With regard to the relationship between independent variables (human agency and age) and the mediator (career decision self-efficacy, CDSE), which is measured by the career decision self-efficacy short-form scale (CDSE-SF; Betz et al., 1996), it is hypothesized that human agency will impact CDSE because human agency is more general than career-specific self-efficacy. In addition, human agency, based on the AHA,
is about general agentic behaviors, whereas CDSE measures confidence in specific career domains; therefore it is hypothesized that the agentic behaviors will cause the perceived confidence (self-efficacy) in career decision-making. This hypothesis is aligned with Solberg et al. (1995) that confirmed that career-related self-efficacy mediates human agency in the relationship with an outcome measure.

*Figure 2.3. The simplified path model for the criterion validity of the AHA*

It is hypothesized that increasing age (certain years of work experience) will positively affect CDSE, because individuals will gain experience that may contribute to CDSE by practicing necessary tasks. In addition, age is a critical factor in developing one’s self-clarity (Schein, 2006), as a certain age could be interpreted as a work experience. The relationship between the mediator (CDSE) and outcome variable (VI) is hypothesized that the higher CDSE scores will contribute to the higher VI scores as previous research showed (e.g., Gushue, Clarke, Pantzer, & Scanlan, 2006; Gushue, Scanlan, Pantzer, & Clarke, 2006; Scott & Ciani, 2008). This study is different from the
previous research because human agency and age were controlled when examining the relationship between CDSE and VI. Both paths, 1) human agency $\rightarrow$ CDSE $\rightarrow$ VI and 2) age $\rightarrow$ CDSE $\rightarrow$ VI, were hypothesized to have mediation effects.

This study also attempted to compare two groups: one group with barriers in career development and the other group with no barriers. It is hypothesized that 1) the coefficient paths will be significant, and 2) there will not be any difference between the two groups in the mediation paths because the characteristics of human agency and the CDSE are applicable to both groups. Considering barriers is important, because it is one of the major elements of career development (Holland, Gottfredson, & Power, 1980; Kenny, Blustein, Chaves, Grossman, & Gallagher, 2003). However, if the path coefficients are confirmed to be significant across the two groups, it may indicate that developing CDSE may serve individuals in gaining VI by having them practice human agency and gaining work experience.

**Chapter Summary**

This chapter reviewed literature related to the development and validation of assessment of human agency (AHA). Because human agency is a new concept in workforce education and development (WFED), the concept of human agency and its relationships with WFED were presented in specific regard to the two missions of WFED. In addition, such constructs as self-efficacy and hope, which are related to human agency, were discussed. Moreover, a potential outcome measure of human agency, the VI scale, was explored and discussed. Finally, current developments of validity standards are explored to guide the process of the development and validation of AHA.
Chapter 3

METHODOLOGY

The purpose of this study was to develop and validate the Assessment of Human Agency (AHA) by applying Bandura’s (2001) concept of human agency. The overall process of this research was guided by AREA et al. (1999) and Kane (2006). This study was conducted in two phases: (1) instrument development; and (2) test and validation (Figure 3.1). The following research questions were answered by this research.

Research Questions

In order to accomplish the purpose, four research questions should be addressed:

1. To what extent can a reliable measure of human agency be developed based on Bandura’s (2001) concept of human agency?

2. To what extent can evidence of internal structure validity be identified for the newly developed AHA?

3. To what extent are there similarities among the constructs of the AHA, the career decision self-efficacy (CDSE), the hope-centered career inventory (HCCI), and the adult hope scale (AHS)?

4. What are the relationships of human agency with other constructs in a conceptual nomological net in terms of predicting CDSE and vocational identity (VI)?

Research Design

In order to fulfill these purposes and answer these questions, this study employed two phases, as shown in Figure 3.1.
Phase 1: Instrument Development

In phase 1, an initial version of the instrument for measuring human agency was developed based on Bandura’s (2001) four features of human agency: intentionality, forethought, self-reactiveness, and self-reflectiveness. Phase 1 has four steps that are as follows: (1) identifying purposes of assessment; (2) item generation; (3) initial pilot test; (4) item selection; and (5) questionnaire formatting.
Identifying Purposes of Assessment

The first step of test development starts with delineating the purpose(s) of the test (AERA et al., 1999). To ensure a professional quality in the purpose statement, this study referred to A Counselor’s Guide to Career Assessment Instruments (Whitfield et al., 2009). The overarching purpose of the AHA is to help individuals achieve their goals by informing their level of human agency and the coping strategy according to the results. Specific purposes are 1) to identify individuals’ strengths and deficiencies among the four elements of human agency and 2) to apply interventions that are designed to address each of the four core features.

The current version of the AHA is intended to use for adults who are aged 18 or above. The AHA is not a timed assessment. The AHA should be used under counselors’ or trained professionals’ attendance because it is a norm-referenced instrument, which may impact one’s self-esteem negatively if instructions are given carelessly. In a longer term, the AHA can be self-administered if sufficient interpretation and follow-up directions are developed and given to the participants. The AHA could be used under two circumstances: 1) during the counseling or facilitation sessions for individuals and 2) during the hiring process as a screening tool that predicts future individual performance in an organization. This research aimed to justify the use of the AHA in the individual context only.

Item Generation

Two sub-steps were employed in the item generation: (1) clarifying the concept of human agency and its sub-constructs and (2) the AHA item development. In order to
secure good content validity, this study first defined the concept of Bandura’s (2001) four features of human agency (See Table 3.1).

Table 3.1. Definition of Human Agency

<table>
<thead>
<tr>
<th>Human Agency</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Human agency refers to “the capacity to exercise control over the nature and quality of one’s life” (Bandura, 2001, p. 1). Human agency has the following four core features: “intentionality, forethought, self-reactiveness, and self-reflectiveness” (Bandura, 2004, p. 618).</td>
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</table>

| Intentionality | “[I]ntentionality is the power to originate actions for given purposes” (Bandura, 2001, p. 6). “People form intentions that include action plans and strategies for realizing them” (Bandura, 2006, p. 164; italics added). |

| Forethought | Forethought involves “the temporal extension of agency” and “set[ting] goals and anticipat[ing] likely outcomes of prospective actions to guide and motivate their efforts” (Bandura, 2006, p. 164). |

| Self-Reactiveness | “[S]elf-reactiveness is to motivate and regulate the execution of action plans” (Bandura, 2001, p. 8; italics added). |

| Self-Reflectiveness | Self-reflectiveness involves reflection on “their personal efficacy, the soundness of their thoughts and actions, and the meaning of their pursuits” (Bandura, 2006a, p. 165, italics added). |

Having the definitions clear, the researcher initially developed 16 items (four items per construct) and had the items reviewed by a writing consultant at Penn State Graduate Writing Center to make sure the expressions were well crafted. In addition, an
expert in the field of career development, Dr. Spencer Niles, reviewed the items to make sure the items measure what they intend to measure. After pilot testing the 16 items, 28 items were finalized after deleting and adding some items.

**Initial Pilot Test**

The initial 16 items were administered to 24 individuals (graduate students in Counselor Education, career counselors at Penn State Career Services, and a Ph.D. test developer) via a Web survey as part of a class assignment (Yoon, 2008). Institutional review board (IRB) approval was not necessary, as it was part of a class assignment at that point.

This initial analysis included test-retest reliability, internal consistency reliability, and construct validity. However, the sample size was not enough to make a sound conclusion on test-retest reliability and construct validity. Cronbach’s alpha for the overall scale turned out to be .887 after deleting three items that negatively affected the reliability. The sub-constructs’ Cronbach’s coefficient alphas were as follows: .750 for intentionality; .607 for forethought; .743 for self-reactiveness; and .802 for self-reflectiveness.

Importantly, the initial pilot survey included questions to solicit feedback on items and the overall instrument. As a result, 12 people gave their reactions such as decrease repetition, eliminate double barred items, change question style, and reword some expressions. These feedbacks helped to further develop additional items with more precision.
After the initial pilot survey, the researcher developed more items with major changes in the existing items based on suggestions of Allen and Yen (1979) and Nunnally (1978) regarding the number of initial items. Allen and Yen (1979) suggested developing one-and-a-half to three times as many items as the final version of the scale will hold. Nunnally (1978) recommended developing one-and-a-half to twice as many items as will become available in the end product. Because this study envisioned having three to four items on each construct, a total of 28 items (seven items per each construct) were developed, which indicates 1.75 to 2.33 times as many as items as will appear on the final version of the instrument. Two writing consultants at the Penn State Graduate Writing Center assisted in polishing the items by comparing those with the definitions of the sub-constructs of Bandura’s (2001) human agency conceptualization.

**Item Selection**

As indicated in the previous stage, item selection began as part of the initial pilot test of the initial item pool, where the panel included 24 graduate students in Counselor Education, career counselors at Penn State Career Services, and a Ph.D. test developer. This process helped select sound items as well as revise them.

For the second phase of the item selection with the 28 items, a panel of writing experts and a panel of content experts were employed in turn. For the expressions, two writing consultants reviewed the 28 items and suggested appropriate corrections again. For the content, the items were reviewed by four experts in the fields of career counseling (Dr. Spencer Niles), industrial psychology (Dr. Rick Jacobs), and educational psychology (Dr. Jonna Kulikowich and Dr. Hoi Suen). These experts had Ph.D. degrees with more
than 20 years of experience in their fields. They reviewed the items by comparing the items and definitions of corresponding constructs. No objection to the initial items was made by the panel of content experts.

**Questionnaire Formatting**

**Response options.** The AHA with the 28 items employed a 4-point Likert-type format using frequency descriptions, although the initial 16-item AHA used six-point options ranging from 1=strongly disagree to 6=strongly agree. The decision was made to make the instrument more behavior-oriented so that it could measure individuals’ self-perceived behaviors and avoid measuring feelings. The four-point options are as follows:

<p>| | | | |</p>
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<tr>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Never</td>
<td>Seldom</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
</tbody>
</table>

**Scoring instructions.** Scoring instructions with a score sheet were developed on page 3 for a paper-based version so that career counselors or other career-development practitioners could use it, although this was not provided for the questionnaire of this research. Interpretations of the results were provided with three ranges (above 3.3, 2.8-3.3, and below 2.8). The cutoff scores at the time of describing scoring instructions were tentative, based on the researcher’s judgment, which was in turn based on ten years of progressive experience in the content area of the AHA items with an intention to reset them once data becomes available.

**Directions for improvement.** On the last page (page 4) of the instrument, directions for improvements are listed accruing to each element of human agency. The purpose of this information is to help individuals strengthen the human agency that they
scored if it was somewhat low according to the cutoff scores. The following are part of the directions that are listed under each construct:

- **Intentionality**: Think about your happiest moment and think how you could have the moment again in the future.
- **Forethought**: Imagine your future life as often as possible while considering your various life roles.
- **Self-Reactivity**: Adjust your plans or actions promptly when you realize something is going wrong.
- **Self-Reflectiveness**: Keep reflecting on and identifying your interests, values, and abilities.

**Overall formatting.** Introductions to human agency and the purpose of the AHA were listed on page 1. Directions with response options and actual question items were given on page 2. Scoring instructions, a scoring sheet, and an interpretation guideline were listed on page 3. Lastly, directions for improvement were provided on page 4.

**Phase 2: Testing and Analysis**

This study used two data sets that were collected twice with one year interval. The first data collection had two main purposes: 1) to confirm initial reliability and validity of the AHA; and 2) to select sound items. The main reasons for using the second data set were 1) to confirm the construct structure of the AHA with more samples in the same institution and 2) to confirm convergent validity with similar measures. Both data collections included the vocational identity scale (Holland et al., 1980) as an outcome measure.
Participants

First data set. Nunnally (1978) recommends that researchers use a sample of at least ten subjects per item. In addition, Tabachnick and Fidell (2006) suggest having at least 300 responses for factor analysis. Because the initial version of the AHA had 28 items, the target responses were 300 or more. The sampling of this research was conducted by recruiting undergraduate students, graduate students, and working professionals at a large public university in the Eastern United States on an availability basis.

Initial validation was conducted to eliminate items in order to increase the reliability and validity of the AHA. Email invitations were sent to 6,800 individuals aged 18 years or older at a public university in the Eastern United States. Those adults included 600 Outreach employees, 2,050 nontraditional adult students, and 169 students who were enrolled in an online degree program. Another set of invitation email was sent out to 4,000 students enrolled in an annual career fair. Of all those invited, 346 individuals responded to the questionnaire (response rate: 5.1%); one case was eliminated due to selecting the same answers across the question sets. Therefore, the total number of usable data was 345. The response rate seems to be low; however, the primary purpose of this research was not to draw any conclusions on a certain population but to validate the items and structure of the assessment tool. Therefore, this low response rate minimally harmed the research findings, given the purpose and research questions of this research.

Reflexive relationships were developed between the researcher, the participating organization, and the participants. Although no monetary incentives were given,
individual participants received a report based on their responses for developmental purposes. The administrators of the participating organizations received a report with detailed results and demographic information so that they could better serve their clients.

**Second data set.** The second data set used in this research was originally collected for the development and validation of the HCCI (Niles, Yoon, Balin, & Amundson, 2010). This data set had 380 usable samples of graduate and undergraduate students at the same academic institution as the first data set. Because the data was collected by the author of this study, no permission was required to analyze this data.

**Instruments**

Different types of instruments were used in two different data collection stages (see Table 3.2.).

**First data set.** The first data set included three different instruments: (1) the 28 items of the AHA from phase 1; (2) the career decision self-efficacy short form (CDSE-SF; Betz & Taylor, 2006); and (3) my vocational situation (MVS; Holland, Diager, & Power, 1980). In total, the questionnaire contained 86 items (AHA: 28; CDSE-SF: 25; MVS: 26; and demographic information: 7).

**Second data set.** The second data set included four different instruments as follows: (1) the refined AHA on the basis of the first data collection; (2) the HCCI; (3) the AHS (Snyder et al., 1991), and (4) the VI scale of MVS. In total, the data set consisted of 80 items (AHA: 12, HCCI: 28, AHS: 12, VI: 18, and demographic information: 10). Although the initial HCCI had 100 items, this study employed the 28-item refined version of the HCCI.
Table 3.2. *Instruments Used in This Research*

<table>
<thead>
<tr>
<th>Instrument</th>
<th>1st Data Set</th>
<th>2nd Data Set</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AHA</strong></td>
<td>• 28 Items</td>
<td>• 12 items</td>
</tr>
<tr>
<td></td>
<td>- Intentionality (7)</td>
<td>- Intentionality (3)</td>
</tr>
<tr>
<td></td>
<td>- Forethought (7)</td>
<td>- Forethought (3)</td>
</tr>
<tr>
<td></td>
<td>- Self-reactiveness (7)</td>
<td>- Self-reactiveness (3)</td>
</tr>
<tr>
<td></td>
<td>- Self-reflectiveness (7)</td>
<td>- Self-reflectiveness (3)</td>
</tr>
<tr>
<td><strong>CDSE-SF</strong></td>
<td>• 25 Items</td>
<td>Not used</td>
</tr>
<tr>
<td></td>
<td>- Self-appraisal (5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Occupational information (5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Goal selection (5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Planning (5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Problem solving (5)</td>
<td></td>
</tr>
<tr>
<td><strong>MVS</strong></td>
<td>• Vocational identity (18)</td>
<td>• Vocational identity only (18)</td>
</tr>
<tr>
<td></td>
<td>• Barrier (4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Need for information (4)</td>
<td></td>
</tr>
<tr>
<td><strong>HCCI</strong></td>
<td>Not used</td>
<td>28 items</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Hope (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Self-reflection (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Self-clarity (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Visioning (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Goal setting &amp; planning (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Implementing (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Adapting (4)</td>
</tr>
<tr>
<td><strong>AHS</strong></td>
<td>Not used</td>
<td>8 items</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Agency (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Pathways (4)</td>
</tr>
</tbody>
</table>

*Note.* The number in () indicates the number of items that measure each sub-construct.

Assessment of Human Agency. The AHA is the primary concern of this study.

AHA adopted Bandura's (2001) four core features of human agency: intentionality, forethought, self-reactiveness, and self-reflectiveness. The total number of items in the initial version of the AHA is 28, and in the refined version 12. Response options are
based on a 4-point Likert scale (1 = never, 2=seldom, 3=often, and 4 = almost always). Reliability and validity information of the AHA will be discussed in Chapter 4.

**Career Decision Self Efficacy-Short Form.** Betz et al.’s (1996) CDSE-SF was chosen to measure career decision self-efficacy in this study because of its popularity in career development research over the CSES. CDSE-SF has 25 items measuring the following five subscales: goal selection; gathering occupational information; accurate self-appraisal; problem solving; and planning. The CDSE-SF’s reliability coefficient alpha values ranged from .73 to .83 on subscales and .94 on the total scale. There was concurrent validity between the CDSE-SF and the VI scale of the MVS (Holland et al., 1980). The correlations between the two measures ranged from .30 (problem solving, male) to .66 (goal selection, female) with .63 (female) and .48 (male) for the total score. Betz et al. (1997) concluded that the CDSE-SF has sound validity and reliability evidence comparable to the long form CDSE scale.

**My Vocational Situation.** As indicated in Chapter 2, the VI scale of the MVS (Holland et al., 1980) was employed as an outcome variable. As presented earlier, the VI scale has 18 true-false items with more than moderate test-retest reliability coefficients ranging from .63 (7 days, N = 48) to .93 (two weeks, N = 161). The responses to 18 items were summed into one variable coding, “No” to “1” and “Yes” to “0.” Answering “No” to the questions indicates healthier VI; thus, higher scores on the unified variable are better.

The MVS scale has two additional constructs with four items per each subscale: 1) barriers; and 2) need for information. The barriers scale was used to determine a
grouping variable for Research Question 4 when exploring the criterion validity of the AHA. Similar to the VI scale, responding “No” to barriers questions indicates a better status. Answering “No” for all four questions was considered as “no barriers”; responding with one or more “No” answers to the questions was regarded as “with barriers.” Therefore, two groups were created based on the barriers question. Although the need for information data was collected for the first dataset, it was not used for this research.

**Hope-Centered Career Inventory.** Using the HCCI (Niles et al., 2010) is critical for this research, because the HCCI adopts the construct of hope and agency. Therefore, the relationship between the HCCI and the AHA was explored for the HCCI’s convergent validity. The HCCI has 28 items with the following seven constructs: hope; self-reflection; self-clarity; visioning; goal setting and planning; implementing; and adapting. Response options are based on a 4-point Likert scale (1 = definitely false to 4 = definitely true).

The HCCI has excellent reliability and validity evidence with a sample of 380 undergraduate and graduate students at a large public university in the United States (Niles et al., 2010). Cronbach’s Alpha for total scale was .924, and individual scales’ coefficients were .827 (hope); .743 (self-reflection); .822 (self-clarity); .859 (visioning); .799 (goal setting and planning); .850 (implementing); and .814 (adapting)—with overall ranges from .743 to .859. The fit indices using confirmatory factor analysis (CFA) turned out to be almost perfect: RMSEA = .0; RMR = .045; NNFI = 1.00; CFI =
1.00; and GFI = .98. Therefore, the 7-factor model of HCCI is valid in terms of internal consistency validity.

**Adult Hope Scale.** AHS (Snyder et al., 1991) is another measure for the AHA’s convergent validity, because AHS measures *agency thinking* and *pathways thinking*, which are similar to AHA’s two constructs, *intentionality* and *forethought*. The AHS has 12 items including four on agency, four on pathways, and four on dummy items. Cronbach’s Alphas ranged from .74 to .85, .71 to .76, and .63 to .80 for the total scale, agency subscale, and pathways subscale, respectively (Snyder, C. Harris, et al., 1991). In terms of convergent validity, the AHS correlated .60 and .50 with an optimism scale in two studies: .54 with a control measure, and .62 with a problem-solving measure. The correlations between the AHS and self-consciousness subscales were not significant, which show its discriminant validity (Snyder, C. Harris, et al., 1991). Overall, the AHS is found to be valid and reliable.

**Data Analysis**

The main purpose of this study was to establish validity evidence of the AHA. The data analysis plan is explained according to the four research questions (see Figure 3.1 for summary). The detailed data analysis plan follows:

**Research questions 1: Reliability.** To measure internal consistency reliability, Cronbach’s alpha coefficient (Cronbach, 1951) was applied. Cronbach’s alpha coefficient determines the degree to which each item measures a construct or latent factor (Crocker & Algina, 1986). The overall scale and each factor were tested with coefficient of items. In addition, the corrected item-total correlation for each item in the AHA was calculated.
A low item-total correlation means that a certain item is less associated with the overall scale or the factor and reduces the reliability of the measure (Nunnally, 1978).

Exploratory factor analysis (EFA) was first implemented before conducting the reliability test to ensure the internal construct validity along with the reliability of the scale.

**Research question 2: Internal construct validity.** For internal construct validity, EFA and confirmatory factor analysis (CFA) were conducted to assess the hypothesized dimensionality of human agency. EFA was used to ensure the consistency of the items under each construct. Using SPSS 17.0, principal axis factoring with promax rotation was conducted. During the EFA process, weak or interfering items were eliminated. Promax rotation is generally recommended when correlation among factors is expected (Stevens, 2002).

CFA was used to confirm the factor structure to identify an adequate factor structure for the proposed scale after EFA. LISREL 8.80 was used to examine the factor structure and confirm the fitness of the data to the proposed measurement model, which will be the refined AHA. CFA is the most suitable method to determine the fit between observed items and proposed latent variables (Hair, Black, Babin, R. E. Anderson, & Tatham, 2006). The primary purpose of CFA is to assess how well the proposed factors are represented by collected data (Byrne, 1998; Kline, 2004; Thompson, 2004). Factor loadings and t-values were examined to determine the soundness of each item. In addition, the following model-fit indices were used to examine the model-data fit between the proposed factor structure and the collected data: $\chi^2$ (chi-square); root mean
square error of approximation (RMSEA; Browne & Cudeck, 1993); non-normed fit index (NNFI; Bentler & Bonett, 1980); and comparative fit index (CFI; Bentler, 1990).

**Research question 3: Convergent validity.** Examining convergent validity is an important method for determining construct validity along with discriminant validity. Comparing the AHA with similar measures can assure that the AHA is valid in terms of measuring the characteristics of the intended construct, human agency. To assess convergent validity, Pearson’s correlations among the AHA, HCCI (Niles et al., 2010), and AHS (Snyder et al., 1991) were examined using SPSS 17.0. Due to the scope of this study, discriminant validity was not examined.

**Research question 4: Criterion validity.** In order to measure the criterion validity of the AHA, career decision self-efficacy (CDSE) and vocational identity (VI) were used as criterion variables. Structural equation modeling (SEM) was used to confirm the relationship between human agency and the two outcome variables, using CDSE as a mediator. Regression coefficients between human agency and other variables were explored using LISREL 8.80 to determine the extent to which the AHA predicts CDSE and in turn, VI, which has been a vital outcome variable in the field of career development.

For this research question, this study used four latent variables: 1) human agency; 2) age; 3) career decision self-efficacy-short form, (CDSE-SF; Betz & Taylor, 1996); and 4) VI. The items were parcelled into three composites using domain representative parceling. Second, the age data were converted into two categories: ages 18-24 and ages 25+. Third, the CDSE has 25 items with five sub-constructs: self-appraisal; occupational
information; goal selection; planning; and problem solving. The 25 items were also parceled into five items using domain representative parceling. Therefore each composite contains scores from all five sub-constructs. When doing domain representative parceling, this research also ran factor analyses within each sub-construct to ensure variation, although it is not a necessary procedure. Fourth, the 18-item VI scale is from MVS (Holland, Daiger, & Power, 1980), and it represents one’s belief about the certainty of one’s career directions. Factorial parceling (Rogers & Schmitt, 2004) was employed to create three composites by conducting factor analysis with one factor solution.

The sample was further divided into two groups using the Barriers scale of MVS (Holland et al., 1980): a group with no barriers ($N = 157$) and the other group with barriers ($N = 188$). The barriers include such items as a significant other’s support, financial issues, and one’s ability. After summing the dichotomous responses, one item for barriers was created, where 0 indicates no barriers and 1 or more indicates with barriers.

For research question four, data analyses were done with LISREL 8.8. Because the present data did not have any missing data, the FIML feature in LISREL was not used. With regard to the identification status of the model, standardized factor loadings of each measure were checked to ensure good standard error (SE) ratios. In order to determine the soundness of the model fit, factor loadings and t-values were examined. In addition, the following four model-fit indices were considered to examine the psychometric properties between the proposed factor structure and the collected data in terms of model-data fit: $X^2$ (chi-square); non-normed fit index (NNFI; Bentler & Bonett, 1980);
comparative fit index (CFI; Bentler, 1990); and root mean square error of approximation (RMSEA; Browne & Cudeck, 1993).

To confirm the mediation effect of the CDSE, the joint significance test of MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) was used. Furthermore, to test whether the factor structure, factor patterns, factor loadings, and b-weight are different between the two groups, the Jöreskog's (1971) hierarchy was employed and chi-square differences were examined to proceed with a higher level hypothesis.

Table 3.3. Summary of the Statistical Analysis Plans

<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Analysis Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To what extent can a reliable measure of human agency be developed based on Bandura’s (2001) concept of human agency?</td>
<td>Mean, SD, Item-total correlations, Exploratory factor analysis, Cronbach’s alpha coefficients</td>
</tr>
<tr>
<td>2. To what extent can evidence of internal structure validity be identified for the newly developed AHA?</td>
<td>Confirmatory factor analysis</td>
</tr>
<tr>
<td>3. To what extent are there similarities among the constructs of the AHA, the CDSE, the HCCI, and the AHS?</td>
<td>Mean, SD, Pearson’s correlation</td>
</tr>
<tr>
<td>4. What are the relationships of human agency with other constructs in a conceptual nomological net in terms of predicting CDSE and VI?</td>
<td>Structured equation modeling</td>
</tr>
</tbody>
</table>
Chapter 4

FINDINGS

This chapter presents the results of data analyses undertaken with the methods proposed in Chapter 3. The purpose of this study was to develop and validate the assessment of human agency (AHA) by applying Bandura’s (2001) concept of human agency. The following research questions were answered by this research.

Research Questions:

1. To what extent can a reliable measure of human agency be developed based on Bandura’s (2001) concept of human agency?

2. To what extent can evidence of internal structure validity be identified for the newly developed AHA?

3. To what extent are there similarities among the constructs of the AHA, the career decision self-efficacy (CDSE), the hope-centered career inventory (HCCI), and the adult hope scale (AHS)?

4. What are the relationships of human agency with other constructs in a conceptual nomological net in terms of predicting CDSE and vocational identity (VI)?
Analysis for Respondents

The results of this study are based on 725 cases with two data sets collected in a one-year period between 2009 and 2010. The number of participants for each phase were 345 (1st) and 380 (2nd). There were no missing values in responses, except for less than .5% on the ethnicity question.

Table 4.1 shows descriptive statistics for the demographic information of survey respondents. This data included gender, age, student status, work experience, employment status, and ethnicity. Level of education was also included in the original survey (1st set); however, the data was not disclosed due to the confusion from the undergraduate respondents about the question. The research data consisted of 248 males (34.2%) and 477 females (65.8%). Of the respondents, 52.5% (N = 379) were between age 18 and 24, and 47.5% (N = 346) were 25 or older. Overall, 45.4% (N = 329) of the respondents were undergraduate students, 36.1% (N = 262) were graduate students, and 18.5% (N = 134) were non-students. The non-student populations were Outreach employees, although some of them belonged to the undergraduate or graduate samples due to their current education. In terms of work experience throughout their careers, only 4.8% (N = 35) had no work experience, 53.4% (N = 387) had less than five years of experience, and 41.8% (N = 303) had five or more years of work experience. With regard to employment status, 39.0% (N = 283) were full-time employees, 36.2% (N = 262) worked part-time, and 24.8% (N = 180) were not working. In terms of ethnicity, the majority (82.3%) of the respondents were white (N = 597) with the second largest number, Asian-American, which consisted of 6.1% (N = 44).
Table 4.1. The Results of the Descriptive Analyses for Research Participants (N = 725)

<table>
<thead>
<tr>
<th></th>
<th>1st Set (N = 345)</th>
<th>2nd Set (N = 380)</th>
<th>Total (N = 725)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>124</td>
<td>35.9</td>
<td>124</td>
</tr>
<tr>
<td>Female</td>
<td>221</td>
<td>64.1</td>
<td>256</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-19</td>
<td>17</td>
<td>4.9</td>
<td>79</td>
</tr>
<tr>
<td>20-24</td>
<td>123</td>
<td>35.7</td>
<td>162</td>
</tr>
<tr>
<td>25-29</td>
<td>50</td>
<td>14.5</td>
<td>77</td>
</tr>
<tr>
<td>30-34</td>
<td>29</td>
<td>8.4</td>
<td>29</td>
</tr>
<tr>
<td>35-39</td>
<td>21</td>
<td>6.1</td>
<td>16</td>
</tr>
<tr>
<td>40-44</td>
<td>28</td>
<td>8.1</td>
<td>5</td>
</tr>
<tr>
<td>45-49</td>
<td>33</td>
<td>9.6</td>
<td>7</td>
</tr>
<tr>
<td>50-54</td>
<td>21</td>
<td>6.1</td>
<td>4</td>
</tr>
<tr>
<td>55-59</td>
<td>17</td>
<td>4.9</td>
<td>0</td>
</tr>
<tr>
<td>60+</td>
<td>6</td>
<td>1.7</td>
<td>1</td>
</tr>
<tr>
<td><strong>Student Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate</td>
<td>156</td>
<td>45.2</td>
<td>173</td>
</tr>
<tr>
<td>Graduate</td>
<td>55</td>
<td>15.9</td>
<td>207</td>
</tr>
<tr>
<td>Non-Student</td>
<td>134</td>
<td>38.8</td>
<td>0</td>
</tr>
<tr>
<td><strong>Work Experience</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>8</td>
<td>2.3</td>
<td>27</td>
</tr>
<tr>
<td>Under 5 years</td>
<td>140</td>
<td>40.6</td>
<td>246</td>
</tr>
<tr>
<td>5 years &amp; over</td>
<td>197</td>
<td>57.1</td>
<td>107</td>
</tr>
<tr>
<td><strong>Employment Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td>211</td>
<td>61.2</td>
<td>72</td>
</tr>
<tr>
<td>Part time</td>
<td>76</td>
<td>22.0</td>
<td>186</td>
</tr>
<tr>
<td>Not working</td>
<td>58</td>
<td>16.8</td>
<td>122</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African-American</td>
<td>15</td>
<td>4.3</td>
<td>13</td>
</tr>
<tr>
<td>Asian-American</td>
<td>15</td>
<td>4.3</td>
<td>29</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>6</td>
<td>1.7</td>
<td>11</td>
</tr>
<tr>
<td>Native American</td>
<td>1</td>
<td>.3</td>
<td>0</td>
</tr>
<tr>
<td>White</td>
<td>295</td>
<td>85.5</td>
<td>302</td>
</tr>
<tr>
<td>Other</td>
<td>13</td>
<td>3.8</td>
<td>23</td>
</tr>
<tr>
<td>No Response</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>
Research Question One

To what extent can a reliable measure of human agency be developed based on Bandura’s (2001) concept of human agency?

Determination of Items through Exploratory Factor Analysis

Before conducting reliability tests, exploratory factor analysis (EFA) was implemented using SPSS 17.0 employing the principal axis factoring with the first data set ($N = 345$). Promax rotation ($Kappa = 4$) was employed because the factors are interrelated on the basis of Bandura’s (2001) conceptualization. The number of factors was fixed at four instead of using eigenvalues to determine the number of factors, as the factor structure and corresponding items are strictly based on a theory.

A numerous types of EFA solutions were explored given the 4-factor structure. Through continuous deletions and comparisons of the items, a distinct 4-factor structure with 12 items was identified (see Table 4.3), and the solution accounted for 68% of the variance. Although some factors had more than three items, the number of items was reduced to three to make it consistent and easy to score in practice. When deleting the extra items, the following two criteria were considered: 1) overall representation of the concept of the factor; and 2) reliability of the scale. Although the results of reliability tests are presented in the next section, EFA and reliability tests were conducted simultaneously.

Factor loadings of selected items on corresponding factors were ranged from .416 to .932 across the constructs (see Table 4.2). There was no item loaded on other factors.
with a factor loading higher than .30. The average factor loading on the corresponding factors was .67, with a .02 average loading on the other factors.

Table 4.2. *Promax Rotated Factor Matrix (Kappa = 4) Showing Factor Loadings for the Four Sub-constructs of Human Agency*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor 1 Self-Reflectiveness</th>
<th>Factor 2 Self-Reactiveness</th>
<th>Factor 3 Intentionality</th>
<th>Factor 4 Forethought</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Reflectiveness (1)</td>
<td><strong>.828</strong></td>
<td>-.051</td>
<td>-.204</td>
<td>.132</td>
</tr>
<tr>
<td>Self-Reflectiveness (2)</td>
<td><strong>.767</strong></td>
<td>-.091</td>
<td>.067</td>
<td>-.005</td>
</tr>
<tr>
<td>Self-Reflectiveness (3)</td>
<td><strong>.682</strong></td>
<td>.084</td>
<td>.086</td>
<td>-.111</td>
</tr>
<tr>
<td>Self-Reactiveness (1)</td>
<td>-.052</td>
<td><strong>.932</strong></td>
<td>-.110</td>
<td>-.016</td>
</tr>
<tr>
<td>Self-Reactiveness (6)</td>
<td>-.077</td>
<td><strong>.691</strong></td>
<td>.055</td>
<td>.086</td>
</tr>
<tr>
<td>Self-Reactiveness (2)</td>
<td>.186</td>
<td><strong>.416</strong></td>
<td>.150</td>
<td>.058</td>
</tr>
<tr>
<td>Intentionality (5)</td>
<td>.004</td>
<td>-.070</td>
<td><strong>.817</strong></td>
<td>.024</td>
</tr>
<tr>
<td>Intentionality (1)</td>
<td>-.127</td>
<td>-.025</td>
<td><strong>.656</strong></td>
<td>.089</td>
</tr>
<tr>
<td>Intentionality (7)</td>
<td>.186</td>
<td>.257</td>
<td><strong>.416</strong></td>
<td>-.068</td>
</tr>
<tr>
<td>Forethought (5)</td>
<td>-.002</td>
<td>-.081</td>
<td>.095</td>
<td><strong>.739</strong></td>
</tr>
<tr>
<td>Forethought (3)</td>
<td>.076</td>
<td>.109</td>
<td>.056</td>
<td><strong>.583</strong></td>
</tr>
<tr>
<td>Forethought (1)</td>
<td>.010</td>
<td>.126</td>
<td>-.032</td>
<td><strong>.510</strong></td>
</tr>
</tbody>
</table>

Average—
Major Factor\(^1\)  
**.759** | **.680** | **.630** | **.611**  

Average—
Other Factors\(^2\)  
-.010  | .031  | .030  | .040  

<table>
<thead>
<tr>
<th>Eigenvalues</th>
<th>Percent of Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.185</td>
<td>43.206</td>
</tr>
<tr>
<td>1.266</td>
<td>10.546</td>
</tr>
<tr>
<td>.902</td>
<td>7.516</td>
</tr>
<tr>
<td>.853</td>
<td>7.111</td>
</tr>
</tbody>
</table>

*Note.* The number following each construct indicates the original item number. Factor loadings greater than .40 are shown in boldface.

\(^1\) Average of the factor loadings of items on the corresponding factor.

\(^2\) Average of the factor loadings of items on the other factors (e.g., factor loadings of self-reflectiveness (1) of factors 2, 3, and 4.)
Table 4.3. *Items of the AHA*

<table>
<thead>
<tr>
<th>Construct</th>
<th>No.</th>
<th>Item descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intentionality</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.</td>
<td><strong>I have end results in mind before I begin something.</strong>  (1)</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>I make lists of the things that need to be done.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>I set goals to accomplish important things.</td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td>I have a clear vision that guides my actions.</td>
</tr>
<tr>
<td></td>
<td>5. <strong>I have specific goals in mind when I complete tasks.</strong>  (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.</td>
<td>I plan daily (e.g., using to do lists, calendars, or PDAs).</td>
</tr>
<tr>
<td></td>
<td>7. <strong>I have a specific purpose when I commit to something.</strong>  (3)</td>
<td></td>
</tr>
<tr>
<td><strong>Forethought</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. <strong>I imagine possible future events in my life.</strong>  (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>I consider the possible consequences of each plan when choosing a plan of action.</td>
</tr>
<tr>
<td></td>
<td>3. <strong>I forecast my future in terms of the next several years.</strong>  (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td>I consider various courses of action likely to produce desired outcomes.</td>
</tr>
<tr>
<td></td>
<td>5. <strong>I imagine various opportunities that might be open to me in five years.</strong>  (3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.</td>
<td>I consider the potential negative consequences of my prospective actions.</td>
</tr>
<tr>
<td></td>
<td>7.</td>
<td>I consider the potential positive consequences of my prospective actions.</td>
</tr>
<tr>
<td><strong>Self-Reactiveness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. <strong>I actively keep myself on track to complete my plans.</strong>  (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. <strong>I monitor my plans and actions so my goals will be met.</strong>  (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>I adjust my plans when I realize something is going wrong.</td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td>I try to find more effective ways to fulfill my objectives.</td>
</tr>
<tr>
<td></td>
<td>5.</td>
<td>I move my plans into action without procrastination.</td>
</tr>
<tr>
<td></td>
<td>6. <strong>I keep myself motivated to reach my goals.</strong>  (3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.</td>
<td>I complete the tasks I had planned for the day.</td>
</tr>
<tr>
<td><strong>Self-Reflectiveness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. <strong>I think about why I am passionate about certain things.</strong>  (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. <strong>I think about the meaning of my life pursuits.</strong>  (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. <strong>I evaluate my motivations for certain goals.</strong>  (3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td>I think about what my priorities are.</td>
</tr>
<tr>
<td></td>
<td>5.</td>
<td>I judge whether my plans were sound based on the outcomes of my predictions.</td>
</tr>
<tr>
<td></td>
<td>6.</td>
<td>I look back and think about how I performed.</td>
</tr>
<tr>
<td></td>
<td>7.</td>
<td>I think about things that make me happy.</td>
</tr>
</tbody>
</table>

*Note.* Items shown in boldface are selected based on EFAs. The number following item descriptions in bold indicates the item number in the 12-item AHA.
Reliability of the AHA

Based on the EFA results, the internal consistency reliability was explored with two different data sets. Table 4.4 and 4.5 show the summary of results from Cronbach’s alpha coefficient test and corrected item-total correlations. With the first dataset \( N = 345 \), Cronbach’s alpha coefficient for the overall scale with the first data set was .88, with the individual constructs’ coefficients ranging from .72 to .78. The corrected item-total correlations for each item with subscales of the AHA ranged from .486 to .661. In addition, the corrected item-total correlation for each item with the main (total) scale ranged from .468 to .652.

With the second data set \( N = 380 \), Cronbach’s alpha coefficient for the overall scale with the first data set was .90, with the individual constructs’ coefficients ranging from .73 to .84. The corrected item-total correlations for each item with subscales of the AHA ranged from .471 to .724. The corrected item-total correlation for each item with the main scale ranged from .551 to .690. The reliability coefficients of the AHA were found to be slightly higher in the second data set.

The results of the Cronbach’s alpha tests in both data sets indicate that the reliability for the subscales of the AHA and the overall scale are sound (Briggs & Cheek, 1986). The AHA subscales have above-minimum acceptable coefficient value, .70 (Nunally, 1978). The results of the corrected item-total correlations in both data sets were also found to be acceptable on the basis of the cut-off point, 0.3 (Wong, Chan, & Lau, 2008). This indicates that both the subscales and the total scale of the AHA are reliable in terms of internal consistency.
Table 4.4. *Means, Standard Deviations, and Item-Total Correlations with Subscales and Total Scale (1st Data Set, N = 345)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Corrected Item-Total Correlation (in a Subscale)</th>
<th>Corrected Item-Total Correlation (in the Main Scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intentionality (1)</td>
<td>3.23</td>
<td>.601</td>
<td>.526</td>
<td>.468</td>
</tr>
<tr>
<td>Intentionality (5)</td>
<td>3.27</td>
<td>.619</td>
<td>.588</td>
<td>.586</td>
</tr>
<tr>
<td>Intentionality (7)</td>
<td>3.22</td>
<td>.590</td>
<td>.517</td>
<td>.625</td>
</tr>
<tr>
<td><strong>Intentionality</strong> (Cronbach’s α = .723)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forethought (1)</td>
<td>3.33</td>
<td>.571</td>
<td>.486</td>
<td>.493</td>
</tr>
<tr>
<td>Forethought (3)</td>
<td>2.98</td>
<td>.792</td>
<td>.595</td>
<td>.651</td>
</tr>
<tr>
<td>Forethought (5)</td>
<td>2.96</td>
<td>.771</td>
<td>.587</td>
<td>.578</td>
</tr>
<tr>
<td><strong>Forethought</strong> (Cronbach’s α = .724)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Reactiveness (1)</td>
<td>3.12</td>
<td>.640</td>
<td>.661</td>
<td>.595</td>
</tr>
<tr>
<td>Self-Reactiveness (2)</td>
<td>2.97</td>
<td>.679</td>
<td>.581</td>
<td>.652</td>
</tr>
<tr>
<td>Self-Reactiveness (6)</td>
<td>3.15</td>
<td>.618</td>
<td>.612</td>
<td>.600</td>
</tr>
<tr>
<td><strong>Self-Reactiveness</strong> (Cronbach’s α = .780)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Self-Reflectiveness (1)</td>
<td>3.07</td>
<td>.758</td>
<td>.629</td>
<td>.515</td>
</tr>
<tr>
<td>Self-Reflectiveness (2)</td>
<td>3.05</td>
<td>.782</td>
<td>.621</td>
<td>.550</td>
</tr>
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<td>Self-Reflectiveness (3)</td>
<td>3.00</td>
<td>.673</td>
<td>.607</td>
<td>.583</td>
</tr>
<tr>
<td><strong>Self-Reflectiveness</strong> (Cronbach’s α = .779)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Human Agency</strong> (Cronbach’s α = .878)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* The number following each variable indicates the original item number.

It should be noted that the second item that measures self-reactiveness is different between dataset 1 and dataset 2. The item used in dataset 2 was based on the preliminary analysis conducted in 2009 (Yoon, 2009) with a sample of 280 respondents. Although the quality of the item may not be dramatically different between the two solutions, the
item selection in dataset 1 is slightly better in terms of internal consistency validity. Cronbach’s Alpha for Self-reactiveness in dataset 1 is also higher than in dataset 2, although the overall Alpha coefficient is higher in dataset 2 than dataset 1.

Table 4.5. Means, Standard Deviations, and Item-Total Correlations with Subscales and Total Scale (2nd Data Set, N = 380)

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Corrected Item-Total Correlation (in a Subscale)</th>
<th>Corrected Item-Total Correlation (in the Main Scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intentionality (1)</td>
<td>3.32</td>
<td>.689</td>
<td>.541</td>
<td>.589</td>
</tr>
<tr>
<td>Intentionality (5)</td>
<td>3.28</td>
<td>.646</td>
<td>.616</td>
<td>.688</td>
</tr>
<tr>
<td>Intentionality (7)</td>
<td>3.30</td>
<td>.620</td>
<td>.511</td>
<td>.611</td>
</tr>
<tr>
<td><strong>Intentionality</strong> (Cronbach’s α = .732)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forethought (1)</td>
<td>3.34</td>
<td>.707</td>
<td>.724</td>
<td>.667</td>
</tr>
<tr>
<td>Forethought (3)</td>
<td>3.15</td>
<td>.768</td>
<td>.700</td>
<td>.697</td>
</tr>
<tr>
<td>Forethought (5)</td>
<td>3.17</td>
<td>.749</td>
<td>.704</td>
<td>.690</td>
</tr>
<tr>
<td><strong>Forethought</strong> (Cronbach’s α = .843)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Reactivity (1)</td>
<td>3.18</td>
<td>.680</td>
<td>.625</td>
<td>.651</td>
</tr>
<tr>
<td>Self-Reactivity (4)</td>
<td>3.19</td>
<td>.711</td>
<td>.471</td>
<td>.578</td>
</tr>
<tr>
<td>Self-Reactivity (6)</td>
<td>3.31</td>
<td>.702</td>
<td>.571</td>
<td>.608</td>
</tr>
<tr>
<td><strong>Self-Reactivity</strong> (Cronbach’s α = .731)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Reflectiveness (1)</td>
<td>3.15</td>
<td>.790</td>
<td>.568</td>
<td>.551</td>
</tr>
<tr>
<td>Self-Reflectiveness (2)</td>
<td>3.24</td>
<td>.794</td>
<td>.592</td>
<td>.588</td>
</tr>
<tr>
<td>Self-Reflectiveness (3)</td>
<td>3.04</td>
<td>.764</td>
<td>.599</td>
<td>.638</td>
</tr>
<tr>
<td><strong>Self-Reflectiveness</strong> (Cronbach’s α = .757)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Agency (Cronbach’s α = .904)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* The number following each variable indicates the original item number.
Research Question Two

To what extent can evidence of internal structure validity be identified for the newly developed AHA?

As noted earlier it is important to remember that one item in self-reactiveness is different in the two datasets; therefore, the internal structure of the AHA and the goodness-of-fit indices of CFAs are different between the two datasets. The results shown in this section can guide what solution would be more appropriate in future research.

Both first-order CFA and second-order CFA were conducted with each dataset: 1) the initial internal structure validity; and 2) the confirmation of internal structure validity. Although one self-reactiveness item is different in dataset 2, it is worthwhile to confirm the soundness of the measurement fit, as the model in dataset 2 is assumed to be weaker. Both types of CFAs tested the four factors of human agency with 12 items. Whereas the first order CFA tested the structure of four factors (intentionality, forethought, self-reactiveness, and self-reflectiveness), the second order CFA also tested the latent human agency factor with the four factors. The goodness-of-fit indices tables and measurement models with factor loadings, regression coefficients, and error variances are presented.

Initial Internal Structure Validity

The goodness-of-fit information of the first dataset for both first-order CFA and second order-CFA appears in Table 4.6. The chi-square tests for both Model 1 and Model 2 were significant, $\chi^2 (df = 48) = 98.86$ for Model 1 and $\chi^2 (df = 50) = 100.21$ for Model 2, at .001, indicating a lack of model fit between the proposed measurement model and the
data. However, the chi-square is considered to be sensitive to sample size (Hooper, Coughlan, & Mullen, 2008). Therefore, this research used three indices of practical fit to judge the quality of model fit for all models in this study: NNFI (Bentler & Bonett, 1980); CFI (Bentler, 1990); and RMSEA (Browne & Cudeck, 1993). For Model 1, these fit indices were NNFI=.95, CFI=.97, and RMSEA=.055. For Model 2, the fit indices were NNFI=.96, CFI=.97, and RMSEA=.054. The pattern of these indices confirms a good fit between the model and the data.

The chi-square difference between Model 1 and Model 2 was not significant, $\Delta \chi^2 (\Delta df = 2) = 1.35 (p > .05)$. Therefore, the two models were found to be equally good, although RMSEA for Model 2 appears to be slightly better. This indicates that the AHA is a single measure with four distinct factors. Factor loadings, covariances, and error variances for Model 1 are presented in Figure 4.1., and factor loadings, regression coefficients, and error variances for Model 2 are shown in Figure 4.2.

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>NNFI</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M1-First Order CFA</strong></td>
<td>98.86***</td>
<td>48</td>
<td>.95</td>
<td>.97</td>
<td>.055</td>
</tr>
<tr>
<td>M1-Null</td>
<td>1571.970</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>M2-Second Order CFA</strong></td>
<td>100.21***</td>
<td>50</td>
<td>.96</td>
<td>.97</td>
<td>.054</td>
</tr>
<tr>
<td>M2-Null</td>
<td>1571.970</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.*** p < .001.
Figure 4.1. First order CFA results with no modifications (M1; 1<sup>st</sup> dataset)

Figure 4.2. Second order CFA results with no modifications (M1; 1<sup>st</sup> dataset)
Initial Internal Structure Validity with Modification

Although the initial internal structure validity was judged to be good, the two models were modified to result in a better model fit. Consequently, two sets of error variances (e_1 and e_2, and e_4 and e_8) were set to be freely estimated. The goodness-of-fit information of the first dataset with the modified models appears in Table 4.7. The chi-square tests for both Model 3 and Model 4 were significant, $\chi^2 (df = 45) = 74.82$ for Model 3 and $\chi^2 (df = 48) = 76.87$ for Model 4, at .05. For Model 3, the fit indices were NNFI=.97, CFI=.98, and RMSEA=.044. For Model 2, they were NNFI=.97, CFI=.98, and RMSEA=.042. The pattern of these indices confirms good-fitting models.

The chi-square difference between Model 3 and Model 4 was not significant, $\Delta \chi^2 (\Delta df = 3) = 2.05$ (p > .05). Therefore, the two models were found to be equally good.

Factor loadings, covariances, and error variances for Model 3 are presented in Figure 4.3., and factor loadings, regression coefficients, and error variances for Model 4 are in Figure 4.4. Importantly, there are significant chi-square differences between Model 2 and Model 4, $\Delta \chi^2 (\Delta df = 2) = 23.34$ (p < .001). Therefore, Models 3 and 4 are better than Models 1 and 2 in terms of goodness of fit.

Table 4.7. Goodness-of-Fit Indices of the CFA with Modified Models (1st Data Set)

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>Df</th>
<th>NNFI</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M3-First Order CFA</strong></td>
<td><strong>74.82</strong></td>
<td>45</td>
<td>.97</td>
<td>.98</td>
<td>.044</td>
</tr>
<tr>
<td>M1-Null</td>
<td>1571.970</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>M4-Second Order CFA</strong></td>
<td><strong>76.87</strong></td>
<td>48</td>
<td>.97</td>
<td>.98</td>
<td>.042</td>
</tr>
<tr>
<td>M2-Null</td>
<td>1571.970</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.** ** p < .01.
Figure 4.3. First order CFA results with modifications (M1; 1st dataset)

Figure 4.4. Second order CFA results with modifications (M1; 1st dataset)
Confirmation of Internal Structure Validity with Second Dataset

With the second dataset, three sets of error variances \((e_1, e_4, e_6, e_9, \text{ and } e_{11})\) were freely estimated, since the previous modified models presented a better model fit. The goodness-of-fit information of the first dataset with the modified models appears in Table 4.8. The chi-square tests for both Model 5 and Model 6 were significant, \(\chi^2 (df = 45) = 120.69\) for Model 5 and \(\chi^2 (df = 47) = 125.71\) for Model 6, at \(.001\). For Model 5, the fit indices were NNFI=.95, CFI=.96, and RMSEA=.067. For Model 6, they were NNFI=.95, CFI=.96, and RMSEA=.067. The pattern of these indices confirms adequately fitting models.

The chi-square difference between Model 5 and Model 6 was not significant, \(\Delta\chi^2 (\Delta df = 2) = 5.02\) (\(p > .05\)). Therefore, the two models were found to be equally good.

Factor loadings, covariances, and error variances for Model 5 are presented in Figure 4.5., and factor loadings, regression coefficients, and error variances for Model 6 are in Figure 4.6. Importantly, there are significant chi-square differences between Model 4 and Model 6, \(\Delta\chi^2 (\Delta df = 1) = 48.84\) (\(p < .001\)). Therefore, Models 3 and 4 are better than Models 5 and 6 in terms of goodness of fit.

Table 4.8. Goodness-of-Fit Indices of the CFA with Modified Models (2nd Data Set)

<table>
<thead>
<tr>
<th>Model</th>
<th>(\chi^2)</th>
<th>df</th>
<th>NNFI</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5-First Order CFA</td>
<td>120.69***</td>
<td>45</td>
<td>.95</td>
<td>.96</td>
<td>.067</td>
</tr>
<tr>
<td>M1-Null</td>
<td>2149.345</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M6-Second Order CFA</td>
<td>125.71***</td>
<td>47</td>
<td>.95</td>
<td>.96</td>
<td>.067</td>
</tr>
<tr>
<td>M1-Null</td>
<td>2149.345</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* ***\(p < .001\).*
Figure 4.5. First order CFA results with modifications (M1; 2\textsuperscript{nd} dataset)

Figure 4.6. Second order CFA results with modifications (M1; 2\textsuperscript{nd} dataset)
However, the models with the first dataset and the second dataset cannot be directly compared to judge a good model, because the characteristics of both datasets are different. In addition, one self-reactiveness item was not the same across two samples.

**Research Question Three**

*To what extent are there similarities among the constructs of the AHA, the career decision self-efficacy, the hope-centered career inventory, and the adult hope scale?*

The correlations of the subscales and the total scale of the AHA with the subscales and the total scales of three different measures were explored (see Table 4.9). With the total scales, the correlation between the AHA and the HCCI was .819 (p < .01), which shows very high convergent validity as the HCCI has a human agency component. The correlation with the AHS overall scale was .664 (p < .01), which indicates a good convergent validity as the AHS also partially has a human agency element in the scale. The correlation with the CDSE total scale was .559 (p < .01), which also indicates a good convergent validity. The VI scale was not intended for the convergent validity of the AHA; however the lower correlation (.369) than other measures indicates that the AHA has a good convergent validity, because the concept of VI is least related with the AHA among the measures in this research. Overall, given the correlations among the total scales, the AHA appears to have a sound convergent validity.

With the HCCI (N = 380), *goal setting and planning* and *implementing* were highly correlated with *intentionality* (.555 and .600, respectively). *Intentionality* is about having goals or plans in mind when implementing something; therefore these high correlations are valid. *Visioning* was highly related with *foreshought* (.784) as they are
very similar conceptually. *Implementing* was correlated most highly with *self-reactiveness* (.733), which is also valid because self-reactiveness is translating goals into action. *Self-reflection* and *self-clarity* were highly correlated with *self-reflectiveness* (.583 and .520, respectively). These results indicate that both the AHA and the HCCI have very sound convergent validity.

With the AHS (\(N = 380\)), *intentionality* was more correlated with *agency thinking* (.558) than *pathways thinking* (.459). That can be because *agency thinking* is more related to thinking about goals and taking them into action, whereas *pathway thinking* is more related to idea generation. By the same token, *self-reactiveness* was also more highly correlated with *agency thinking* (.685) than *pathways thinking* (.563). The AHS does not contain a concept that is comparable to *self-reflectiveness*; therefore, its correlation coefficients with *pathways thinking* (.424) and *agency thinking* (.468) were somewhat lower. *Forethought* was highly correlated with *agency thinking* (.515) as *agency thinking* is related to finding options to achieve goals. The overall correlations between the AHA and the AHS indicate that the AHA has sound convergent validity.

With the CDSE (\(N = 345\)), *intentionality* was most highly correlated with *planning* (.463), *forethought* was also most highly correlated with *planning* (.500). Given the similarities between the concepts, this result seems to be valid. *Self-reactiveness* was highly related to *self-appraisal* (.498) and *planning* (.483). The reason for its high correlation with *self-appraisal* may be because *self-reactiveness* involves monitoring of one’s progress toward goals. *Self-reflectiveness* was highly correlated with *self-appraisal*
(.447), which is a similar function to self-reflection. The overall correlations between the AHA and the CDSE also indicate that the AHA has sound convergent validity.

Table 4.9. *Pearson’s correlations among related constructs of the AHA*

<table>
<thead>
<tr>
<th></th>
<th>Assessment of Human Agency (AHA)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intentionality</td>
<td>Forethought</td>
<td>Self-Reactiveness</td>
<td>Self-Reflectiveness</td>
<td>Overall Scale</td>
</tr>
<tr>
<td>HCCI (N = 380)</td>
<td>Hope</td>
<td>.445**</td>
<td>.469**</td>
<td>.559**</td>
<td>.407**</td>
</tr>
<tr>
<td></td>
<td>Self-reflection</td>
<td>.391**</td>
<td>.441**</td>
<td>.409**</td>
<td>.583**</td>
</tr>
<tr>
<td></td>
<td>Self-clarity</td>
<td>.517**</td>
<td>.496**</td>
<td>.543**</td>
<td>.520**</td>
</tr>
<tr>
<td></td>
<td>Visioning</td>
<td>.490**</td>
<td>.784**</td>
<td>.456**</td>
<td>.515**</td>
</tr>
<tr>
<td></td>
<td>Goal setting &amp; Planning</td>
<td>.554**</td>
<td>.425**</td>
<td>.482**</td>
<td>.390**</td>
</tr>
<tr>
<td></td>
<td>Implementing</td>
<td>.600**</td>
<td>.496**</td>
<td>.733**</td>
<td>.437**</td>
</tr>
<tr>
<td></td>
<td>Adapting</td>
<td>.334**</td>
<td>.357**</td>
<td>.483**</td>
<td>.410**</td>
</tr>
<tr>
<td></td>
<td><em>Overall Scale</em></td>
<td>.674**</td>
<td>.706**</td>
<td>.734**</td>
<td>.655**</td>
</tr>
<tr>
<td>AHS (N = 380)</td>
<td>Pathways thinking</td>
<td>.459**</td>
<td>.384**</td>
<td>.563**</td>
<td>.424**</td>
</tr>
<tr>
<td></td>
<td>Agency thinking</td>
<td>.558**</td>
<td>.515**</td>
<td>.685**</td>
<td>.468**</td>
</tr>
<tr>
<td></td>
<td><em>Overall Scale</em></td>
<td>.567**</td>
<td>.502**</td>
<td>.696**</td>
<td>.497**</td>
</tr>
<tr>
<td>CDSE (N = 345)</td>
<td>Self-appraisal</td>
<td>.405**</td>
<td>.431**</td>
<td>.498**</td>
<td>.447**</td>
</tr>
<tr>
<td></td>
<td>Occupational information</td>
<td>.311**</td>
<td>.358**</td>
<td>.352**</td>
<td>.250**</td>
</tr>
<tr>
<td></td>
<td>Goal selection</td>
<td>.351**</td>
<td>.394**</td>
<td>.479**</td>
<td>.332**</td>
</tr>
<tr>
<td></td>
<td>Planning</td>
<td>.463**</td>
<td>.500**</td>
<td>.483**</td>
<td>.357**</td>
</tr>
<tr>
<td></td>
<td>Problem Solving</td>
<td>.305**</td>
<td>.385**</td>
<td>.429**</td>
<td>.382**</td>
</tr>
<tr>
<td></td>
<td><em>Overall Scale</em></td>
<td>.415**</td>
<td>.469**</td>
<td>.508**</td>
<td>.402**</td>
</tr>
<tr>
<td>VI (N = 725)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Overall Scale</em></td>
<td>.330**</td>
<td>.301**</td>
<td>.399**</td>
<td>.206**</td>
</tr>
</tbody>
</table>

*Note.* **p < .01., Correlations greater than .50 are shown in boldface.*
Research Question Four

What are the relationships between human agency and other constructs in a conceptual nomological net in terms of predicting career decision self-efficacy and vocational identity?

One-Group Model

Before examining the two-group model with a group without barriers and the other group with barriers, a one-group model was explored to identify general tendency of the relationships among the variables without separating the data into two groups. Identification of the one group \( (N = 345) \) mediation model was judged to be sound; because the factor loadings of each parceled variable were averaged to .887 (human agency), .910 (CDSE), and .837 (VI). The chi-square and goodness of fit indices of the one group \( (N = 345) \) mediation model are shown in Table 4.10. The total sample’s chi-square and fit indices are as follows: \( \chi^2 (df = 49) = 88.821 \), RMSEA = .049, NNFI = .98, CFI = .99. The chi-square estimate was statistically significant at .001, which disproves the appropriate fit between the proposed measurement model and the collected data set. However, using the chi-square test of model fit for this research may not be appropriate, because chi-square is often very sensitive to sample size (Hooper et al., 2008). Therefore, looking at RMSEA, NNFI, and CFI is appropriate. According to Hu and Bentler (1999), the model was found to be a good-fitting model given the overall pattern of fit indices.
Table 4.10. *Goodness-of-Fit of the Latent Variable Mediation Model with One Group*

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>NNFI</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>M0</td>
<td>88.821***</td>
<td>49</td>
<td>.98</td>
<td>.99</td>
<td>.049</td>
</tr>
<tr>
<td>M0-null</td>
<td>3313.648</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.*** $p < .001.$

Analysis results of the regression weights and total effects of the mediation model are shown in Table 4.11. The total effects of two independent variables on VI were statistically significant, with the regression coefficients of both human agency ($b = .219$, SE = .034) and age ($b = .087$, SE = .030) on VI. This indicates the unique effects of human agency and age on vocational identity when the mediator, CDSE, is not considered in the model. Both independent variables also had significant effects on the CDSE mediator (human agency: $b = .739$, SE = .062; age: .191, SE = .053). The regression coefficient of the CDSE mediator on vocational identity was also significant ($b = .268; SE = .032$) after controlling for human agency and age. These findings confirm that the effects of human agency and age on vocational identity were each mediated significantly by CDSE by employing the joint significant test of MacKinnon et al. (2002).

The residual direct effects of both human agency and age on predicting VI when the mediator (CDSE) was included in the model were not statistically significant (human agency: $b = .020$, SE = .039; age: $b = .036$, SE = .027). Figure 4.7 shows the regression weights and the residual direct effects of variables in the model 0.
Table 4.11. *Regression Weights and Total Effects of the Mediation Model with One Group*

<table>
<thead>
<tr>
<th>Total Effects of ETA on ETA</th>
<th>human agency</th>
<th>age</th>
<th>CDSE</th>
<th>VI</th>
</tr>
</thead>
<tbody>
<tr>
<td>VI</td>
<td>0.219*</td>
<td>0.087*</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(0.034)</td>
<td>(0.030)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.482</td>
<td>2.937</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LISREL Estimates (Maximum Likelihood)**

<table>
<thead>
<tr>
<th>BETA</th>
<th>human agency</th>
<th>Age</th>
<th>CDSE</th>
<th>VI</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDSE</td>
<td>0.739*</td>
<td>0.191*</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(0.062)</td>
<td>(0.053)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.738</td>
<td>3.638</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td>0.020</td>
<td>0.036</td>
<td>0.268*</td>
<td>-</td>
</tr>
<tr>
<td>(0.039)</td>
<td>(0.027)</td>
<td>(0.032)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.532</td>
<td>1.322</td>
<td></td>
<td></td>
<td>8.364</td>
</tr>
</tbody>
</table>

*Note.* *p < .05.*
Two-Group Models

Goodness of fit for Model 0. The goodness-of-fit indices for Model 0 for both Group 1 (individuals with no barriers) and Group 2 (individuals with barriers) are shown in Table 4.12. The chi-square and fit indices for Model 0.0 and Model 0.1 are $\chi^2 (df = 49) = 70.359$ and $\chi^2 (df = 49) = 64.299$, respectively. The chi-square estimate for Group 1 was statistically significant at .05, which indicates the inappropriate fit between the proposed measurement model and the collected data set. The chi-square estimate for Group 2 was not statistically significant at .05 ($p = .07$). Although these results indicate partial soundness of the model fit, the chi-square test of the model for the present study may not be appropriate, because chi-square is often very sensitive to sample size (Hooper, Coughlan, & Mullen, 2008). Therefore, looking at RMSEA, NNFI, and CFI is appropriate. The fit indices of both groups were: RMSEA = .036, NNFI = .98, and CFI = .98 (Group 1); and RMSEA = .030, NNFI = .99, and CFI = .99 (Group 2). According to Hu and Bentler (1999), the models were regarded to be good fitting models given the overall tendency of fit indices. Therefore, comparing factor loadings for the two groups is desirable.

Goodness of fit for Model 1. In Model 1, all parameters were freely estimated in both groups. Although the chi-square test was significant at .01, $\chi^2 (df = 98) = 134.658$, judging the model fit through the practical fit indices is important (RMSEA = .033, NNFI = .98, CFI = .99; see Table 4.12). According to Hu and Bentler (1999), Model 1 was found to be a good-fitting model given the overall pattern of CFI, NNFI and RMSEA.
Therefore, all factor loadings to be constrained were equal between the two groups to further test the mediation model in Model 2.

**Goodness of fit for Model 2.** The fit indices of model 2 were: \( \chi^2 (df = 106) = 137.974 \), RMSEA = .030, NNFI = .99, CFI = .99 (see Table 4.12). Despite the chi-square test was significant at .05, Model 2 was judged to be a good-fitting model given the practical fit indices, CFI, NNFI, and RMSEA, according to Hu and Bentler (1999). The chi-square difference between Model 2 and Model , \( \Delta \chi^2 (\Delta df = 8) = 3.316 \) (p > .05), was not significant, which means factor loadings of Model 2 between the two groups are invariant. Therefore, it is desirable to continue with fixing the b-weights of both groups to be equal in Model 3.

**Goodness of fit for Model 3A.** In model 3A, only two b-weights, be\_32 (age predicting CDSE) and be\_43 (CDSE predicting VI) were constrained to be equal in two groups. The fit indices of model 3A appear in Table 4.12, and the result of the chi-square test was significant at .05, \( \chi^2 (df = 108) = 164.956 \); however, other practical fit indices indicated that Model 3A is a good-fitting model. The chi-square difference between Model 3A and Model 2 was \( \Delta \chi^2 (\Delta df = 2) = 3.016 \) (p > .05), which was not significant. Therefore, the two b-weights (be\_32 and be\_43) were judged to be invariant.

**Goodness of fit for Model 3B.** In model 3B, an additional b-weight, be\_31 (human agency predicting CDSE) was constrained to be equal in two groups as a next step to confirm that the b-weights are invariant, because Model 3A and Model 2 had no statistically significant difference. The fit indices of model 3B were: \( \chi^2 (df = 109) = 145.346 \); RMSEA = .030; NNFI = .99; CFI = .99 (see Table 4.12). Despite the chi-square
test was significant at .05, Model 3B was judged to be a good-fitting model based on the overall pattern of practical fit indices. However, the chi-square differences between Model 3B and Model 3A was $\Delta \chi^2 (\Delta df = 1) = 4.356$ ($p < .05$), which was significant. Therefore, the $b_{31}$ (human agency predicting CDSE) cannot be invariant between the two groups (without barriers and with barriers). In other words, $b_{31}$ is different between the two groups.

**Goodness of fit for Model 3C and 3D.** In Models 3C and 3D, an additional b-weight, human agency predicting VI and age predicting VI, respectively for each model, was constrained to be equal in two groups, because Model 3A and Model 2 had no statistically significant difference. The fit indices and the chi-square differences of Model 3C and Model 3D appear in Table 4.12. Both models were found to be good fitting; and none of the models’ chi-square differences showed any significant difference from the chi-square of Model 3A. Therefore, the b-weights with all combinations except for one b-weight (human agency predicting CDSE) were found to be invariant.

**Goodness of fit for Model 3E.** Because the previous combinations of b-weights were invariant between the two groups, except for human agency predicting CDSE, all other b-weights were constrained to be equal. Although the chi-square estimate was significant, $\chi^2 (df = 110) = 145.198$, other practical fit indices (RMSEA = .031, NNFI = .99, CFI = .99) indicated that Model 3E is a good-fitting model. In addition, the chi-square differences between Model 3E and Model 3C, $\Delta \chi^2 (\Delta df = 1) = 2.056$ ($p > .05$), as well as Model 3D and Model 3F, $\Delta \chi^2 (\Delta df = 1) = 2.495$ ($p > .05$), were not significant.
Therefore, all of the b-weights except for $b_{52}$, human agency predicting CDSE, were judged to be invariant.

Analysis results of the regression weights and total effects of the mediation Model 3E are shown in Table 4.13. The two independent variables had significant total effects on VI because the regression coefficients of both human agency ($b = .158$, SE = .033 for group 1; $b = .205$, SE = .033 for group 2) and age ($b = .089$, SE = .026 for both groups) on VI were statistically significant. Both independent variables also had significant effects on the mediator, CDSE (human agency: $b = .550$, SE = .087 for group 1 and $b = .794$, SE = .080 for group 2; age: .200, SE = .050). The regression coefficient of the mediator, CDSE, on vocational identity was also significant ($b = .195$, SE = .031 for both groups) after controlling for human agency and age. These findings confirm that the effects of human agency and age on vocational identity were each mediated significantly by CDSE according to MacKinnon et al. (2002). However, one b-weight, $b_{31}$ (human agency predicting CDSE), was not invariant between the two groups, as indicated in the analysis of Model 3B.

Accordingly, hypothesis 1, “The path coefficients will be significant across the two groups,” was supported; and hypothesis 2, “The path coefficients of two groups will be invariant,” was not supported through this analysis. However, this finding may generate more positive implications of applying human agency in practice than the original hypothesis. The final mediation model (Model 3E) with the two groups is shown in Figure 4.8.
Table 4.12. Goodness-of-Fit Indices of the Mediation Model with Two Groups

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>NNFI</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 0.0 (G1)</td>
<td>70.359*</td>
<td>49</td>
<td>.98</td>
<td>.98</td>
<td>.036</td>
</tr>
<tr>
<td>Null-M0.0</td>
<td>1240.723</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 0.1 (G2)</td>
<td>64.299</td>
<td>49</td>
<td>.99</td>
<td>.99</td>
<td>.030</td>
</tr>
<tr>
<td>Null-M0.1</td>
<td>1868.215</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 1 (ly=ps)</td>
<td>134.658**</td>
<td>98</td>
<td>.98</td>
<td>.99</td>
<td>.033</td>
</tr>
<tr>
<td>Null-M1</td>
<td>3108.938</td>
<td>132</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 2 (ly=in)</td>
<td>137.974*</td>
<td>106</td>
<td>.99</td>
<td>.99</td>
<td>.030</td>
</tr>
<tr>
<td>Model 2-Model 1</td>
<td>$\Delta$ 3.316</td>
<td>$\Delta$ 8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3A</td>
<td>140.990*</td>
<td>108</td>
<td>.99</td>
<td>.99</td>
<td>.030</td>
</tr>
<tr>
<td>(43, 32)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3A-Model 2</td>
<td>$\Delta$ 3.016</td>
<td>$\Delta$ 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3B</td>
<td>145.346*</td>
<td>109</td>
<td>.99</td>
<td>.99</td>
<td>.031</td>
</tr>
<tr>
<td>(3 1, 3 2, 4 3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3B-Model 3A</td>
<td>$\Delta$ 4.356*</td>
<td>$\Delta$ 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3C</td>
<td>143.142*</td>
<td>109</td>
<td>.99</td>
<td>.99</td>
<td>.030</td>
</tr>
<tr>
<td>(3 2, 4 1, 4 3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3C-Model 3A</td>
<td>$\Delta$ 2.152</td>
<td>$\Delta$ 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3D</td>
<td>142.703*</td>
<td>109</td>
<td>.99</td>
<td>.99</td>
<td>.030</td>
</tr>
<tr>
<td>(3 2, 4 2, 4 3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3D-Model 3A</td>
<td>$\Delta$ 2.22</td>
<td>$\Delta$ 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3E</td>
<td>145.198*</td>
<td>110</td>
<td>.99</td>
<td>.99</td>
<td>.031</td>
</tr>
<tr>
<td>(32, 41, 42, 43)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3E-Model 3C</td>
<td>$\Delta$ 2.056</td>
<td>$\Delta$ 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3E-Model 3D</td>
<td>$\Delta$ 2.495</td>
<td>$\Delta$ 1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. * $p < .05$. ** $p < .01$. 
Table 4.13. *Regression Weights and Total Effects for Mediation Model with Two Groups*

(Model 3E)

<table>
<thead>
<tr>
<th>Total Effects of ETA on ETA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 1 (with No Barriers)</strong></td>
</tr>
<tr>
<td>human agency</td>
</tr>
<tr>
<td>VI</td>
</tr>
<tr>
<td>(0.033)</td>
</tr>
<tr>
<td><strong>Group 2 (with Barriers)</strong></td>
</tr>
<tr>
<td>human agency</td>
</tr>
<tr>
<td>VI</td>
</tr>
<tr>
<td>(0.033)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LISREL Estimates (Maximum Likelihood)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 1 (with No Barriers)</strong></td>
</tr>
<tr>
<td>human agency</td>
</tr>
<tr>
<td>CDSE</td>
</tr>
<tr>
<td>(0.087)</td>
</tr>
<tr>
<td>VI</td>
</tr>
<tr>
<td>(0.036)</td>
</tr>
<tr>
<td><strong>Group 2 (with Barriers)</strong></td>
</tr>
<tr>
<td>human agency</td>
</tr>
<tr>
<td>CDSE</td>
</tr>
<tr>
<td>(0.080)</td>
</tr>
<tr>
<td>VI</td>
</tr>
<tr>
<td>(0.036)</td>
</tr>
</tbody>
</table>

*Note.* *p < .05.*; Different b-weights between Group 1 and Group 2 are noted in bold.
Chapter Summary

This chapter presents the results of analyses based on the four research questions in this study. First, multiple EFAs were conducted with an oblique rotation as the factors are inter-related. As a result, the number of items in the AHA was reduced from 28 to 12. Second, internal consistency reliability was explored employing item-total correlations and Cronbach Alphas, and the results revealed that the AHA has sound reliability. Third, multiple CFAs were conducted to confirm the 4-factor structure with both first-order and second-order solutions, and the practical fit indices confirmed that the 4-factor model is sound. Fourth, the convergent validity of the AHA was established by exploring its relationships with four other measures: the HCCI, the AHS, the CDSE, and the VI. Finally, a structural equation modeling (SEM) model with two independent variables (human agency and age), one mediator (CDSE), and an outcome variable (VI) were confirmed to be valid. In a nutshell, the four research questions were addressed and answered.
Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The main purpose of this study was to develop and validate the assessment of human agency (AHA) by applying Bandura’s (2001) concept of human agency. This chapter summarizes the research findings, provides discussions, generates implications, and suggests recommendations for future research and practice.

Summary

Human agency is a characteristic of people who realize their goals. Bandura's (2001) four core features of human agency—intentionality, forethought, self-reactiveness, and self-reflectiveness—appear to be conceptually related to Hall’s (1996) protean career theory, which is characterized as values driven and self-directed. According to Bandura (2001), the concept of human agency relates one’s adaptation, self-development, and self-renewal over time.

Although scholars tried to understand the agentic behaviors in career development using career self-efficacy measures (e.g., Betz & Hackett, 1986; Solberg et al., 1994), self-efficacy is distinct from human agency. Self-efficacy (Bandura, 1977; 1989; 1992) is an individual’s beliefs regarding his/her ability to perform a given task or behavior successfully, and it is a critical factor that affects human agency (Bandura, 1992; 2001). However, the four features of human agency differ in quality from the characteristics of self-efficacy. Whereas self-efficacy is the positive self-confidence of succeeding in a certain task, the elements of human agency are actual behaviors that the individual engages in to achieve his/her goals. There is no instrument that aims to measure directly
human agency. Prior measurements (e.g., Betz & Hackett, 1986; Solberg et al., 1994) that attempted to correspond with human agency do not directly measure human agency, because those assessments primarily measure one’s self-efficacy.

Therefore, the primary purpose of this study was to develop and validate the AHA by applying Bandura’s (2001) concept of human agency. The research questions were as follows:

1. To what extent can a reliable measure of human agency be developed based on Bandura’s (2001) concept of human agency?
2. To what extent can evidence of internal structure validity be identified for the newly developed AHA?
3. To what extent are there similarities among the constructs of the AHA, the Career Decision Self-Efficacy (CDSE), the Hope-Centered Career Inventory (HCCI), and the Adult Hope Scale (AHS)?
4. What are the relationships of human agency with other constructs in a conceptual nomological net in terms of predicting CDSE and vocational identity (VI)?

This study first reviewed literature related to the development and validation of the AHA. In addition, such constructs as self-efficacy and hope that are related to human agency were discussed. Moreover, a potential outcome measure of human agency, the VI scale, was explored and discussed. Finally, current developments of validity standards are explored to guide the process of the development and validation of the AHA.
On the basis of the literature review, this study was conducted in two phases: 1) instrument development; and 2) test and validation. In the first phase, an initial version of the instrument for measuring human agency with 28 items and a 4-point Likert scale was developed based on Bandura’s (2001) four features of human agency: intentionality, forethought, self-reactiveness, and self-reflectiveness. The first phase employed the following steps: identifying purposes of assessment; item generation; initial pilot test; item selection; and questionnaire formatting.

After that, the second phase of study was initiated by answering four research questions. In a one-year interval with data gathering done twice, 725 individuals at a large public university in the Eastern United States participated in this research. The number of participants for each phase are 345 (first dataset) and 380 (second dataset). The research data consisted of 248 males (34.2%) and 477 females (65.8%). Of the respondents, 52.5% (N = 379) were between ages 18 and 24, and 47.5% (N = 346) were 25 or older. Overall, 45.4% (N = 329) of the respondents were undergraduate students, 36.1% (N = 262) were graduate students, and 18.5% (N = 134) were non-students.

To answer the research questions, multiple exploratory factor analyses (EFAs) were conducted with an oblique rotation, because the factors are inter-related. As a result, the number of items in the AHA was reduced from 28 to 12. Factor loadings of selected items on corresponding factors were ranged from .416 to .932 across the constructs, which indicates sound factor loadings. Eigenvalues were not used to determine the number of factors because this tool is strictly based on a theory.
Second, internal consistency reliability was explored employing item-total correlations and Cronbach Alpha coefficients, and the results revealed that the AHA has sound reliability. Cronbach’s alpha coefficients for the overall scale were .88 (first dataset) and .90 (second dataset), and the individual constructs’ coefficients ranged from .72 to .84 across the datasets. Overall, the corrected item-total correlations for each item with subscales of the AHA ranged from .447 to .724. In addition, the corrected item-total correlation for each item with the main scale ranged from .468 to .690.

Third, multiple confirmatory factor analyses (CFAs) were conducted to confirm the 4-factor structure with both first-order and second-order solutions, and the following practical fit indices confirmed that the 4-factor model is sound: NNFI=.96, CFI=.97, and RMSEA=.054 (second-order model with no modifications). When some error variances were set to be estimated freely, the practical fit indices turned out to be better: NNFI=.97, CFI=.98, and RMSEA=.042. (second-order model with modifications).

Fourth, the convergent validity of the AHA was established by exploring its relationships with three other measures: the HCCI, the AHS, the CDSE, and the VI. The correlations turned out to be .819 (HCCI), .664 (AHS), .559 (CDSE), .369 (VI). These results reflect the order of the conceptual relatedness between the AHA and each measure. The correlations among subscales were also examined, and they confirmed the characteristics of the four distinct constructs of the AHA.

Finally, a SEM model with two independent variables (human agency and age), one mediator (CDSE), and an outcome variable (VI) was confirmed to be valid with multiple phases of two group analyses using barriers as a grouping variable. The fit
indices of the mediation model were RMSEA = .031, NNFI = .99, and CFI = .99, which
indicates a good model fit. The two independent variables had significant total effects on
VI because the regression coefficients of both human agency (b = .158, SE = .033 for
group 1; b = .205, SE = .033 for group 2) and age (b = .089, SE = .026 for both groups)
on VI were statistically significant. Both independent variables also had significant
effects on the mediator, CDSE (human agency: b = .550, SE = .087 for group 1; and b
= .794, SE = .080 for group 2; age: .200, SE = .050). The regression co-efficient of the
mediator, CDSE, on vocational identity was also significant (b = .195, SE = .031 for both
groups) after controlling for human agency and age.

Conclusions

This section presents a discussion of the instrument development process, data
analyses results, and the study as a whole in the light of Kane (2006) and AERA (1999).
Accordingly, the structure of the section is comprised in order of the following:
instrument development process; reliability; internal consistency; convergent validity;
criterion validity; overall validation process; and overall conclusion.

Instrument Development Process

The initial AHA with 28 items was constructed using a five-step process:
identifying purposes of assessment; item generation; initial pilot test; item selection; and
questionnaire formatting. Based on overall experience of the development and validation
of the AHA with data analyses, each development step was discussed.

Identifying purposes of assessment. The overarching purpose of the AHA is to
help individuals achieve their goals by informing them of their level of human agency
and their coping strategy according to the results. Although the basic purpose of the AHA is to measure the level of human agency, the purpose that initially developed was not tested in this study. To validate whether understanding individuals’ level of human agency by taking the AHA and following directions in the results section of the AHA contribute to individuals’ goal attainment, an additional study is required to collect the evidence based on consequences of testing according to AERA et al. (1999). In addition, to employ Kane’s (2006) method, it will be desirable to ask the administrators and the participants whether the administering AHA served its purpose.

This study was conducted with the intended age group, adults who are 18 years or older, and the data analysis confirmed that the AHA is reliable and valid with the target age group, although more evidence needs to be collected to verify whether it can be generalized. There is also a possibility that the AHA can be used with high school students with some revisions. Therefore, the compatibility of the AHA with other age groups needs to be explored. The AHA was designed to be used for two settings: 1) individual career development, especially, in career counseling sessions or career planning workshops; and 2) employee selection process in organizations. Its uses under these two circumstances were not tested; therefore, the AHA should be used and tested in these settings in future research.

**Item generation and initial pilot test.** Initially, 16 items (four items per construct) were generated and pilot tested with 24 individuals soliciting their feedback on the items. This step was essential to ensure that the expressions of the items were correctly described and not misleading. In addition, this step led to developing the 28-
item version of the AHA. The initial pilot test made the development process efficient because it guided item generation based on the participants’ feedback. Therefore, conducting an initial pilot test is recommended to any other test development endeavors.

**Item selection.** Four experts with more than 20 years of experience reviewed the 28 items of the AHA without any objection. This indicates that the AHA has a sound content validity. However, this study did not require them to rate the items but merely requested the experts to review the items with the definitions of corresponding constructs. Therefore, a more rigorous approach to item selection and content validation should be devised and implemented.

**Questionnaire formatting.** A major concern regarding this step relates to response options. Bandura (2006b) advised self-efficacy instruments to have a 10-point Likert scale as opposed to 4- or 5-point, to increase reliability. However, a testing expert indicated that more options may result in a decrease in reliability, whereas four items would not have such a problem (H. K. Suen, personal communication, March 9, 2009). Betz et al.'s (2005) study, which founded that a 5-level continuum had better reliability than a 10-level continuum using CDSE-SF, confirms Suen’s opinion. It is a noteworthy finding, because Betz’s study rejected Bandura’s (2006) guideline. Despite these contradictory viewpoints, it may be worthwhile to use a 10-point scale to compare the reliability of the AHA, given that the construct of human agency is different from self-efficacy.
Reliability of the AHA

**RQ1: To what extent can a reliable measure of human agency be developed based on Bandura’s (2001) concept of human agency?**

The 12-item AHA was identified after multiple tests of the EFA, and the AHA is found to be a reliable measure based on the Cronbach alphas of the total scale and the subscale with two datasets. The internal consistency reliability with the Cronbach’s alphas for the overall scale were .88 (first dataset) and .90 (second dataset). The coefficients of the individual constructs ranged from .72 to .78. (first dataset) and .73 to .84 (second dataset). Overall, the corrected item-total correlations for each item with subscales of the AHA ranged from .447 to .724. The corrected item-total correlation for each item with the main scale ranged from .468 to .690. The item-total correlation results indicate the AHA is reliable, given that the figures are above .30 (Wong, Chan, & Lau, 2008).

This moderate reliability result, while using only three items per construct, is one of the strengths of the AHA over other measures with many items, as the reliability of a scale tends to be low with a small number of corresponding items. This small number of items (12 total) helps the tool to be easily used in research and practice. For example, the CDSE (Betz & Hackett, 1983) is now rarely used after the development of the CDSE-SF (Betz et al., 1996), and the CDSE-SF is being widely used to measure career decision self-efficacy. In practice, the AHA can be used in a counseling session or a training workshop as a quick diagnostic tool. In addition, the AHA can be used as part of an employee selection tool because it is easy to add 12 items to existing instruments.
Internal Structure Validity of the AHA

**RQ2:** *To what extent can evidence of internal structure validity be identified for the newly developed AHA?*

Internal structure validity turned out to be sound with the first dataset by employing CFA. The following practical fit indices of both models confirmed that the 4-factor model fits well with the data collected: NNFI=.95, CFI=.97, and RMSEA=.055 (first order model with no modifications); and NNFI=.96, CFI=.97, and RMSEA=.054 (second order model with no modifications). When two error variances were freely estimated, the RMSEA decreased to .044 and .042, respectively.

However, the fit indices with the second data set were revealed to be significantly weaker than the first data set, although the overall pattern of fit indices indicates that the 4-factor model is adequate (RMSEA = .67). Potentially, there are three reasons: 1) the characteristics of the sample in the second dataset are different from the first dataset; 2) the items are optimized with the first dataset (therefore, the factor structure may not fit well with the second dataset); and 3) the second item of the self-reactiveness scale is different between the two datasets. Therefore, in the next research, some additional items should be used with the current 12 AHA items in order to identify optimally sound items across different groups.

**Convergent Validity**

**RQ3:** *To what extent are there similarities among the constructs of AHA, career decision self-efficacy, the hope-centered career inventory, and adult hope scale?*
The convergent validity of the AHA was found to be very solid. The higher correlations of measures in the order of their relatedness to human agency (.819 [HCCI]; .664 [AHS]; .559 [CDSE]; and .369 [VI]), indicate that the AHA has good convergent validity. The results of the correlations among subscales revealed that the characteristics of the four constructs of the AHA are distinct and well represented in the relationships with other sub-constructs.

Although the convergent validity of the AHA is established, its relationships with various measures still need to be explored and established, including examining discriminant validity. Some examples are listed in the initial nomological net (Figure 2.2), and the relationships need to be confirmed. When exploring the relationships, the multi-trait multi-method (MTMM; Campbell & Fiske, 1959) could be used to add rigor.

**Criterion Validity**

*RQ4: What are the relationships of human agency with other constructs in a conceptual nomological net in terms of predicting career decision self-efficacy and vocational identity?*

With RQ 4, this study attempted to compare two groups: one group with barriers in career development and the other group with no barriers, with a SEM mediation model with the following four variables: human agency; age; CDSE; and VI. Importantly, the hypothesized mediation model was confirmed to be valid with a variation of the predictability of human agency on CDSE depending on barriers. This implies a number of significant meanings in individuals’ career development.
First, the two predictors, human agency and aging to a certain point (25+), each contributed to increased vocational identity (having a clear and stable view of one's goals, interests, and talents). Fortunately, human agency can be developed through career counseling or other career development interventions (Cochran, 1997). In addition, Brown and Redmond (2008) indicated that human agency could be used as an instructional strategy. Therefore, counselors, teachers, and instructors could contribute to one’s development of human agency, which in turn will contribute to the development of vocational identity. Practical solutions to enhance human agency can be found from the human agency–based individual transformation (HABIT) model (Yoon & Hutchison, 2010) that employed Bandura’s (2001, 2006a) human agency concept and features.

Second, with regard to the effect of age on vocational identity, it can be interpreted as per Schein (2006), “As you accumulate work experience, you have the opportunity to make choices; from these choices you begin to ascertain what you really find important” (p. 5). This study used 25 years of age as a cut-off point, where individuals in the United States typically gain more than five years of work experience including part-time jobs. Therefore, college students are encouraged to undertake work-related experience as much as possible to make satisfying career decision-making based on understanding themselves.

Third, the effect of human agency on vocational identity was mediated almost completely by career decision self-efficacy (CDSE). People with high human agency were much more likely to have high confidence in their decision-making related to their career development, and in turn had a higher level of vocational identity. This also
indicates that people with low human agency had a lower level of CDSE and in turn developed a lower level of vocational identity.

Fourth, the effect of age on vocational identity was mediated almost completely by CDSE. Individuals 25 years old or above had a higher level of CDSE and in turn developed a higher level of vocational identity. Conversely, individuals aged 18-24 had a lower level of CDSE and in turn had a lower level of vocational identity. This does not indicate that people need to wait until they turn 25, but it encourages people to gain more work-related experience. The cumulative effect of work experience often results in greater career decision-making self-efficacy and a higher level of vocational identity.

Fifth, based on the two group analyses, this study confirmed that there is a difference between the two groups, one with barriers and the other with no barriers. Human agency positively contributed 79.4% to the level of CDSE of the group with barriers, whereas the human agency effect was 55% with a group without barriers. The b-weights of both groups are significant and high enough to conclude that human agency is a major factor that increases CDSE; however, the human agency effect with a group with barriers was significantly higher than with a group with no barriers. This should be encouraging news to researchers who study barriers related to self-efficacy (e.g., Gushue, Clarke, Pantzer, & Scanlan, 2006; Lent, Hackett, & Brown, 2000). This also could mean that people with barriers would benefit significantly more than whose with no barriers when practicing human agency, although practicing human agency is beneficial to both groups.
Overall Validation Process

The validation tasks that are developed in Chapter 2 from the perspective of AERA et al. (1999) and Kane (2006) were mostly carried out through this study. The 14 tasks identified based on AERA et al. were implemented mostly, although more evidence needs to be accumulated and the AHA should be updated continually. Among AERA et al.’s (1999) five key sources of validity evidence (evidence based on 1) test content, 2) response processes, 3) internal structure, 4) relations to other variables, and 5) consequences of testing), data related to test content, internal structure, and relations to other variables were collected through this study, although content validation could be more rigorous. Evidence based on response processes and consequences of testing should be collected in future research.

Kane’s (2006) four elements—1) argument, 2) interpretative argument, 3) validity argument, and 4) criticism—were difficult to achieve through this study, and the six tasks developed based on Kane (2006) are partially finished and mostly in progress. The reason is mainly because researchers need to actively solicit criticism from others in order to follow Kane (2006). Soliciting criticism is not possible unless a certain level of quality of the measure is assured. A major challenge when following Kane (2006) is constantly committing to the validity argument to evaluate the dependability of generalization across situations based on the clear statement of the AHA and its results and necessary evidence. In that sense, this study is meaningful because a fundamental invitation of criticism is established.
Overall Conclusion

The AHA is a reliable and valid measure that can be used in research and practice. Importantly, the findings are significant theoretically, because this research is the first to examine the empirical interplay between human agency and self-efficacy using Bandura’s (2001) concept of human agency. Although Bandura (2001, 2006a) conceptualized human agency with four constructs, no one has developed an assessment tool that measures the constructs. This research, and the development and validation of the AHA, will stimulate future research activities around the topic of human agency. In addition, this research specifies such elements as human agency and work experience as contributors to increasing self-efficacy and outcome expectations (Lent, Brown, & Hackett, 1994) and learning experiences (Lent, Hackett, & Brown, 2000) in the well-known social cognitive career theory (SCCT), which is mainly derived from the work of Bandura. There are ample possibilities to be explored with the concept of human agency and the relations with other variables by using the AHA.

The impact of using the AHA and validity evidence based on consequences of testing (AERA et al., 1999) must be explored in future research because the overarching purpose of the AHA is to further the process of individuals achieving their goals. The validation research is valuable, as it confirmed that the items and the constructs of the AHA are sound enough to be used in practice. One of the next steps related to the AHA is to use it in different settings, such as career counseling/facilitation, career development workshops, performance management, and employee selection. During the administration
of the AHA, argument and criticism about the AHA must be collected from participants and administrators.

**Recommendations**

**Recommendations for Future Researchers**

First, future research is encouraged to study a specific population while building validity evidence. This study finding is limited to the sample, because the study adopted a purposeful random sampling to contrast between people with limited work experience and significant work experience. It can neither represent a particular group in general nor set a norm score. In addition, it is desirable to diversify the populations in order for the AHA to be generalized across different regions, cultures, industries, job functions, and position levels. In the process of the validation, it is necessary to translate the AHA to other languages and back-translate them to English as part of cross-cultural validation for linguistic equivalence (Marsella & Leong, 1995).

Second, the AHA should be validated with different types of outcome variables in order to be used in the chosen field. One of the purposes of the AHA is for it to be used as a selection tool in organizations screening job applicants. In order to do so, the AHA’s criterion validity must be established with a positive correlation to individual performance. In addition, the contribution of human agency to the career meta-competencies (Hall, 1996), identity and adaptability, can be explored. In order for the AHA to be used in psychology in general, its relationship with risk factors, such as anxiety, depression, and obesity, should also be explored.
Third, in future research, some additional items should be added to the existing 12 AHA items in order to find a better fitting and generalized model in terms of its internal construct structure. It may be desirable to use a larger pool of items until the additional items become stable.

Fourth, the AHA should be used and validated in career counseling, training, and organization development settings in conjunction with the human agency–based individual transformation (HABIT) model to be established in the field of workplace learning and performance (WLP) and career development (CD). The HABIT model, based on the four core features of human agency, is developed as both a career-counseling process and a training program. While providing the HABIT, the AHA could be used, and outcome variables should be measures to establish an additional criterion validity.

Fifth, researchers can use the AHA to continue to build the nomological net related to human agency. More specifically, this study explored only three related variables with the SEM model and the main relationship with self-efficacy. Future studies should be done to examine the relationship with the social cognitive career theory (SCCT; Lent & Brown, 1996). In addition, the AHA could be used with a newly developed SCCT measure (Rogers, Creed, & Searle, 2009) to position human agency in the SCCT model.

Finally, qualitative research should be done to understand the causes and effects of high or low human agency through in-depth interviews or focus groups. The findings from the research will contribute to advancing the AHA with valid items as well as the
human agency theory with patterns based on concrete examples. The current data could be used for sampling of the research participants, as it is easy to identify a high human-agency group as well as a low human-agency group.

**Recommendations for CD and WLP Practitioners**

The overarching purpose of the use of the AHA is to contribute to individuals’ achieving their goals by assessing their level of human agency and providing directions to improve human agency on the basis of their results. Although the AHA can be used as a self-assessment, it is not recommended because of the potential risk of misinterpretation. Therefore, CD and WLP practitioners should represent major populations who use the AHA. Most likely, the AHA will be used in career counseling and career-development workshop settings.

As with using other instruments, CD and WLP professionals who administer the AHA must understand its target population, titles of subscales, forms available, required time to administer, norm groups, report format and content, scoring, and computer software options (Whitfield et al., 2009). This study could serve as a manual for the AHA until a formal manual is developed. Therefore, CD and WLP professionals are expected to review this dissertation. Currently, two forms, paper and pencil version and web version, are available, although the cost of the AHA has not been determined.

In addition, it is desirable for the practitioners to provide interventions on the basis of clients’ results with the AHA. One example is to use the HABIT model that is structured to address each sub-scale with various interventions to increase human agency (Yoon & Hutchison, 2010). The finding from RQ4 can provide professionals a strong
reason to increase human agency through a structured process like the HABIT model, because increasing human agency contributes to exhibiting high career decision-making self-efficacy with even higher impact for people with barriers. However, as suggested in the research recommendation section, more evidence regarding the outcomes of human agency should be explored and determined to suggest more practical implications.

Bandura (2001) expands human agency into collective agency, which could be a central element in organization development (OD) efforts. As noted in Chapter 2, the process in the HABIT model is identical to the 4D cycle (Cooperrider & Whitney, 2005) in a strength-based OD approach. Therefore, the HABIT could help individuals better understand organization-wide strength-based change efforts when applying the concept to their lives. The AHA can serve a critical role in identifying individual strengths in implementing the 4D cycle both at a personal level and at an organizational level.

**Recommendations for Organizations**

The AHA is also designed to be used as a employee selection tool. Although the AHA is found to be reliable and valid with the data collected in this research, it does not mean that the AHA is ready to be used for selection. This study only confirmed that human agency contributes to increasing self-efficacy and in turn, vocational identity. Therefore, HR practitioners and I/O psychologists need to confirm whether human agency is one of significant predictors for performance. In order to do so, the AHA should be tested in conjunction with the current selection tool to see if the human agency concept has a practical value for organizations.
If human agency turns out to be one of the critical predictors for performance, organizations may use the AHA as a selection tool. However, some consideration should be given with regard to a potential social-desirability issue when using it in employee selection, because the response options can easily indicate better or worse choices, and job candidates are prone to manipulate the answers in a way that favors them. Therefore, it is desirable to triangulate the candidate’s human agency through other selection methods such as interview, work sample, and portfolio in addition to the AHA. In order to do so, guidelines, e.g., interview protocol, should be developed.

The AHA also can be used during the process of performance management, because performance management cycles involve the elements of human agency as follows: 1) evaluating past performance and understanding the strategy and mission of the team and organization (self-reflectiveness); 2) thinking about desired results for an evaluation period (forethought); 3) setting goals using key results areas and key performance indicators (intentionality); and 4) implementing and monitoring the goals through supervisors or scorecards (self-reactiveness). Because the AHA measures competencies in these four domains, the AHA could serve as an aid to build a good performance-management practice and eventually contribute to achieving performance goals. However, again, these ideas must be tested before implementing widely.
REFERENCES


doi:10.1287/orsc.1040.0103


doi:10.1177/106907279500300207


doi:10.1080/09614520500042094


Appendix A: Initial Survey Instrument
Part 1: Career Decision Self-Efficacy Short Form (SDSE-SF)

For each statement below, please read carefully and indicate how much confidence you have that you could accomplish each of these tasks by marking your answer according to the following 5-point continuum. For example, if you have much confidence in the stated behavior, select the number 4.

1. How much confidence do you have that you could:

<table>
<thead>
<tr>
<th>Statement</th>
<th>No confidence at all</th>
<th>Very little confidence</th>
<th>Moderate confidence</th>
<th>Much confidence</th>
<th>Complete confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Use the internet to find information about jobs or careers that interest you.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2) Select one field from a list of potential fields you are considering</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3) Make a plan of your goals for the next five years.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4) Determine the steps to take if you are having trouble with an aspect of your chosen field of work or study.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5) Accurately assess your abilities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6) Select one job or career from a list of those you are considering</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>7) Determine the steps you need to take to successfully achieve your career goals.</td>
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<td>2</td>
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<td>8) Persistently work at your major or career goal even when you get frustrated.</td>
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<td>5</td>
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<tr>
<td>9) Determine what your ideal job would be.</td>
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<td>3</td>
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<tr>
<td>10) Predict the employment trends for an occupation over the next ten years.</td>
<td>1</td>
<td>2</td>
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<td>5</td>
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<tr>
<td>11) Choose a career that will fit your preferred lifestyle.</td>
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<td>4</td>
<td>5</td>
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<td>12) Prepare a good resume.</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>13) Change majors or fields if you did not like your first choice.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
How much confidence do you have that you could:

<table>
<thead>
<tr>
<th>No confidence at all</th>
<th>Very little confidence</th>
<th>Moderate confidence</th>
<th>Much confidence</th>
<th>Complete confidence</th>
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</table>

14) Decide what you value most in an occupation.
15) Find out about the average yearly earnings of people in an occupation.
16) Make a career decision and then not worry whether it was right or wrong.
17) Change occupations if you are not satisfied with the one you enter.
18) Figure out what you are and are not ready to sacrifice to achieve your career goals.
19) Talk with a person already employed in a field you are interested in.
20) Choose a major or career that will fit your interests.
21) Identify employers, firms, and institutions relevant to your career possibilities.
22) Define the type of lifestyle you would like to live.
23) Find information about graduate or professional schools.
24) Successfully manage the job interview process.
25) Identify some reasonable major or career alternatives if you are unable to get your first choice.

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Part 2: Assessment of Human Agency

Please answer each of the following 28 items. It is very important to answer as you truly behave because only sincere responses help you benefit from this assessment.

2. For each item, rate how true each of the statements is for you using the response scale shown below. For example, if you often exhibit the stated behavior, select the number 3.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Seldom</th>
<th>Often</th>
<th>Almost Always</th>
</tr>
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<td>1</td>
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1) I have end results in mind before I begin something.
2) I imagine possible future events in my life.
3) I actively keep myself on track to complete my plans.
4) I think about why I am passionate about certain things.
5) I make lists of the things that need to be done.
6) I consider the possible consequences of each plan when choosing a plan of action.
7) I monitor my plans and actions so my goals will be met.
8) I think about the meaning of my life pursuits.
9) I set goals to accomplish important things.
10) I forecast my future in terms of the next several years.
For each item, rate how true each of the statements is for you using the response scale shown below.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Seldom</th>
<th>Often</th>
<th>Almost Always</th>
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</tbody>
</table>
Part 3: My Vocational Situation

Try to answer all the following statements as mostly TRUE or mostly FALSE. Click the answer that best represents your present opinion.

3. In thinking about your present job or in planning for an occupation or career:

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) I need reassurance that I have made the right choice of occupation.</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>2) I am concerned that my present interests may change over the years.</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>3) I am uncertain about the occupations I could perform well.</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>4) I don't know what my major strengths and weaknesses are.</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>5) The jobs I can do may not pay enough to live the kind of life I want.</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>6) If I had to make an occupational choice right now, I am afraid I would make a bad choice.</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>7) I need to find out what kind of career I should follow.</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>8) Making up my mind about a career has been a long and difficult problem for me.</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>9) I am confused about the whole problem of deciding on a career.</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>10) I am not sure that my present occupational choice or job is right for me.</td>
<td>☑</td>
<td>☐</td>
</tr>
</tbody>
</table>

In thinking about your present job or in planning for an occupation or career:

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>11) I don't know enough about what workers do in various occupations.</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>12) No single occupation appeals strongly to me.</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>13) I am uncertain about which occupation I would enjoy.</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>14) I would like to increase the number of occupations I could consider.</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>15) My estimates of my abilities and talents vary a lot from year to year.</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>16) I am not sure of myself in many areas of life.</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>17) I have known what occupation I want to follow for less than one year.</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>18) I can't understand how some people can be so set about what they want to do.</td>
<td>☐</td>
<td>☑</td>
</tr>
</tbody>
</table>
For questions 4 and 5, select the Y if your answer is YES, the N if your answer is NO.

4. I need the following information:

<table>
<thead>
<tr>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to find a job in my chosen career.</td>
<td></td>
</tr>
<tr>
<td>What kinds of people enter different occupations.</td>
<td></td>
</tr>
<tr>
<td>More information about employment opportunities.</td>
<td></td>
</tr>
<tr>
<td>How to get the necessary training in my chosen career.</td>
<td></td>
</tr>
</tbody>
</table>

5. I have the following difficulties:

<table>
<thead>
<tr>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am uncertain about my ability to finish the necessary education or training.</td>
<td></td>
</tr>
<tr>
<td>I don't have the money to follow the career I want most.</td>
<td></td>
</tr>
<tr>
<td>I lack the special talents to follow my first choice.</td>
<td></td>
</tr>
<tr>
<td>An influential person in my life does not approve of my vocational choice.</td>
<td></td>
</tr>
</tbody>
</table>

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Demographics

Please provide the following demographic information. It will only be used to make statistical comparisons between different groups of respondents; it will not be used to profile individual respondents.

6. What is your gender?
   - Male
   - Female

7. How old are you?
   - 18 - 19
   - 20 - 24
   - 25 - 29
   - 30 - 34
   - 35 - 39
   - 40 - 44
   - 45 - 49
   - 50 - 54
   - 55 - 59
   - 60 - 64
   - 65+

8. Are you a student currently (including part time)?
   - Yes, undergrad student
   - Yes, grad student
   - No

9. Which of the following best represents the highest level of education that you have completed?
   - Some high school or less
   - High school graduate
   - Attended some college
   - Associates degree
   - Bachelors degree
   - Post-college graduate (masters and doctorate)
10. Do you have work experience? If yes, how many years?

- No
- Just internship(s) or summer job(s)
- Yes, How many years?

11. Are you currently employed?

- Yes, full-time
- Yes, part-time (30 hours or less per week)
- No

12. With which of the following groups do you most identify?

- African-American/Black
- Asian-American or Pacific Islander
- Hispanic/Latino
- Native American
- White
- Other

Submit Survey

Please click the above button to finish. Thank you.
Appendix B: IRB Approval, Recruitment Letter, and Informed Consent Form
IRB Approval

From: Moeller, Joyel [mailto:jdm35@psu.edu]
Sent: Friday, May 22, 2009 9:45 AM
To: huy114@psu.edu
Cc: wjr9@psu.edu
Subject: IRB # 31229- Development and Validation of the Assessment of Human Agency

Hi Hyung Yoon,

The Office for Research Protections (ORP) has reviewed the application for the research study noted in the subject line of this email and determined it to be exempt from IRB review. You may begin your research. This study qualifies under the following category:

Category 2: Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observations of public behavior unless: (i) information obtained is recorded in such a manner that human participants can be identified, directly or through identifiers linked to the participants; and (ii) any disclosure of the human participants’ responses outside the research could reasonably place the participants at risk of criminal or civil liability or be damaging to the participants’ financial standing, employability, or reputation. [45 CFR 46.101(b)(2)]

PLEASE NOTE THE FOLLOWING:
- Include your IRB number in any correspondence to the ORP.
- The principal investigator is responsible for determining and adhering to additional requirements established by any outside sponsors/funding sources.

Record Keeping
- The principal investigator is expected to maintain the original signed informed consent forms, if applicable, along with the research records for at least three (3) years after termination of the study.
- This will be the only correspondence you will receive from our office regarding this exemption determination.
- MAINTAIN A COPY OF THIS EMAIL FOR YOUR RECORDS.

Consent Document
- The most recent consent form/initial email that you sent in for review is the one that you are expected to use.

Follow-Up
- The Office for Research Protections will contact you in three (3) years to inquire if this study will be on-going.
- If the study is completed within the three year period, the principal investigator may complete and submit a Project Close-Out Report.
(http://www.research.psu.edu/orp/areas/humans/applications/closeout.rtf)

Revisions/Modifications
- Any changes or modifications to the study must be submitted to the Office for Research Protections on the Modification Request Form - Exemption available on our website:
http://www.research.psu.edu/orp/areas/humans/applications/modrequest.rtf
- Modifications will not be accepted unless the Modification Request Form is included with the submission.
Invitation Letter

Summer Greetings to __________,

Hyung Joon Yoon, a Ph.D Candidate in Workforce Education and Development at Penn State needs your assistance to complete his research project.

He is conducting research about human agency, which is defined as the characteristics of people who accomplish their desired goals and actions. He has developed his own career development model for adults and presented at professional conferences. His model helps people plan their careers and realize their dreams. Joon has been refining his approach for the past 10 years.

Would you take a few moments to participate in his survey? Then visit Survey address: http://proteancareer.com.

If you participate in his research, you will be asked to answer questions about your career decision-making and career readiness. It will not take more than 20 minutes. The questions in the survey will help you sharpen your career development strategies and competencies. In addition, he will provide you with a summary highlights your strengths and points to develop further.

In addition, identification will remain completely confidential except to the researcher. If you have any concern or question about this research, you can email or call him. His email address is huy114@psu.edu and phone number is 814-933-2464. This project has been approved by the IRB.

Thanking you in advance for your support in answering the survey for this doctoral student.
Dear survey participants:

I am Hyung Joon Yoon, a Global Career Development Facilitator (GCDF) and a Ph. D candidate in Workforce Education and Development program at the Pennsylvania State University, University Park Campus. The purpose of this study is to develop and validate the Assessment of Human Agency, by testing its initial reliability and validity and comparing it with other career development measures. This will be the first career development assessment tool using the concept of human agency, which is vital for one’s achievement.

I would like to ask you to fill out a survey which you can access by clicking the "NEXT>>" button below. Participants must be 18 years of age or older. If you decide to participate, you will be asked to answer questions about your career decision-making self-efficacy, human agency, and vocational situation. Also, you will be asked to answer questions about your personal background. It will take about 15-20 minutes to finish the survey.

While there is no financial benefit for your participation, you may find that the questions in the survey will help you reflect on your career development strategies and competencies.

Completion and submission of the survey is considered your implied consent to participate in this study. Please print this form for your records. Your participation is entirely voluntary. You may withdraw at any time, and you may decline to answer specific questions.

Your participation in this research is confidential. All information collected from you will remain completely confidential. The data will be stored at a secure server and stored on the principal investigator’s computer in a password protected file. Your confidentiality will be kept to the degree permitted by the technology used. No guarantees can be made regarding the interception of data sent via the Internet by any third parties.

If you have any concerns or questions about this research, please let me know. You may contact me at (814) 933-2464, or my advisor Dr. William J. Rothwell at (814) 863-2581 or by email at wjr9@psu.edu. Thank you for your consideration.

Hyung Joon Yoon, GCDF, SPHR
VITA

Hyung Joon Yoon, Ph.D., SPHR, GCDF, CDFI (drmtree@gmail.com)

EDUCATION
The Pennsylvania State University, University Park, PA
• Ph.D in Workforce Education and Development, August 2011
  - Emphasis: Human Resource Development / Organization Development

Korea University, Seoul, Korea
• Master of Art in Educational Sociology and Adult Continuing Education, July 2004
• Bachelor of Economics in Food and Resource Economics, February, 2000

REPRESENTATIVE WORK EXPERIENCE
Instructor, WFED/CNED 424 Facilitating Career Development, The Pennsylvania State University

Career and Leadership Development Specialist, Penn State Management Development Programs and Services, The Pennsylvania State University

Assistant Manager (Leadership Development Specialist), Management Training Team, LG.Philips LCD Co., Ltd. (Currently, LG Display)

SELECTED HONORS AND AWARDS


KAHRDA Scholarship, Awarded by the Korean Academy of Human Resource Development in America (February 2010).

Individual Greatness Award, Awarded by Franklin Covey, Co., Ltd. (May 2006).

SELECTED PUBLICATIONS


