

**FACTOR STRUCTURE OF THE HOPE-ACTION-INVENTORY IN A PROBLEMATIC
SUBSTANCE USE SAMPLE**

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Abstract

Alcohol and other substance use disorders are a significant health and social issue in North America (World Health Organization [WHO], 2018). Previous research has found that individuals working to overcome an addiction often report feeling hopeless about their ability to secure employment or return to work in the future (Bauld et al., 2013). Hopefulness and a sense of human agency have been found to be important predictors of positive outcomes, including vocational ones, in a variety of domains for individuals with substance use disorders. Research findings suggest that the presence of hopefulness and being engaged in a meaningful activity, such as a job, are important factors for achieving positive outcomes for individuals with a significant problem with substance use (Ferrari et al., 2012). As such, it is essential to validly and reliably measure career competencies, based on hope and human agency, in clinical settings to provide direction for practitioners on how to effectively support this population. This study evaluated the psychometric properties of the Hope-Action-Inventory (HAI; Yoon, 2017) with a sample of 751 individuals who had ever had a problem with alcohol and other drugs. The HAI is based on Hope-Action Theory (Niles et al., 2019) and was developed to measure an individual's level of Hope-Centered Career Competencies (i.e., Hope, Self-Reflection, Self-Clarity, Visioning, Goal Setting and Planning, Implementing, and Adapting). This study assessed the reliability of the HAI as well as the scale's factor structure to explore whether the HAI can be justifiably used to assess career competencies in a problematic substance use population. The HAI was found to have adequate reliability with this previously uninvestigated clinical sample. Furthermore, hierarchical confirmatory factor analysis found that the previously proposed hierarchical seven-factor structure of the HAI fit the data well. These results provide support for

the use of the HAI by professionals working with individuals who have ever experienced problematic substance use. Specifically, for the purpose of developing a better understanding about which career competencies clients may need to work on to improve their ability to navigate career development and exploration.

Lay Summary

Alcohol and other drug disorders are a significant health and social issue in North America (WHO, 2018). The presence of hopefulness and having a sense of agency are important factors for achieving beneficial results for individuals with a significant problem with substance use (Bandura, 2001; Ferrari et al., 2012; Grigson, 2008; McCullough & Anderson, 2013). As such, this study evaluated the psychometric properties of the Hope-Action-Inventory (HAI; Yoon, 2017) with a sample of 751 individuals who have ever had a problem with substance use. Participants were recruited online through MTurk and substance use support centers across Greater Vancouver, British Columbia, Canada. Participants were asked to complete a demographics questionnaire, a substance use screening questionnaire, and the HAI. The HAI was found to have adequate reliability and hierarchical confirmatory factor analysis confirmed the factor structure of the measure with this previously uninvestigated clinical population.

Preface

This thesis is an original, unpublished, and independent work by the author, Lauren N. Currie. All data was collected and analyzed by Lauren N. Currie under the supervision of Dr. Robinder P. Bedi. Ethical approval was granted by University of British Columbia's Behavioural Research Ethics Board Certificate number H18-03324.

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List of Symbols

X^2	Chi-Squared
α	Cronbach's Alpha
df	Degrees of Freedom
d	Effect Size
=	Equals
κ	Kappa
<	Less than
*	Multiplied by
/	Or
ω_o	Ordinal Omega
r	Pearson's Correlation Coefficient
%	Percent
ρ	Polychoric Correlation Coefficient
p	Probability Statistic
t	T-test

List of Abbreviations

ADP	Adapting
AHA	Assessment of Human Agency
AHS	Adult Hope Scale
ASD	Autism Spectrum Disorder
AUC	Area Under the Curve
BC	British Columbia
CAGE-AID	CAGE-Adapted to Include Drugs
CFI	Career Flow Index
CI	Confidence Interval
CFI	Comparative Fit Index
GBL	Gamma Butyrolactone
GHB	Gamma Hydroxybutyrate
GIF	Goodness of Fit Index
GP	Goal Setting and Planning
GPA	Grade Point Average
HAI	Hope-Action-Inventory
HCCI	Hope-Centered Career Competencies
HCFA	Hierarchical Confirmatory Factor Analysis
HIT	Human Intelligence Task
HP	Hope
IMP	Implementing

LOT-R	Life Orientation Test-Revised
LSD	Lysergic Acid Diethylamide
M	Mean
MAX	Maximum
MDMA	Methylenedioxymethamphetamine
Mdn	Median
MIN	Minimum
MTurk	Amazon Mechanical Turk
N	Number
NNFI	Non-normed Fit Index
QQ	Quantile-Quantile
RMSEA	Root-Mean-Square Error of Approximation
SC	Self-Clarity
SCC	Self-Concept Clarity Scale
SD	Standard Deviation
SE	Standard Error
SMART	Self-Management and Recovery Training
SRF	Self-Refection
SRMR	Standardized Root Mean Square Residual
SUD	Substance Use Disorder
UBC	University of British Columbia
USD	United States Dollar
WLSMV	Diagonally Weighted Least Squares

VI Vocational Identity Scale

VIS Visioning

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Dedication

I dedicate this work to my grandfather, Sydney James Currie. I will cherish your unyielding belief in me and boundless support throughout my academic endeavours.

Chapter 1: Introduction

Alcohol and other drug disorders (i.e., substance use disorders) are a significant health and social issue in North America. The World Health Organization (2018) purports that at least 31 million persons have substance use disorders excluding alcohol and a further 283 million people have alcohol use disorders worldwide. According to the Canadian Community Health Survey (CCHS) in 2012, 21.6% of Canadians (i.e., about 6 million people) met criteria for a substance use disorder over the course of their lifetime, with alcohol being the most common substance meeting criteria for abuse or dependence (Statistics Canada, 2013). The National Survey on Drug Use and Health in the United States found that 19.7 million people had a substance use disorder with Alcohol Use Disorder being more common than an Illicit Drug Use Disorder (73.6% and 38.3%, respectively; Bose et al., 2017). Problematic substance use can result in a variety of difficulties in various areas of life, such as social relationships, family, housing, physical and mental health challenges, occupational and educational functioning (Bauld et al., 2012; Sung & Chu, 2011; Zanis et al., 2001). Given the prevalence of substance use problems, it is important to explore ways to support this population in achieving positive recovery and general life outcomes.

Recent literature has established a strong connection between success in substance use recovery and the presence of hopefulness (Chavarria et al., 2012; Ferrari et al., 2012; Leamy et al., 2011). Furthermore, setting career goals and gaining employment have been found to be influential factors in the process of recovery (West, 2008). Problematic substance users' agency (i.e., goal-directed energy) is thought to be compromised by their addiction because they lose control over their consumption behaviours rather than having control over them (McCullough &

Anderson, 2013; Snyder et al., 1991a). As such, regaining human agency is essential in the recovery process (McCullough & Anderson, 2013). Given the importance of gaining employment in the process of recovery (West, 2008), it is necessary to assess an individual's degree of career competencies. By developing a better understanding of one's degree of hopefulness and agency, as informed by their strengths or weaknesses in certain career competencies, professionals can better support those in recovery through the process of searching for employment and making career decisions, and ultimately further improving their substance use outcomes as well (Chavarria et al., 2012; Ferrari et al., 2012; Leamy et al., 2011; West, 2008).

This thesis will draw upon Hope-Action Theory (Niles et al., 2019) to inform a psychometric study of the Hope-Action-Inventory (HAI; Yoon et al., 2019) for potential use with a problematic substance use population. Hope-Action Theory draws upon aspects of Snyder's Hope Theory (2002), Bandura's Human Agency Theory (2001), and Hall's (1996) Protean Career Theory and metacompetencies to establish a foundation for how to work through career-related difficulties (Niles, 2011). The HAI is a measure that assesses an individual's degree of Hope-Centered Career Competencies (i.e., Hope, Self-Reflection, Self-Clarity, Visioning, Goal Setting and Planning, Implementing, and Adapting). Developing an understanding of one's career competencies provides meaningful information for clients and career practitioners on how to effectively manage career decisions and work through career challenges (Amundson et al., 2018).

1.1 The role of hope

Hope is an essential component in psychological healing and performs a central role in counselling (Snyder et al., 2000). Given the importance of instilling and fostering hopefulness with individuals experiencing substance use issues (Chavarria et al., 2012; Irving et al., 1998), the importance of understanding the role that hope takes in the recovery process is imperative. Hope has been defined as a positive motivational state that is composed of a mutually derived sense of agency and identification of pathways (Snyder et al., 1991b). Agency refers to goal-directed determination and pathways is the ability to make plans to achieve said goals (Snyder et al., 1991b). The presence of both agency and pathways is necessary for individuals to achieve hopeful states (Snyder, 1995). Furthermore, having a high level of hope improves one's ability to navigate challenges, stressors, or barriers encountered during the goal achievement process (Snyder, 1995). As such, hope is an important predictor of success and enhances the ability to develop strong pathways towards successfully achieving goals, such as stopping substance use or obtaining a job. Moreover, it is important to identify the link between hope and career aspirations when working with a problematic substance use population because the ability to successfully gain employment during the recovery process can result in many positive outcomes, such as increased independence (Best & Lubman, 2012; Chavarria et al., 2012; Ferrari et al., 2012; Leamy et al., 2011; Snyder et al., 2006; West, 2008).

1.2 Hope and substance use

Many individuals engaged in substance use treatment report feelings of shame, low self-esteem, and hopelessness due to the barriers they face (e.g., physical health problems, poor work histories, criminal records; Coduti & Schoen, 2014). Specifically, individuals working to

overcome an addiction have reported feeling hopeless about their ability to secure employment or return to work in the future (Bauld et al., 2013). These findings suggest that the presence of hopefulness and being agentically engaged in an activity, such as employment, are important factors for achieving positive outcomes for individuals in recovery (Ferrari et al., 2012; Grigson, 2008). The importance of gaining employment and becoming engaged in an activity provides justification for the evaluation of a client's degree of hope related to career (i.e., being hopeful and securing employment have been found to lead to improved substance use recovery outcomes). Furthermore, the process of gaining employment through goal identification (e.g., exploring job opportunities) and establishing steps towards goal achievement is strongly linked to the construct of human agency (Chen, 2006; Kush & Cochran, 1993; Solberg et al., 1995).

1.3 The role of human agency

Human agency is the ability to develop self-understanding, envision future goals and events, and purposely establish and implement action plans to achieve goals while continuously monitoring continued success (Bandura, 2001). In other words, human agency refers to one's ability to independently select a goal and make decisions on how to achieve that goal. According to Bandura's (2001) Human Agency Theory, individuals have to believe they can achieve their goals; otherwise, there is no internal drive to develop plans and fulfil them. There are four core components that comprise human agency according to Bandura (2006): intentionality, forethought, self-reactiveness, and self-reflectiveness. Due to the goal-directed nature of the construct as defined by Bandura, possessing a high degree of agency can significantly promote an individual's ability to create career goals and develop strategies or identify steps to be taken to achieve those career goals. Career-related human agency is a key facet of the broader construct

of self-efficacy (i.e., an individual's beliefs about their ability to succeed on a task; Bandura, 2001), which has frequently been demonstrated to predict the successful navigation of one's career objectives and overcoming career barriers (Chen, 2006; Kush & Cochran, 1993). While there is limited research available that assesses the connection between human agency and career directly, what has been reported is promising. Furthermore, there are many conceptual parallels between the presence of hope and a strong sense of human agency. The ability to formulate future-oriented goals and develop realistic pathways to successful goal attainment is vital to both theories (Bandura, 2001; Snyder, 2002). Furthermore, both of these theories lend themselves well to career navigation and development in a career counselling context. As such, these two theories provided the primary foundation for the development of the HAI (Niles et al., 2010b).

1.4 Hope-Action-Inventory

The HAI was developed to assess an individual's degree of hope as it relates to specific Hope-Centered Career Competencies (Niles et al., 2010b). The competencies this measure focuses on are: Hope, Self-Reflection, Self-Clarity, Visioning, Goal Setting and Planning, Implementing, and Adapting (Niles et al., 2010b). These competencies are based on Hope-Action Theory (Niles et al., 2010b) which draws on Snyder's (2002) research on the hope construct, Bandura's (2001) Human Agency Theory, and Hall's (1996) Protean Career Theory and metacompetencies. Studies that have previously evaluated the utility of the HAI have primarily focused on university students (Amundson et al., 2013; Niles et al., 2010a; Smith et al., 2014; Yoon, 2011; Yoon et al., 2015) and unemployed job seekers (Amundson et al., 2016; Clarke et al., 2016). For example, these studies have evaluated how students' levels of hope influence their ability to navigate career challenges (Amundson et al., 2013; Smith et al., 2014),

how hope predicts student engagement in their learning, academic performance, and vocational identity (Yoon et al., 2015), and how hope interventions can reduce unemployment (Amundson et al., 2016; Clarke et al., 2016; Yoon et al., 2020). Furthermore, several published studies have been conducted specifically to evaluate the psychometric properties of the HAI (Niles et al., 2010a; Schreiber et al., 2013; Schindler et al., 2014; Yoon, 2017; Yoon et al., 2015; Yoon et al., 2020). These studies have found the HAI to have good validity, poor to adequate internal consistency, and good model fit in the samples used (university students, unemployed job seekers, and individuals diagnosed with Autism Spectrum Disorder (ASD); Niles et al., 2010a; Schreiber et al., 2013; Schindler et al., 2014; Yoon, et al., 2015; Yoon et al., 2020). In previous studies, the Cronbach's α for the total scale has ranged from .88 to .92 and subscale coefficients ranged from .59 to .85 indicating good to excellent internal consistency for the total scale and poor to good internal consistency for the subscales (Niles et al. 2010a; Schreiber et al., 2013; Yoon 2017; Yoon et al., 2015; Yoon et al., 2020). Two previous studies found the HAI to have good convergent validity with scales of similar constructs with correlations ranging from .76 to .82 (Niles et al., 2010a; Schindler et al., 2014). Furthermore, the HAI has been found to have a consistent seven-factor hierarchical structure across the three most recent studies with factor loadings ranging from .37 to .89 (Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015). In these three most recent studies, the Root-Mean-Square Error of Approximation (RMSEA) has ranged from .06 to .07, the Standardized Root Mean Square Residual (SRMR) was consistently .06, the Non-Normed Fit Index (NNFI) ranged from .88 to .98, and the CFI ranged from .89 to .98 which suggests moderate to good model fit (Schreiber et al., 2013; Yoon 2017; Yoon et al., 2015). Limited information is available on the first study to assess the HAI (Niles et al. 2010a), then referred to as the CFI, so it cannot be determined if the first study assessed a seven-factor

hierarchical model or a different structural model. Therefore, the factor analysis results from Niles et al.'s (2010a) study cannot be compared to latter studies that tested the seven-factor hierarchical model with the HAI. While the previously reported factor analyses with the HAI are not well described, we can deduce from previous images of the seven-factor hierarchical structure (Schindler et al., 2014; Schreiber et al., 2013; Yoon, 2017) and the same degrees of freedom being reported in the latter three studies (Schreiber et al., 2013; Yoon 2017; Yoon et al., 2015) that the same seven-factor hierarchical structure was tested. In sum, previous psychometric evaluations of the HAI have found the measure to operate moderately well when used with students and general unemployed populations.

1.5 Problem statement

The HAI has not previously been psychometrically evaluated for the use with a clinical population, such as a problematic substance use population, with the exception of one recent and unpublished study with a combined adolescent/adult sample of individuals with a developmental disorder (Autism Spectrum Disorder [ASD]; Yoon et al., 2020). Additionally, I am not aware of any other measures of career-related hope that have been evaluated for the use with this population. Specifically, Zumbo (2009) states that the validity of a scale cannot be separated from the sample from which the information was obtained. Thus, it is important to validate measures for use with samples corresponding to populations in which the measure may be applied to ensure that the measure is assessing the construct as intended in those populations.

1.6 Purpose of the proposed study

Previous research has identified hope as a key factor for substance use recovery as well as for being actively engaged in employment and other vocational activities (Chavarria et al., 2012; Ferrari et al., 2012; Leamy et al., 2011; Snyder et al., 2006; West, 2008). As such, it is important to attempt to validate the HAI for use in working with a problematic substance use population to assess their degree of hope related to employment. As the HAI has not been previously evaluated for use with a problematic substance use population, which may have meaningfully different characteristics than the previously studied student or general unemployed populations, the present study explored the utility of the HAI with this previously uninvestigated clinical population. Specifically, this study aimed to evaluate the reliability and previously reported seven-factor hierarchical structure of the HAI (Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015) with a sample of problematic substance users.

Chapter 2: Literature Review

Hope-Action Theory is grounded in Snyder's Hope Theory (2002), Bandura's Human Agency Theory (2001), and Hall's (1996) Protean Career Theory and metacompetencies. As such, this literature review will focus on the intersection of hope, agency, and the 21st century career (based on Hall's theory) as they relate to a population with problematic substance use. Specifically, I will discuss Hope-Action Theory, Snyder's Hope Theory, hope's influence on employment, the importance of hope in substance use recovery, Bandura's Human Agency Theory, human agency and career, human agency and substance use, the importance of human agency in substance use recovery, the importance of employment for recovering substance users, the common barriers to employment that current or past substance users typically encounter, Hall's Protean Career Theory and metacompetencies, and career metacompetencies and substance use. The history of the development and use of the HAI will also be presented.

2.1 Hope-Action Theory

Hope-Action Theory, formerly known as the Hope-Centered Model of Career Development, describes competencies that can be used to guide the career development process (Niles et al., 2010b). Hope-Action Theory addresses relatively unique 21st century career challenges (e.g., limited job security) and provides direction for understanding one's work context and ways of managing career flow effectively. "Career flow" refers to the difficult work situations, or work demands, that all workers encounter and each individual's ability to navigate those situations whether they are challenging, overwhelming, boring, or enjoyable (Niles, 2011). Furthermore, this theory promotes strategies to incorporate self-awareness, work-awareness,

goal-setting, action planning, and career adaptability (Niles et al., 2014). This theory is situated in the positive psychology approach to human development and takes a strengths-based approach to foster career competencies through kinaesthetic activities, storytelling, visualisation, and metaphor (Niles et al., 2011). Specifically, action-oriented hope involves “envisioning a meaningful goal and believing that positive outcomes are likely to occur should specific actions be taken” (Niles et al., 2010b, p. 102). In this perspective, those with higher levels of action-oriented hope are better able to explore their options, take action, and overcome adversity (Niles et al., 2014). Moreover, the ability to adapt in the face of challenges is a key component of Hope-Action Theory and refers to an individual’s ability to respond effectively to new information about themselves or their environment and incorporate this information into their career behaviour (Niles & Harris-Bowlsbey, 2002). Individuals are encouraged to reflect on their circumstances, envision their future, develop, implement, and adapt their lives as they work towards their desired goals (Clarke et al., 2016). The seven career competencies espoused by Hope-Action Theory are Hope, Self-Reflection, Self-Clarity, Visioning, Goal Setting and Planning, Implementing, and Adapting. The ability to understand one’s competencies in these areas and identify areas for growth provides essential insight for career practitioners on how to best support clients coping with unemployment or career transition difficulties (Amundson et al., 2018).

Hope-Action Theory’s core competencies draw on Snyder’s (2002) hope-focused research, Bandura’s (2001) Human Agency Theory, and Hall’s (1996) metacompetencies and Protean Career Theory. Together, hope, human agency, and metacompetencies provide the foundational base for working through career-related challenges (Niles, 2011). Snyder’s (2002) Hope Theory most directly informs the Hope competency of Hope-Action Theory (Yoon et al.,

2015). Bandura's (2001) Human Agency Theory most directly informs Self-Reflection (i.e., thoughts about one's character, actions, and motives), Visioning (i.e., forethought), Goal Setting and Planning (i.e., self-reactiveness), and Implementing (i.e., intentionality; Yoon et al., 2015). Finally, Hall's (1996) metacompetencies most directly inform the Self-Clarity and Adapting competencies (Yoon et al., 2015). Hope-Action Theory utilizes a metaphor of a pinwheel to depict the centrality of action-oriented hope to the seven career-competencies (see Figure 2.1). Each of the seven career competencies are useful for managing one's career flow effectively and will be described below (Niles, 2011).



Figure 2.1 *Hope-Action Theory Pinwheel*. Copyright 2011 by S. Niles, N. Amundson, & H. J. Yoon. Reprinted with permission.

2.1.1 Hope

Hope is related to envisioning a meaningful goal and believing that positive outcomes are possible should specific actions be taken (Niles, 2011). Having hope allows an individual to imagine possible future situations and take the steps needed to achieve those goals (Niles, 2011).

Furthermore, having a hopeful attitude can be a catalyst for identifying goal-related action steps to begin the goal attainment process (Niles, 2011).

2.1.2 Self-reflection

Self-reflection refers to intentionally examining one's beliefs, thoughts, behaviours, feelings, and circumstances (Niles, 2011; Niles et al., 2011). When engaging in self-reflection, individuals focus on more significant issues in life, reflect on what matters in life, and think about what they want to do with their life (Amundson et al., 2016). Individuals are aware of the interaction between internal and external factors (Amundson et al., 2016). In other words, individuals reflect on their life holistically taking into account their personal beliefs, values, and desires as well as their external reality.

2.1.3 Self-clarity

Self-clarity is the clear identification of one's skills, interests, values, and personality (Amundson et al., 2016). Self-clarity emerges as individuals develop answers to their key questions about themselves, their circumstances, and their life (Niles, 2011). When developing self-clarity, individuals go beyond the broader questions about life and begin to seek an understanding of their unique attributes, skills, and values (Amundson et al., 2016).

2.1.4 Visioning

Visioning is the act of brainstorming and looking ahead into future possibilities (Amundson et al., 2016). When engaging in visioning, the focus is on possibilities rather than probabilities (Pryor et al., 2008). When a sufficient list of options for the future is developed,

self-clarity is utilized to determine which options are the most desirable (Niles, 2011). Those more desirable options are narrowed and focused on to gain a deeper understanding of them (Niles, 2011).

2.1.5 Goal setting and planning

Goal setting and planning is the act of engaging in thoughtful consideration about goals and the specific steps to be taken (Amundson et al., 2016; Niles, 2011). The pathway towards a goal should be narrow, and the goals should be realistic and doable (Amundson et al., 2016).

2.1.6 Implementing

Implementing is the act of taking steps towards goals (Amundson et al., 2016). An example is writing an entrance exam in order to apply to a specific academic program that will lead to a future desired career.

2.1.7 Adapting

Adapting is the flexibility to modify goals, or the pathways towards goals, in order to move forward (Amundson et al., 2016; Niles, 2011). When individuals encounter barriers during the goal attainment process, it is imperative that they remain flexible and willing to modify their plans in order to resume their path towards their desired goal (Niles, 2011). In remaining flexible and open to new information, current goals can be reinforced, or new goals may emerge (Niles, 2011).

2.2 Hope-Action Theory interventions

A wide range of interventions have been developed based on the career competencies outlined in Hope-Action Theory. Over 40 interventions have been developed from Hope-Action Theory that are intended to target specific career competencies that an individual may be lacking, or have been weakened (Amundson, 2009; Amundson et al., 2016). Three Hope-Action Theory based interventions that have been presented in previous literature will be described here to clarify the application of the theory. These include: walking the problem, career flow, and story wheels (Amundson et al., 2016). Each of these three interventions are intended to empower individuals to establish and sustain constructive momentum through the career development process (Niles et al., 2019) and strengthen specific career competencies in order to help the client gain clarity about their career-related problem and work towards creating solutions.

The first intervention to be discussed is “walking the problem.” It aims to develop the Visioning and Goal Setting and Planning career competencies. In this intervention, two spots in a room are chosen with the first spot being the problem and the second spot being the solution. The client is asked to stand in the first spot and describe the problem they are facing, an issue they are trying to resolve, or the goal they are trying to reach. The client is then asked to look at the second spot and visualize the solution to their problem. Next, the client is asked to imagine a miracle has occurred and their problem has been solved. The client is then asked to walk to the second spot and describe the solution. Finally, the client is asked to look back to the problem and is asked, “What steps do you need to take to get you to where you have arrived?” Finally, the counsellor and client discuss the new insights the client has gained about their problem.

Another intervention is “career flow.” It aims to strengthen the Self-Reflection career competency. Career flow is a metaphor that depicts the flow of a river with twists and currents as

a reflection of the challenges of work or career. Certain strengths and skills will aid one's journey along the river when they encounter difficult terrain. The first step in this intervention is to introduce Hope-Action Theory as well as the seven career competencies and ask the client to share their thoughts on the theory. Then the counsellor introduces the career flow metaphor and asks the client to describe their career flow and any recent experiences of difficulties. Then the counsellor introduces the idea of optimal flow moments which is described as being completely immersed in a work-related activity. The counsellor can also read aloud the following: "When you are in the flow you are involved in an activity for its own sake. The ego falls away. Time flies. Every action, movement, and thought flows inevitably from the previous one, like playing jazz. Your whole being is involved, and you're using skills to the utmost" (Amundson et al., 2016, p. 28). Next, the client is asked to focus their attention on two or three work tasks in the past when they felt in optimal flow and describe what made these experiences special. Finally, the client is asked to reflect on which skills, interest, values, or attitudes they were experiencing during those optimal career flow moments.

A third example is "story wheels," formerly known as the circle of strength. This is an intervention that aims to develop the Self-Clarity career competency. Stories about our experiences can be rich in insights about our values, interests, and personal characteristics that are likely to have an impact on our career flow. This intervention aims to draw on stories to gain clarity on how these factors influence career flow. First, the client is asked to reflect on an activity they took part in where they felt engaged and proud of their contribution or the outcome. Using a large flip chart, the counsellor begins writing notes as the client tells their story while probing for more details on the client's feelings, thoughts, and motivations. On a second piece of chart paper, the counsellor will draw a large S in the middle of the page, standing for story, and

begin writing words around the “S” that represent the client’s goals, strengths, interest, personal style, and values that were generated from the story. After doing this, the client is asked if there are any other observations or reframing that they would like to add to the “S” diagram. Finally, the counsellor and client can discuss how the strengths identified from the story could be applied to the client’s vision for work and career search decisions.

The interventions described here are intended to provide a sense of what Hope-Action Theory driven interventions look like and is not meant to be an exhaustive list of the numerous interventions that have been developed from this theory (Amundson, 2009). Like all Hope-Action Theory interventions, these three draw on the core career competencies of Hope-Action Theory as well as hope and human agency to foster change and navigate problems the client is experiencing.

2.3 Snyder’s Hope Theory

Many individuals have theorized about the construct of hope (e.g., Dufault & Martocchio, 1985; Snyder et al., 1991b; Stephenson, 1991). Snyder and colleagues (1991b) provided a highly popular theory and defined hope 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). Furthermore, according to Snyder, hope is conceptualized as centering on cognition rather than emotion (Snyder et al., 2006). By nature, human beings are goal-directed, and the process of developing goals is fundamental to determining where we want to be in life and what we want to achieve (Snyder, 1995). Snyder (2002) has identified five primary types of goals: repair goals (i.e., goals that fix something missing in the individual’s life), maintenance goals (i.e., related to daily life), enhancement goals (i.e., large long-term

goals), sure things (i.e., goals thought to be inevitable), and unattainable goals (i.e., goals deemed out of reach). Furthermore, there are two categorizations of goals: approach and avoidance (Snyder et al., 2006). Approach goals have a positive goal outcome and include a target that an individual wants to achieve (e.g., gaining employment). Avoidance goals have an adverse goal outcome and are attempts to avoid a given eventuality (e.g., avoiding any setbacks over the course of recovery; Snyder et al., 2006). There are no restrictions on which types of goals align with either category. However, Snyder has suggested that individuals with high hope are more likely to have approach goals whereas, those with low hope are more likely to have avoidance goals (Snyder et al., 2006). In sum, goals are fundamental to Snyder's Hope Theory and are seen as an individual's primary source of motivation, which is directed through agency and pathways (Coduti & Schoen, 2014).

According to Snyder's Hope Theory, without both agency and pathways, high hope cognitions are not activated, and a positive motivational state cannot be achieved (Elliott et al., 1991; Snyder, 1995). Agency refers to an individual's sense of determination, motivation, or cognitive effort made to achieve goals, which elicits energy for the process of negotiation in order to execute selected pathways (Elliott et al., 1991; Snyder et al., 2006). Furthermore, agentic thinking is defined as "the thoughts that people have regarding their ability to begin and continue movement on selected pathways towards those goals" (Snyder et al., 1999, p. 180). Pathways refer to an individual's ability to achieve their goals successfully through developing plans with different stages directed towards goal achievement (Elliott et al., 1991). Goals can have various pathways towards achieving them; however, some pathways are more effective than others (Snyder et al., 2006). Having both agency and pathways is important because individuals with a high sense of agency will remain psychologically strong under stressful situations and having a

high sense of pathways will result in numerous options to resolve a stressful situation (Elliott et al., 1991). Generally, high hope individuals have an elevated sense of both agency and pathways (Snyder, 1995). Furthermore, they tend to approach goals with a positive emotional state, a sense of challenge, and with a focus on success rather than failure (Snyder, 1995). Moreover, individuals with high hope show a heightened ability to encounter situational difficulties while maintaining a positive emotional state (Coduti & Schoen, 2014). This may, in part, be due to their positive views on the goal-pursuit process and the possibilities of achieving positive outcomes (Snyder et al., 2006). Conversely, low hope individuals typically approach goals with a negative emotional state, a sense of ambivalence, and with a focus on failure (Snyder, 1995). Furthermore, low hope can result in decreases in confidence, motivation, goal attainment, and overall engagement (Clarke et al., 2016). In sum, according to Snyder's theory, having a high sense of hope is a key factor that impacts one's ability to achieve their goals through developing plans while also being able to navigate difficult situations as they arise.

2.4 Hope's influence on employment

Hope has been found to be a predictor of career development and exploration (Diemer & Blustein, 2007; Hirschi et al., 2015). For example, a study with urban high school students found that high vocational hope was associated with the desire to attain external rewards through future career attainment as well as increased confidence in the ability to attain goals (Kenny et al., 2010). Furthermore, it has been suggested that individuals with high levels of hope have greater ease in exploring multiple career options and are able to draw on personal preferences and strengths to better facilitate achieving their career goals (Hirschi et al., 2015). The heightened ability to explore career goals occurs because individuals with high levels of hope have more

accessible pathways (i.e., are better able to determine the steps taken to reach a desired goal) and engage more in agency thinking (i.e., determination and motivation to work towards a desired goal; Hirschi et al., 2015). Furthermore, Juntunen and Wettersten (2006) have suggested vocational hope is an important factor to consider when examining the motivational states of economically disenfranchised groups, such as individuals with substance use disorders. These individuals may have extra difficulty sustaining hope in social contexts offering limited economic resources while simultaneously facing a number of additional barriers to academic and vocational success (Juntunen & Wettersten, 2006). This literature highlights the importance of having high levels of hope in order to successfully navigate career options and difficult situations.

Hope has also been found to influence productivity in workplace settings. Hirschi (2014) suggests that the presence of hope has a direct effect on proactive career behaviours beyond career decidedness, planning, and self-efficacy beliefs. Furthermore, hope has been found to predict increased levels of vigour and dedication to work in employees on the following day (Ouweneel et al., 2012). Ouweneel and colleagues (2012) suggest that employees who start their workdays expecting to reach their goals are more engaged because the presence of hope results in increased effort and therefore actual goal attainment. Thus, experiencing hope motivates employees to work towards their work-related goals and become completely absorbed in their work in an effort to successfully reach their goals (Ouweneel et al., 2012). In sum, hope not only influences one's ability to successfully navigate career exploration but impacts one's ability to perform at a high level in their work. Furthermore, the continued experience of goal attainment, fostered by a sense of hope, has a circular effect in that achieving one's goals increases one's

sense of hope about future goal attainment, which then results in a greater likelihood of achieving the goals one sets out for and so on.

2.5 Importance of hope in substance use recovery

Addictive behaviour is defined as those behaviours that are experienced by an individual and perceived by society as difficult or problematic to keep under personal control (Caselli & Spada, 2016; DiClemente, 1986). Specifically, substance use disorder is “a cluster of cognitive, behavioural, and physiological symptoms indicating that the individual continues using the substance despite significant substance-related problems” (American Psychiatric Association, 2013). It has been theorized and empirically supported that hope is one of the factors that support individuals in taking steps towards change, establishing goals, and working towards recovery (Chavarria et al., 2012; Ferrari et al., 2012; Leamy et al., 2011; Snyder et al., 2006). A recent systematic review identified hope and optimism about the future as one of five key processes for recovery (the others were: connectedness, identity, meaning of life, and empowerment; Leamy et al., 2011). In further support, Snyder and colleagues (2006) have found that individuals with high levels of hope are more successful in their substance use rehabilitation goals than those with low hope. Hope is part of an individual’s internal trajectory that serves as a significant predictor of future behaviour (Chavarria et al., 2012). Furthermore, hope has been found to be significantly related to self-regulation (i.e., ability to control one’s behaviour) and self-esteem – two characteristics of individuals in recovery that also predict their success (Chavarria et al., 2012; Ferrari et al., 2012). Moreover, strong statistical relationships have been found between self-competency (i.e., the belief that one is skilled in the ability to handle various situations) and resistance to impulsivity and the two factors of hope defined by Snyder (agency and pathways;

Ferrari et al., 2012). Overall, being hopeful about one's ability to reduce substance use, remain abstinent, or engage in treatment appears important in the recovery process (Chavarria et al., 2012).

There is also specific support in the literature for incorporating hope-based interventions and attending to hopefulness when working with individuals with substance use problems or those in recovery. Utilizing hope theory as a guide for substance use treatment can facilitate goal-directed thinking in order to optimize an individual's participation in treatment planning and their adaptive coping skills (Snyder et al., 2006). A study by Dekhtyar and colleagues (2012) found that recovery house residents with high degrees of hope were less likely to be reincarcerated than those with lower levels of hope. Specifically, agency was a significant predictor of reduced incarceration; however, pathways was not. Another study by May and colleagues (2015) also found agency to be a significant predictor of reduced anxiety and depression symptoms in a sample of problematic substance users in recovery. These studies provide support for the utility of hope, particularly agentic thinking, as beneficial cognitive resources for recovery outcomes.

2.6 Bandura's Human Agency Theory

A second foundational theory, underlying Hope-Action Theory, is Bandura's Human Agency Theory (2001). According to Human Agency Theory, people are the agents of their experiences and to be an agent one must intentionally make things happen through their actions (Bandura, 2001; 2006). Furthermore, people must believe they can create wanted effects; otherwise, without this belief, there would be no motivation to take action and persevere when obstacles inevitably occur (Bandura, 2006; 1999). Four core properties compose human agency:

intentionality, forethought, self-reactiveness, and self-reflectiveness (Bandura, 2006).

Intentionality refers to the process of self-organizing (Bandura, 2006). This is a person's ability to set intentions for themselves through action plans and strategies for achieving goals (Bandura, 2001; 2006). Forethought represents future-oriented plans; however, according to Bandura, the future cannot be the cause for present behaviour (Bandura, 2001; 2006). Individuals can set goals through visualizing the future anticipated outcome of their action and, in doing so, the person becomes motivated in the present (Bandura, 2001; 2006; 2018). Holding a future-oriented perspective can provide guidance, direction, coherence, and meaning to one's life (Bandura, 2006). The third component, self-reactiveness, refers to one's ability to motivate and regulate the self when constructing plans and visualizing future outcomes through developing behavioural standards and evaluating themselves based on those standards (Bandura, 2001; 2006; 2018). Finally, self-reflectiveness is one's ability to examine and reflect on their plans, thoughts, and actions and implement corrective actions when necessary (Bandura, 2006; 2018). Human Agency Theory provides some grounding for an individual's ability to set intentions for themselves and navigate the process of affirming those intentions by remaining flexible and reflecting on their process.

2.7 Human agency and career

Human agency plays a significant role in one's ability to develop goals, establish plans, motivate actions, and reformulate plans in the presence of barriers in order to achieve a desired outcome. Specifically, according to Bandura's theory of human agency, career-related human agency is a component of self-efficacy (Chen, 2006). Often in the field of educational and vocational psychology, self-efficacy and human agency will be used interchangeably (Yoon,

2011). However, the characteristics of self-efficacy and human agency do differ from one another (Yoon, 2011). Self-efficacy is an individual's beliefs about their ability to succeed on certain tasks while human agency is concerned with an individual's ability to exercise control over those tasks (Bandura, 2001; Yoon, 2011). For example, self-efficacy would refer to the belief that one can successfully engage in and complete a work-related task, such as an internal report, while one's human agency would refer to one's ability to complete a work-related task by asserting control over that task (e.g., delegating work, setting a timeline to meet a deadline). 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). Human agency is a distinctive concept from self-efficacy; however, they are related as demonstrated in the vocational psychology literature.

An individual's career path can evolve over time either between occupations and job placements or within job duties and roles. Often, in the 21st century, individuals cannot assume they have job security because organizations cannot guarantee job security and future careers like they had before the 21st century (Hall, 1996; Yoon, 2011). Therefore, individuals are tasked with increased responsibility for coping with changes in their career trajectory or changing work environment (Hall, 1996). Assessing human agency is important as it plays a significant role in one's adaptation (i.e., act of modifying one's approach to fit a given context), self-development (i.e., process by which one's abilities gradually improve), and self-renewal over time (i.e., restoring one's self through changing and adapting to new situations; Bandura, 2001). It has been suggested that the greater an individual's vocational self-efficacy, the more equipped they are to navigate career tasks and career problems (Chen, 2006). For example, a study by Kush and Cochran (1993) found that, by enhancing an individual's sense of agency and, in turn, self-

efficacy, they became more certain about their career direction and felt more confident about their career goals. Furthermore, career self-efficacy has been found to mediate the relationship between human agency and various career indices (i.e., vocational identity, career decision needs, and career activities; Solberg et al., 1995), meaning that one's belief in one's ability to perform career search tasks (i.e., self-efficacy) mediates the relationship between one's ability to complete career search tasks (i.e., human agency) and their career indices (Solberg et al., 1995). In sum, the presence of human agency enhances one's ability to navigate a career trajectory and career problems as they occur. As such, human agency is an important characteristic to attend to when developing career goals and plans, including for those who engage in problematic substance use.

2.8 Human agency and substance use

Under many biological, psychological, and socio-cultural explanations of addiction, problematic substance users are assumed to have no agency (McCullough & Anderson, 2013). Furthermore, some have conceptualized the agency of problematic substance users to be compromised or weakened, and that problematic substance users gradually lose agency and control over their consumption behaviours (McCullough & Anderson, 2013). It has also been argued that problematic substance user's personal agency is disregarded in the disease model of addiction, which is the dominant model in Western contexts (Frawley, 1988). The steps towards recovery, under the disease model, begin with detoxification and ceasing substance use (Frawley, 1988). The second step is to educate the individual about their vulnerability to addictive behaviours (Frawley, 1988). Finally, the third step is rebuilding a substance-free life through changing the individual's environment (e.g., people, places, and activities; Frawley, 1988). It is

not until this third step that human agency becomes essential to the recovery process (Anderson, 2014; Frawley, 1988; McCullough & Anderson, 2013). Essentially, a problematic substance user is perceived as being incapable of making decisions or asserting agency until late in the change process (McCullough & Anderson, 2013).

While the importance of human agency is not viewed as a vital factor in the early stages of recovery under the disease model of addiction, recent literature has questioned this perspective. It is suggested that overemphasising an individual's powerlessness over their addiction and the need to relinquish personal control in order to achieve successful recovery can result in increased stigmatization (Graham et al., 2008; Hammersley & Reid, 2002). That is, the individual can feel stigmatized because their problem is viewed as being internal (i.e., they are the sole cause of the problem) and external factors are unaccounted for (McCullough & Anderson, 2013).

Elsewhere, it has been argued that human agency is imperative in the explanation of addiction (McCullough & Anderson, 2013). The social constructionist approach to addiction identifies human agency as an important factor in recovery and aims to increase an individual's degree of agency by accounting for both the internal and external factors to contribute to one's problems (McCullough & Anderson, 2013). In doing so, the personal stigmatization an individual in recovery may feel will be reduced by limiting the degree to which the problem resides within the individual by accounting for the individual's social context (Borrell & Boulet, 2005). Furthermore, fostering agency is imperative because, without the belief that you can achieve a goal and have control over outcomes in your life, there is little internal drive to persevere when faced with difficulties (Bandura, 1999). This perspective is evidenced by studies that describe individuals who were able to overcome their addiction independently without

treatment or outside support (e.g., Granfield & Cloud, 1996). In sum, while there is relatively little direct research on the influence of the construct of agency in substance use recovery what does exist provides a grounding for the importance of attending to human agency when supporting individuals in recovery, including promoting their vocational outcomes (i.e., helping them obtain or maintain employment). This is so because when these individuals inevitably encounter setbacks or barriers, they will need to draw on their sense of agency in order to preserve and continue on the path towards their goal (Bandura, 1999).

2.9 Career barriers experienced by substance users

Unemployment is a serious problem for substance users (McCoy et al., 2007). It is estimated that 70 percent of individuals entering substance use treatment are unemployed (Comerford, 1999). Gaining employment is crucial in recovery and in maintaining sobriety (Storti et al., 2011; West, 2008). Individuals experiencing issues with substance use may face a variety of barriers to gaining employment. Some barriers to employment for this population include poor self-confidence, feeling incapable of meeting work-related demands, lack of motivation to work, physical health problems, limited work experience, transportation, ongoing substance use, and previous criminal records (Bauld et al., 2012; Sung & Chu, 2011; Zanis et al., 2001). Professionals working in vocational rehabilitation and substance use agencies further report that poor work histories and criminal histories are among the top reasons individuals with problematic substance use have difficulty gaining employment (Glenn & Moore, 2008). Moreover, a study with individuals in recovery found that 72% of respondents believed they had difficulty gaining employment due to their former drug addict status (Fauziah et al., 2011). Problematic substance users have reported feeling stigmatized due to their substance use and

often find it difficult to gain the trust and support from their employers (Bauld et al., 2012; Fauziah et al., 2011). Furthermore, a study by Booth and Feng (2002) found that at-risk drinkers had a significantly higher risk of not gaining or continuing employment due to unreliability and impaired work performance. The barrier that problematic substance use, past or present, presents for individuals seeking employment is significant. However, it is often only one of many barriers these individuals face when seeking employment or maintaining their working status.

Previous research has found that not having confidence in one's ability to cope and apply problem-solving skills is another barrier and decreases the likelihood of gaining employment after treatment (Sung & Chu, 2011). Specifically, the ability to apply vocational problem-solving skills has been found to improve employment outcomes (Zanis et al., 2011). Research by Fauziah and Naresh (2009) found that former problematic substance users had limited self-confidence in their ability to overcome their problems. As such, they easily gave up and did not solve problems productively, making them more easily affected by factors influencing relapse. This reduction in self-confidence can be reflected in various aspects of these individual's lives (e.g., not making a resume in order to submit job applications) and have a negative impact on their employment outcomes. Furthermore, some individuals working to overcome their substance use problem may be fearful of gaining employment. Participants in Duffy and Baldwin's (2013) study reported wanting to return to work following treatment; however, few participants did gain employment. Many reported that they did not want to rush back into employment due to the perceived relapse risks associated with paid work or accepting the wrong job. Another study by McCoy and colleagues (2007) found that the majority of their sample of chronic substance users became unemployed within six months of gaining employment. As noted in these studies, there seems to be conflicting beliefs and concerns among substance users about the nature of

employment and the benefits it may have in their recovery. Notably, these studies also bring to light the difficulty experienced by problematic substance users in securing and maintaining employment. In sum, securing employment is an important step in working towards recovery and developing independence for many; however, many environmental and personal barriers can obstruct an individual's path towards gaining employment, as outlined by Hall (2004).

2.10 Hall's Protean Career Theory and metacompetencies

In Western contexts, work is an important component of personal identity (Hall, 2004). It has been theorized that, in the 21st century, work has become protean, meaning that the person, rather than the organization one works for, is in charge. This shift reflects the core values of freedom and growth where success is measured subjectively (i.e., psychological success) as opposed to objectively (i.e., position or salary; Hall, 2004). Hall (1996) suggests that psychological success is the ultimate career goal, which is reflected in feelings of pride and personal accomplishment as a result of achieving one's goals. In contrast, objective success would be reflected in climbing the workforce ladder to reach the "top" and earn a large salary (Hall, 1996). As such, one's career is driven by the individual, not the organization, and can change over time as the person or the environment changes (Hall, 1996). Due to the high degree of personal drive, interests, and values required in directing one's career, a high level of self-awareness and personal responsibility is necessary for the pursuit of the protean career (Hall, 1996).

Hall (1996) has also suggested that the 21st century career is measured by continuous learning and identity changes rather than the chronological age of the individual or life stages. Continuous learning is powered by a combination of the person, work challenges, and

relationships (Hall, 1996). New work assignments that challenge an individual and push the individual to work hard and develop new learning fuels change (Hall, 1996). Furthermore, individuals can learn a lot from their relationships with other people in their work environments (Hall, 1996). Due to the importance of continuous learning, individuals are required to learn new metacompetencies related to self-management, self-knowledge, and adaptability (Hall, 1996). These metacompetencies are skills that require learning how to learn (Hall, 1996). As such, adaptability and identity (or self-awareness) are higher-order competencies and are fundamental to the self-directed protean career (Hall, 1996; 2004). Furthermore, adaptability and self-awareness allow people to learn from their experiences and develop new competencies independently, allowing for further growth (Hall, 2004). Hall's theory and its concept of metacompetencies are a foundational theoretical element of Hope-Action Theory (along with Hope Theory and Human Agency Theory).

2.11 Career metacompetencies and substance use

The metacompetencies outlined by Hall (1996; 2004) in relation to Protean Career Theory (i.e., self-awareness, self-knowledge, and self-management) also have important implications for those who have experienced problematic substance use. Addiction is characterized by compromised decision-making and inflexibility to change or adapt behaviours that at one time produced positive rewards, but no longer result in positive outcomes (Goldstein et al., 2011). For example, one may pass up important job opportunities while continuing to engage in uncontrolled substance use resulting in limited career growth and development (Moeller & Goldstein, 2014). It has been suggested that these difficulties in changing behaviour may be caused by a lack of insight and self-awareness (Goldstein et al., 2009; Verdejo-García &

Pérez-García, 2006). The limited self-awareness often experienced by active substance users hinders their ability to recognize that they have an addiction problem and that they may need to seek assistance with treatment and recovery (Castine et al., 2019; Verdejo-García & Pérez-García, 2006).

Those who do seek assistance with managing problematic substance use report benefitting from treatment or support groups due to their increased degree of self-knowledge that is developed through the recovery process (McMillen et al., 2001). This is important because individuals often have “blind spots” in self-knowledge that can have fairly negative consequences (Carlson, 2013). For example, poor self-knowledge is associated with negative intrapersonal consequences (e.g., fewer employment achievements), limited insight into future behaviour, and poor decision-making (Carlson, 2013; Kim & Chiu, 2011; Wilson & Gilbert, 2005). Former substance users have reported that the treatment process forced them to reflect on themselves and their motivations for engaging in substance use (McMillen et al., 2001). They also reported that they gained two different types of self-knowledge through this process including knowledge about their skills as well as about their personality (McMillen et al., 2001).

Development of self-management has also been found to be beneficial for those who have experienced problematic substance use. A study exploring the effectiveness of traditional 12-step interventions and Self-Management and Recovery Training (SMART) with dual diagnosis individuals (i.e., serious mental illness and substance user disorder) found that 12-step interventions were more effective at reducing alcohol use and increasing social interaction (Brooks & Penn, 2003). However, those in the 12-step intervention were found to have worsening medical problems, health status, employment status, and psychiatric hospitalization (Brooks & Penn, 2003). Alternatively, those in the SMART intervention were found to have

better health and employment status outcomes as well as greater marijuana use (Brooks & Penn, 2003). Perhaps the development of improved self-management skills through the SMART intervention lead to improved health and employment outcomes whereas self-management was not effectively addressed in the 12-step intervention. This study provides support for the importance of the self-management metacompetency for problematic substance users in fostering career development. Notably, it has also been found that as substance use increases self-management skills decrease (Griffin et al., 2009; Nasiry et al., 2015). Therefore, as self-management decreases the possibility of abusing substances increases (Nasiry et al., 2015). However, developing self-management skills early on is a protective factor that can lead to reduced substance use in the future (Griffin et al., 2009). As such, developing the self-management metacompetency is important for those who have experienced problematic substance use for reducing their likelihood of engaging in future problematic substance use and improving future employment outcomes (Griffin et al., 2009; Nasiry et al., 2015; Brooks & Penn, 2003).

In sum, given that individuals experiencing problematic substance use are more likely to have limited insight, self-awareness, self-knowledge, and self-management skills they may also be more likely to experience deficits with regards to these metacompetencies in relation to career. Therefore, being able to assess an individual's skills in these areas may be particularly important for those who have experienced problematic substance use in order to determine which metacompetencies need to be strengthened to support positive overall outcomes (addiction-related, career-related, other-life related).

2.12 Previous research on the Hope-Action Theory

Many studies have previously utilized Hope-Action Theory based interventions and/or the HAI assessment tool with a variety of populations to determine their degree of career-related hope in a given situation or help them progress towards greater development of their career competencies. Specifically, studies have been conducted with college and university students, unemployed job seekers, individuals in transition from one career to another, refugees in Canada, and individuals diagnosed with ASD. These studies will be summarized here.

2.12.1 College and university students

Two research studies and one case study with college and university students have been conducted using Hope-Action Theory interventions and the HAI. Amundson and colleagues (2013) conducted a two-phase study with this population which was subsequently published as two journal articles (Smith et al., 2014; Yoon, et al., 2015). A total of 1,685 undergraduate students from Canadian and American universities were sampled to develop baseline scores on the HAI and to explore the role of hope in relation to school engagement, vocational identity, and academic performance (Amundson et al., 2013; Yoon et al., 2015). The baseline HAI scores found for the Canadian and American students were similar, with those in the 90th percentile receiving an overall score of 3.75 or 3.86, respectively. The mean score on the HAI was 3.00, suggesting that college and university students in North America have positive views on their degree of hope and hope related career competencies in general. Furthermore, high levels of hope were found to relate to clear vocational identity and a higher grade point average (GPA). The results of this study further suggested that those with high levels of hope are more likely to engage in meaningful school activities which lead to developing a clear understanding of their

vocational identity. In this way, hope was found to indirectly affect GPA through increased school engagement.

Following this study, the researchers were interested in what helps or hinders students' hopefulness (Amundson et al., 2013; Smith et al., 2014). Those participants who reported the highest levels of hope on the HAI and the highest level of barriers, as indicated on the Perceived Barriers Scale (McWhirther, 1997), were selected for inclusion in the second study. Using Enhanced Critical Incident semi-structured interviewing techniques, 15 participants were interviewed to understand how these students experienced high hope in the face of challenges. Fourteen helping factors for promoting hopefulness were identified including: support (100%), future goals (73.3%), role models (66.7%), attitude (53.3%), passion (46.7%), possibilities and opportunities (40%), self-efficacy (40%), social/professional contribution (33.3%), school (33.3%), spirituality (26.6%), refocusing activities (26.7%), recognition of achievement (20%), supporting significant others (20%), and family expectations (13.3%). Eleven hindering factors were identified: negative and unsupportive people (86.7%), negative emotions & cognitions (53.3%), situations outside of one's control (40%), economic and financial challenges (33.3%), school (33.3%), health (mental and physical) (26.7%), cultural conflicts (20%), workload (20%), failing (13.3%), multiple roles (6.7%), and relationship breakups (6.7%). Based on these findings, the researchers concluded that hope and the factors that influence it can play an important role in post-secondary students' personal and career development.

In addition to these studies, Niles and colleagues (2014) published a case study with a 25-year old male undergraduate student in South Korea to illustrate how Hope-Action Theory can be applied in a career counselling context. The student had recently failed an important exam multiple times, was fearful he would never pass the exam and was considering alternative career

options. The student completed the HAI and received the following scores on the subscales: Hope (2.50), Self-Reflection (2.50), Self-Clarity (2.50), Visioning (2.75), Goal Setting and Planning (3.25), Implementing (4.00), and Adapting (2.75). From the lens of Hope-Action Theory, informed by the HAI results, this student became motivated to develop goals and follow through with future plans. However, his low scores on Self-Reflection and Self-Clarity suggested that he had not spent enough time reflecting on himself and his environment resulting in limited self-understanding. Furthermore, his low score on Visioning suggested he may rush to set goals that do not reflect his values, interests, or skills. Finally, his low scores on Adapting suggested he would benefit from becoming more flexible in his goals and plans when necessary. The authors suggested that the strengths and weaknesses identified in this student's career competencies can be utilized in developing career counselling goals and plans.

2.12.2 Unemployed job seekers

A series of studies have also been conducted with unemployed job seekers. The first study was conducted with a sample of adult job seekers accessing employment counselling services ($N = 52$) who engaged in a series of hope-focused interventions including walking the problem, career flow, and story of strengths (based on Hope-Action Theory) and completed the HAI pre- and post-intervention as well as three months following completion of the intervention program (Amundson et al., 2016; Amundson et al., 2018). Additionally, 20 of these participants were interviewed using the Enhanced Critical Incident technique to understand which factors influenced their progress and their experience of the Hope-Action Theory informed counselling interventions. The results of the HAI assessments revealed an increased level of hope in *all* participants after the interventions. Pre-intervention participants average score on the HAI was

2.27 ($SD = 0.29$) for the total score, 2.42 ($SD = 0.69$) for the Hope subscale, 3.14 ($SD = 0.51$) for the Self-Reflection subscale, 2.28 ($SD = 0.57$) for the Self-Clarity subscale, 2.63 ($SD = 0.66$) for the Visioning subscale, 2.34 ($SD = 0.52$) for the Goal Setting and Planning subscale, 2.46 ($SD = 0.59$) for the Implementing subscale, and 3.21 ($SD = 0.54$) for the Adapting subscale. Post-intervention participants average score on the HAI was 3.10 ($SD = 0.50$) for the total score, 3.01 ($SD = 0.80$) for the Hope subscale, 3.34 ($SD = 0.52$) for the Self-Reflection subscale, 3.21 ($SD = 0.56$) for the Self-Clarity subscale, 2.96 ($SD = 0.72$) for the Visioning subscale, 2.96 ($SD = 0.72$) for the Goal Setting and Planning subscale, 3.01 ($SD = 0.63$) for the Implementing subscale, and 3.43 ($SD = 0.58$) for the Adapting subscale. Furthermore, 70% of the participants who were interviewed reported developing new perspectives on their job search, developing better career plans, and being more confident in their decision-making. Overall, the findings of this study support the use of the Hope-Action Theory framework in improving hopefulness in a career counselling context.

The second study was conducted through the Saskatchewan Pathways: Internationally Educated Health Professional Support, Bridging and Integration Project (Clarke et al., 2016). This study explored what helps and hinders hopefulness and success in gaining licensure with Canadian immigrants ($N = 19$). The participants were working in an underemployed capacity in a health region facility (e.g., care aid, medical laboratory assistant) and pursuing licensure in a health profession in Canada. Each participant engaged in one or two hope-focused interventions (i.e., circle of strengths, walking the problem, visioning, goal setting/time management techniques, thought awareness, or journaling) informed by the Hope-Action Theory; they also completed the HAI pre-intervention and two months post-intervention. Participants were also invited to attend a focus group two weeks after the hope-focused interventions to discuss their

experiences. Results from the two-month follow-up found that 16 (84.21%) of the participants had significantly increased HAI scores, suggesting that these participants' Hope-Centered Career Competencies improved after the intervention(s). Pre-intervention participants average score on the HAI was 3.30 ($SD = 0.44$) for the total score, 3.57 ($SD = 0.39$) for the Hope subscale, 3.26 ($SD = 0.44$) for the Self-Reflection subscale, 3.38 ($SD = 0.56$) for the Self-Clarity subscale, 3.38 ($SD = 0.75$) for the Visioning subscale, 2.89 ($SD = 0.75$) for the Goal Setting and Planning subscale, 3.07 ($SD = 0.59$) for the Implementing subscale, and 3.51 ($SD = 0.50$) for the Adapting subscale. Post-intervention participants average score on the HAI was 3.72 ($SD = 0.23$) for the total score, 3.86 ($SD = 0.33$) for the Hope subscale, 3.61 ($SD = 0.29$) for the Self-Reflection subscale, 3.83 ($SD = 0.21$) for the Self-Clarity subscale, 3.67 ($SD = 0.32$) for the Visioning subscale, 3.44 ($SD = 0.56$) for the Goal Setting and Planning subscale, 3.76 ($SD = 0.27$) for the Implementing subscale, and 3.88 ($SD = 0.21$) for the Adapting subscale. Furthermore, the focus groups revealed four facilitating factors of the interventions as experienced by participants including: normalization of their journey, positive relationship with the project facilitator, creating new relationships through the peer network/mentorship program, and feelings of success. Additionally, four hindering factors were also identified: limited control over their situation, feeling like they are failing in Canada, challenges learning English, and challenges with personal identity. The results of this study revealed that, while participants experienced both helping and hindering factors, the majority of participants showed improvements in the degree of Hope-Centered Career Competencies after engaging in hope-focused interventions based on Hope-Action Theory.

2.12.3 Career transitions

When Hope-Action Theory, formerly known as the Hope-Centered Model of Career Development, was initially developed, Niles and colleagues (2010) discussed its utility in career counselling contexts with a case study example. The case study involved a 29-year-old woman who had graduated with a Bachelor's degree in Computer Education and Educational Technology in Turkey. For the last eight years, she had worked in a teaching capacity but was not enjoying her current career path. She recently took on more administrative tasks at work and was considering transitioning into the private sector. She completed the HAI and received the following scores: Hope (3.25), Self-Reflection (4.00), Self-Clarity (3.50), Visioning (3.00), Goal Setting and Planning (2.50), Implementing (3.50), and Adapting (3.75). The client and career counsellor agreed to improve her high competencies and strengthen her lower competencies to help with future career planning. The career counsellor was able to use the HAI results to guide the counselling goals and process in an effort to support the client through the decision on whether to transition from their current career into a new one. For example, the counsellor noted the client's lack of visioning and goal setting and after asking the client to think about the possibility of transitioning into a new career, she first identified her barriers (e.g., family expectation to maintain a stable job). The authors suggested that the client could be encouraged to draw on her hope and self-clarity (which she received high HAI scores on) to help her envision her future possibilities and find ways to work through her barriers and decide on her next career steps.

2.12.4 Refugees

Recently, a study was conducted with refugees ($N = 31$) in British Columbia, Canada on the outcomes of a career development program based on the Hope-Action Theory (Yoon et al., 2019). Those participants randomly assigned to the experimental group (i.e., Hope-Action Theory group) participated in a two-week-long career development training program that involved engaging with local employers to help define the participants' workplace attractors and values as well as a one-on-one meeting with the program facilitator to complete a detailed Enhanced Action Plan that addressed the seven hope-action competencies. Those in the control group received typical employment services at local career centres. Immediately after the intervention, participants in the experimental and control groups were given the HAI ($M = 3.63$, $SD = 0.26$ and $M = 3.47$, $SD = 0.32$, respectively). The results of the study found significant between group differences ($F(1, 52) = 6.11$, $p < .05$, $\eta_p^2 = 0.015$) with that those in the experimental group having significantly higher mean HAI scores ($M = 3.58$, $SD = 0.37$) than the control group ($M = 3.49$, $SD = 0.32$) at the 3-month follow-up. However, there were no differences in the rate of employment at the nine-month follow-up between the experimental and control group (i.e., 61% and 62%, respectively). While no differences in the rate of employment were found, the results of the study did find that the hope-focused program was effective in developing hope-action competencies, general self-efficacy, and job search clarity. Furthermore, those in the experimental group who did gain employment were more engaged in their work and had a more hopeful career state than those in the control group. This suggested that the intervention in the experimental group contributed to developing a positive perspective on the participants' current and future employment.

2.12.5 Individuals with Autism Spectrum Disorder

The most recent study conducted with the HAI was with 171 Canadian individuals diagnosed with ASD who took part in the Employment *Works* Canada program (EWC; Yoon et al., 2020). Participants were between the ages of 16 and 29 ($M = 20.95$, $Mdn = 20.00$) and the majority of the sample was male ($n = 127$, 74.2%). Additionally, the majority of the sample identified as Caucasian ($n = 120$, 70.0%) and 7% ($n = 12$) identified themselves as a visible minority. With regards to employment status, 13.3% ($n = 22$) reported being employed before the study in positions such as kitchen staff, food server, officer clerk, and receptionist, for example. The EWC program was 12 weeks long with two sessions each week. Sessions included a structured learning component in a classroom-type setting and applied components at a work site. The authors of this paper reviewed the EWC program manual and identified that the program included a number of elements that related to each career competency in Hope-Action Theory. Participants in this study completed the HAI before beginning the EWC program and immediately after completing the program.

Participants average pre-program score on the HAI was 2.98 ($SD = 0.45$) for the total score, 2.28 ($SD = 0.73$) for the Hope subscale, 3.25 ($SD = 0.56$) for the Self-Reflection subscale, 3.18 ($SD = 0.62$) for the Self-Clarity subscale, 2.99 ($SD = 0.71$) for the Visioning subscale, 2.61 ($SD = 0.75$) for the Goal Setting and Planning subscale, 2.89 ($SD = 0.67$) for the Implementing subscale, and 3.10 ($SD = 0.59$) for the Adapting subscale. Participants average post-program score on the HAI was 3.06 ($SD = 0.47$) for the total score, 2.90 ($SD = 0.78$) for the Hope subscale, 3.23 ($SD = 0.60$) for the Self-Reflection subscale, 3.26 ($SD = 0.58$) for the Self-Clarity subscale, 3.01 ($SD = 0.74$) for the Visioning subscale, 2.71 ($SD = 0.76$) for the Goal Setting and Planning subscale, 3.04 ($SD = 0.63$) for the Implementing subscale, and 3.19 ($SD = 0.59$) for the

Adapting subscale. Additionally, significant improvements in HAI scores were found for the total scale ($t(170) = -3.58, p < .001, d = .17$), Hope subscale ($t(170) = -2.23, p < .05, d = .11$), Self-Clarity subscale ($t(170) = -2.20, p < .05, d = .13$), Goal Setting and Planning subscale ($t(170) = -2.33, p < .05, d = .13$), Implementing subscale ($t(170) = -3.92, p < .000, d = .23$), and Adapting subscale ($t(170) = -2.31, p < .05, d = .15$). Furthermore, the program had a significant positive impact on the participants sense of well-being from pre-program ($M = 15.01, SD = 5.56$) to post-program ($M = 16.29, SD = 4.90; t(166) = -3.99, p < .000, d = .24$). Additionally, the program initially had a small positive effect on employment status right after the program with 36 (23%) participants being employed immediately after the program ($t(156) = -2.70, p < .05, d = .23$). At the 3-month, 6-month, and 12-month follow-ups employment rates continued to increase (38% ($n = 48/125$), 40% ($n = 35/88$), and 50% ($n = 15/30$), respectively). Overall, the findings of this study showed that the EWC program, which contains many elements in Hope-Action Theory, strengthens Hope-Centered Career Competencies and improves employment outcomes for those diagnosed with ASD.

The studies reported here present the promising outcomes for various populations derived from implementing Hope-Action Theory assessment and interventions. These studies further promote the utility of the HAI in counselling settings. While the HAI is a relatively new measure, there have been a number of studies conducted specifically to evaluate its psychometric properties and validate its use.

2.13 Previous psychometric evaluations of the HAI

The Hope-Action-Inventory, formerly known as the Career Flow Index and Hope-Centered-Career-Inventory (HCCI) in previous versions, was initially developed in 2010 by

Niles and colleagues as an assessment inventory based on the Hope-Action Theory (then called the Hope-Centred Model of Career Development). The Career Flow Index was initially developed by refining 100 items across the seven Hope-Centered Career Competencies down to 28 items (Yoon et al., unpublished). The scale was developed to be used by individuals 18 years old and older and the developers wanted the items to be equivalent to an 8th grade reading level. As such, each of the items were reviewed by 11 graduate students to adapt the scale to be appropriate for use by 8th to 12th grade students. These graduate students were taking a school counselling course and had prior experience working with 8th grade students. Reviewers were asked to consider the usage of vocabularies and phrases in each item; based on the reviewers' suggestions, Career Flow Index items were rephrased. As a result, 21 items were rephrased and 7 items were retained.

Following this, the scale name changed from the Career Flow Index to the HCCI. The scale developers then discovered an issue with the HCCI's subscale reliability and added 14 test items to the scale. These additional items were similar to existing items. For example, an original item was, "I am open to making changes to my plans when necessary" and a similar test item was, "I am prepared to make changes if the situation changes." After analyzing the test items, 12 items were changed and 16 items were retained. The scale name changed from the HCCI to the HAI with this new set of 28 items. The scale name also changed because, during the same time period, the theoretical model changed from the Hope-Centred Model of Career Development to Hope-Action Theory (H. J. Yoon, personal communication, February 6, 2020).

The HAI is a 28-item scale with seven subscales, each with 4 items. The scale utilizes a 4-point Likert-type response scale (4 = *definitely true*; 3 = *somewhat true*; 2 = *somewhat false*; 1 = *definitely false*). This assessment tool incorporates seven sets of attitudes and behaviours

outlined in the Hope-Action Theory that are necessary for career self-management (Niles, 2011). The seven subscales of the HAI are correlated and load onto a higher-order factor (i.e., Hope-Centered Career Competencies; Yoon, 2017). Most of what is known about the psychometric properties of the HAI and previous versions of the scale shows promising results for validity and scale structure and some weaknesses with regards to reliability. Previous analyses of the HAI's factor structure do not provide thorough written descriptions of the model being tested. In particular, limited information is available on the first study to assess the factor structure of the measure (Niles et al., 2010a). As such, it cannot be determined if this first study (Niles et al., 2010a) assessed a seven-factor hierarchical model. However, more recent studies provide the same image for the seven-factor hierarchical structural model (Schindler et al., 2014; Schreiber et al., 2013; Yoon, 2017). Furthermore, the latter three studies to assess the factor structure of the HAI report the same degrees of freedom for the model (Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015). Reporting the same degrees of freedom suggests that the same model was tested in these studies as variations in the number of parameters or model structure would affect the degrees of freedom. In addition, the model tested in each of these studies had the correct number of degrees of freedom corresponding to a seven-factor hierarchical model for the HAI. As such, it can be concluded that the same seven-factor hierarchical structure was tested in the three studies following Niles et al.'s (2010a) initial factor analysis study (Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015). This section will discuss the psychometric findings for each version of the HAI since its development in 2010.

The first study to examine the psychometric properties of the scale was conducted on the Career Flow Index (Niles et al., 2010a). In this study, responses from 382 undergraduate and graduate students from a large university in the United States were collected. This sample size is

considered acceptable to assess the seven-factor hierarchical structure of the scale as there are just enough participants to meet the minimum requirement of 5 participants per parameter (i.e., 5.38 participants per each of the 71 parameters; Furr & Bacharach, 2014; Kline, 2010). When researchers are uncertain about a measure's structural model, it has been suggested that exploratory rather than confirmatory approaches be applied (Browne, 2001). Often confirmatory factor analysis will be utilized for exploratory purposes and modifications are applied to the model with the aim of improving the model, making this process exploratory rather than confirmatory (Browne, 2001). Confirmatory factor analysis was used to assess the Career Flow Index as the authors had a strong theoretical foundation for the components of the Career Flow Index (i.e., each of the subscales and the total score) and therefore applied confirmatory factor analysis, rather than exploratory factor analysis (H. J. Yoon, personal communication, January 16, 2020). Using confirmatory factor analysis, this study confirmed a seven-factor structure of the model (RMSEA = 0.00, SRMR = 0.05, NNFI = 1.00, CFI = 1.00, and GFI = 0.98). All of these fit indices suggested excellent model fit. However, it is not clear whether they tested a simple seven-factor model or a seven-factor hierarchical model. As such, the factor analysis results from this study cannot be compared to later studies that did test a seven-factor hierarchical model (Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015). The resulting Cronbach's α for the total scale was .92 with the following coefficients for the subscales: .83 (Hope), .74 (Self-Reflection), .82 (Self-Clarity), .86 (Visioning), .80 (Goal Setting and Planning), .85 (Implementing), and .82 (Adapting). This showed excellent reliability for the total scale with an alpha exceeding .90. The majority of the subscales showed good reliability with the Self-Reflection subscale being considered acceptable (i.e., $\alpha = .74$). Additionally, this model showed adequate construct validity and had factor loadings ranging from .56–.83. No additional information on the factor loadings

found in this study were available. The Career Flow Index was found to have good convergent validity with the Assessment of Human Agency scale ($r = .82$, AHA; Yoon, 2009, 2011) and the Adult Hope Scale ($r = .74$, AHS; Snyder et al., 1991a). The Career Flow Index was weakly correlated with the Vocational Identity Scale ($r = .45$, VI; Holland et al., 1980). This study found good convergent validity evidence between the AHA and AHS scales and the Career Flow Index with all correlations exceeding $.70$ (Furr & Bacharach, 2014). The authors suggested that the lower correlation found with the VI Scale provided evidence of discriminant validity because this construct is less related to Hope-Action Theory than Hope and Human Agency.

In 2013, the HCCI was translated from English to German and evaluated by Schreiber and colleagues. In their study, responses from 116 participants were collected. It should be noted that this sample size is not considered acceptable to assess the seven-factor hierarchical structure of the scale with only 1.63 participants per parameter (Furr & Bacharach, 2014; Kline, 2010). The authors also did not provide any additional demographic information on the participants in this sample. However, this study did confirm the seven-factor hierarchical structure of the model (RMSEA = 0.07, NNFI = 0.91, CFI = 0.91). The RMSEA suggested moderate model fit and both the NNFI and CFI suggested good model fit. The resulting Cronbach's α for the total scale was $.88$ with the following coefficients for the subscales: $.80$ (Hope), $.59$ (Self-Reflection), $.77$ (Self-Clarity), $.82$ (Visioning), $.75$ (Goal Setting and Planning), $.75$ (Implementing), and $.75$ (Adapting). This showed good reliability for the total scale with an alpha value exceeding $.80$. The majority of the subscales showed acceptable reliability with one (i.e., Self-Reflection) showing poor reliability with an alpha of $.59$. Factor loadings onto the higher-order factor ranged from $.37$ – $.89$ with the Self-Reflection and Visioning lower-order factors having the lowest factor loadings ($.37$ and $.46$, respectively). Additionally, only the Implementing and Adapting lower-

order factors exceeded the suggested factor loading of .70, which is considered satisfactory (.89 and .82, respectively; Kline, 2016). Moreover, the majority of the item loadings were below the suggested factor loading of .70 (Kline, 2016) including: two items on the Hope subscale, all four items on the Self-Reflection subscale, two items on the Self-Clarity subscale, one item on the Visioning subscale, two items on the Goal Setting and Planning subscale, one item on the Implementing subscale, and three items on the Adapting subscale. The range of factor loadings, with 20 of 35 factor loadings being below .70, suggested poor construct validity.

Following this study, Schindler and colleagues (2014) evaluated the validity of the HCCI with a sample of 127 participants. The authors did not provide any additional demographic information on the participants in this sample. In this study, the German version of the HCCI showed good convergent validity with the AHS ($r = .77$; Snyder et al., 1991a), the Life Orientation Test-Revised ($r = .77$, LOT-R; Scheier & Carver, 1985), and the Self-Concept Clarity Scale ($r = .76$, SCC; Campbell et al., 1996). This study found good convergent validity evidence between the above listed scales and the HCCI with all correlations exceeding .70 (Furr & Bacharach, 2014). However, the sample size collected for this study is considered small with less than five participants per item (i.e., 4.57 participants per item) resulting in somewhat less confidence in the convergent validity findings in this study (Furr & Bacharach, 2014).

The third study to examine the psychometric properties of the scale was conducted on the HCCI (Yoon et al., 2015). In this study, responses from 1,685 university students from Canada and the United States were collected. This sample size is considered excellent to assess the seven-factor hierarchical structure of the scale as there were over twice as many participants than the suggested 10 participants per parameter (i.e., 23.73 participants per parameter; Furr & Bacharach, 2014; Kline, 2010). The majority of the sample was female ($n = 1,093$, 64.9%) and

35.1% ($n = 592$) were male and the average age of participants was 21.55 years ($SD = 5.88$). Additionally, 68.8% of the sample were first- and second-year students and 31.2% were third year and higher. This study confirmed the seven-factor hierarchical structure of the model (RMSEA = 0.07, SRMR = 0.06, NNFI = 0.94, and CFI = 0.95). Both the RMSEA and SRMR suggested moderate model fit and the NNFI and CFI suggested good model fit. The resulting Cronbach's α for the total scale was .91, with the following coefficients for the subscales: .81 (Hope), .61 (Self-Reflection), .73 (Self-Clarity), .77 (Visioning), .74 (Goal Setting and Planning), .77 (Implementing), and .74 (Adapting). This showed excellent reliability for the total scale with an alpha value exceeding .90. The majority of the subscales showed acceptable reliability with the Self-Reflection subscale showing questionable reliability (i.e., $\alpha = .61$) and the Hope subscale showing good reliability (i.e., $\alpha = .81$). Factor loadings were not reported in this study.

A recent study examining the psychometric properties of the scale was conducted on the HAI (Yoon, 2017). In this study, responses from 738 participants were collected. This sample size is considered acceptable to assess the seven-factor hierarchical structure of the scale as it meets the higher range suggested for determining appropriate sample size, which is 10 participants per parameter (i.e., 10.39 participants per parameter; Furr & Bacharach, 2014; Kline, 2010). No additional demographic characteristics for this sample were reported. This study confirmed the seven-factor hierarchical structure of the model (RMSEA = 0.06, SRMR = 0.06, NNFI = 0.88, and CFI = 0.89) with all of the fit indices suggesting moderate model fit. The resulting Cronbach's α for the total scale was .92 with the following coefficients for the subscales: .82 (Hope), .76 (Self-Reflection), .83 (Self-Clarity), .77 (Visioning), .81 (Goal Setting and Planning), .80 (Implementing), and .78 (Adapting). This showed excellent reliability for the

total scale with an alpha value exceeding .90. The majority of the subscales showed good reliability with the Self-Reflection (i.e., $\alpha = .76$), Self-Clarity (i.e., $\alpha = .77$), and Adapting (i.e., $\alpha = .78$) subscales showing acceptable reliability. Factor loadings onto the higher-order factor ranged from .51–.89 with the Self-Reflection lower-order factor having the lowest factor loading (i.e., .51). Additionally, only the Implementing, Goal Setting and Planning, and Visioning lower-order factors exceeded the suggested factor loading of .70, which is considered satisfactory (.89, .88, and .74, respectively; Kline, 2016). Furthermore, 10 of the item loadings were below the suggested factor loading of .70 (Kline, 2016) including: one item on the Hope subscale, two items on the Self-Reflection subscale, three items on the Visioning subscale, one item on the Goal Setting and Planning subscale, one item on the Implementing subscale, and two items on the Adapting subscale. The range of factor loadings, with 14 of 35 factor loadings being below .70, suggested adequate construct validity.

As already noted, the most recent study conducted with the HAI was with 171 Canadian individuals diagnosed with ASD (see above for demographic details; Yoon et al., 2020). This study assessed the internal consistency of the HAI before and after completing the EWC program. The resulting pre- and post-Cronbach's alphas for the total scale were .91 and .92, respectively. The respective coefficients for the subscales were as follows: Hope (.85/.83), Self-Reflection (.71/.78), Self-Clarity (.73/.69), Visioning (.75/.81), Goal Setting and Planning (.78/.79), Implementing (.78/.78), and Adapting (.72/.81). This showed excellent reliability for the total scale with alpha values exceeding .90 both pre- and post-program. The Hope and Adapting subscales showed good reliability with the remaining subscales showing acceptable reliability (i.e., $\alpha > .70$).

2.14 Current study

The current study aimed to evaluate the English version of the HAI for use with a problematic substance use population as it has not been utilized with this population previously. Previously, the HAI and its predecessors have only been utilized with non-clinical populations (e.g., students, unemployed adults, and refugees) with one exception – a study with individuals with a particular developmental disorder (ASD; Yoon et al., 2020).

As such, this scale needed to be evaluated for use with common clinical populations, such as those with problematic substance use, who can potentially benefit from its use by counsellors and other health care professionals. The present study examined the factor structure and reliability of the HAI with this new clinical population in order to speak to the justification for using this measure with individuals who engage in problematic substance use.

Research Question 1: Will the previously established hierarchical seven-factor structure of the HCCI be replicated in the HAI with a sample of problematic substance users?

Hypothesis: Hierarchical Confirmatory Factor Analysis (HCFA) will replicate a seven-factor structure reported previously (Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015) with a sample of problematic substance users. Previous studies analyzing the structure of this measure have found moderate to excellent support for the seven-factor hierarchical structure with different populations (Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015).

Research Question 2: Will the good reliability, specifically internal consistency, found with the HCCI in previous research be replicated in the HAI total scale and subscales with a sample of problematic substance users?

Hypothesis: The HAI will continue to show good internal consistency by the items in the HAI and within each subscale. Previous studies with this measure have found good to excellent internal consistency for the total scale and questionable to good internal consistency for the subscales (Niles et al., 2010a; Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015; Yoon et al., 2020).

Chapter 3: Methods

3.1 Participants

Seven hundred and fifty-one participants were included in this study. Participants were eligible to participate in the study if they had ever experienced problematic substance use (i.e., alcohol or other drug use) and were 18 years old and older at the time of the study. A minimum age of 18 was used because the HAI is intended for use with individuals who are 18 years old and older (Niles et al., 2010a). Participants were recruited from two sources. The first source was in the community through substance use support centres in Greater Vancouver, British Columbia, Canada ($N = 35$; see Appendix A). These centers were located by reviewing agency resource lists, community resource postings, and internet searches for community substance use services in the Greater Vancouver area. In addition to recruiting in support centres, recruitment posters were placed in the community on public notice boards (see Appendices B and C). The second source through which participants were recruited was an online recruitment tool, Amazon Mechanical Turk (MTurk; $N = 716$).

MTurk is a widely used online crowdsourcing platform that has increasingly been used in academic research, including addictions research (e.g., Boynton & Richman, 2014; Kim & Hodgins, 2017; Shapiro et al., 2013). Researchers have found MTurk yields more diverse samples and is more representative of the general population (i.e., non-university samples) than internet-based samples (Buhrmester et al., 2011). Moreover, MTurk is a cost-effective way to recruit hard-to-reach populations, such as individuals with current or past substance use issues, with greater ease (Buhrmester et al., 2011; Smith et al., 2015). One reason this may be the case is because MTurk allows participants to remain completely anonymous, which strengthens this

method's ability to connect with potentially marginalized populations who would otherwise be difficult to reach (Smith et al., 2015).

3.2 Measures

3.2.1 Demographic items

Participants were asked to report their age, gender, and ethnicity (see Appendix D). The ethnicity categories presented in the demographic portion of the survey were gathered from Statistics Canada (2017). Additional questions related to work experience were also asked, such as, "How many years of work experience do you have?", "What is your current employment status?", "If unemployed, what is the length of time unemployed?", and "If unemployed, how long have you been looking for work?" Participants were also asked to indicate any substances they use presently or have used in the past (see Appendix E).

3.2.2 CAGE-AID

The CAGE-Adapted to Include Drugs (i.e., CAGE-AID; Brown & Rounds, 1995) is a 4-item questionnaire that has been adapted from the CAGE (Bush et al., 1987) to simultaneously test for alcohol and drug use and misuse and dependence in adults (see Appendix F). The CAGE questionnaire only screens for alcohol use and misuse and dependence (Ewing, 1984). The CAGE-AID is not a diagnostic questionnaire but rather a tool to indicate whether a problem likely exists. Item responses are scored 0 for "No" or 1 for "Yes", with a higher score indicating alcohol or drug use problems. A score of 2 or greater is considered clinically significant, which indicates an increased likelihood of the individual experiencing substance abuse warranting

further questioning by a physician (Brown & Rounds, 1995). The CAGE-AID has been found to have good sensitivity (.70) and specificity (.85) when two or more of the items are endorsed (Brown & Rounds, 1995). When one or more items are endorsed, the CAGE-AID has also been found to have good sensitivity (.79) and specificity (.77; Brown & Rounds, 1995). Sensitivity measures the proportion of correctly identified true positives (i.e., proportion of individuals who have clinically significant issues with substance use and are correctly identified) whereas specificity measures the proportion of correctly identified true negatives (i.e., proportion of individuals who do not have a clinically significant issue with substance use and are correctly identified; Furr & Bacharach, 2014). While both sensitivity and specificity are important, in this study, attending to greater specificity was more important in order to attempt to only include participants in the study with clinically significant problematic substance use. As such, a cut-off score of 2 or greater was used in the present study.

The psychometric properties of the CAGE-AID have not been studied to the same extent as the CAGE, which has been studied extensively (Kuerbis et al., 2014). The reliability and validity of the CAGE-AID have only been evaluated twice. The first study was with 100 adult psychiatric inpatients residing in a psychiatric hospital in the United States (Dyson et al., 1998). The CAGE-AID showed a sensitivity of 83% and a specificity of 88% for the detection of Substance Use Disorder (SUD). The CAGE-AID was administered at admission to the hospital and again 24 to 48 hours later and was found to have moderate test-retest reliability ($\kappa = .62$). The CAGE-AID was also found to have acceptable internal consistency at both admission and retest (Cronbach's $\alpha = .83$ and $.84$, respectively). The second study evaluated the reliability and validity of the CAGE-AID was with 190 adolescents and their caretakers in the Netherlands (Couwenbergh et al., 2009). The CAGE-AID was found to have adequate internal consistency

for both the self-report and parent-report CAGE-AID (Cronbach's $\alpha = 0.77$ and 0.86 , respectively). Furthermore, the CAGE-AID self-report showed 99.6% probability that someone with SUD will score higher on the CAGE-AID than someone without SUD (AUC = 0.996; 95% CI = 0.99-1.00). Using a cut-off score of 2, the CAGE-AID showed a sensitivity of 91% and a specificity of 98%. While the available literature on the CAGE-AID is limited, these studies do provide support for the utility of the CAGE-AID for quickly assessing for alcohol or drug use, misuse, and dependence.

The CAGE-AID is often used in clinical settings to screen for alcohol and drug use, misuse, and dependence (Babor & Kadden, 2005; Basu et al., 2016; Couwenbergh et al., 2009; Kuerbis et al., 2014). Due to the CAGE-AID's popularity as a brief screening tool in clinical settings, and the research supporting the utility of this measure for identifying potentially problematic substance use, the CAGE-AID was used in this study to screen for alcohol or other clinically significant substance use in the online sample's recruitment through MTurk and in the community.

Previous studies with problematic substance use samples have successfully recruited on MTurk using screening questionnaires and clearly stated inclusion criteria to narrow their sampling frame (Boynton & Richman, 2014; Kim & Hodgins, 2017; Shapiro et al., 2013). Specifically, the CAGE-AID assessment tool has previously been used to assess possible substance use problems in MTurk samples (Boynton & Richman, 2014; Shapiro et al., 2013). A recent study reported that, while 37.1% of their MTurk sample positively endorsed at least one CAGE-AID item, only 4.3% of this sample reported seeking treatment for substance abuse (Shapiro et al., 2013). Moreover, the majority of this sample reported light to moderate average weekly consumption of alcohol or recreational drugs, despite a large number of positive screens.

These results may be an indication of socially desirable responding resulting in a reduction in the reported quantity of alcohol or drug use. This could also be due to MTurk workers being light substance users and/or they may be less likely to seek treatment. However, a recent study conducted through MTurk found the self-report responses of alcohol users and gamblers to be both reliable and valid (Kim & Hodgins, 2017). Due to the possible limitations of only using a single assessment measure, such as the CAGE-AID, when screening participants, researchers are encouraged to screen participants using well-defined criteria and relevant variables to ensure high-quality data (Shapiro et al., 2013). As such, the present study included the following additional screening question: “Have you ever attended treatment or detox for substance use?” While recruiting substance use samples on MTurk is a relatively new recruitment strategy, there is sufficient support for this method of data collection for the present study.

3.2.3 Hope-Action-Inventory

The Hope-Action-Inventory (HAI; Yoon, 2017) is a 28-item scale based on Hope-Action Theory that was developed to assess clients’ or students’ degree of Hope-Centered Career Competencies (see Appendix G). The HAI is designed for adults who are 18 years old and older (Niles et al., 2010a). The scale utilizes a 4-point Likert-type response scale (4 = *definitely true*; 3 = *somewhat true*; 2 = *somewhat false*; 1 = *definitely false*). Furthermore, it is composed of seven subscales, with four items per subscale, each corresponding to one of the proposed seven Hope-Centred Career Competencies: Hope, Self-Reflection, Self-Clarity, Visioning, Goal Setting and Planning, Implementing, or Adapting (Niles et al., 2010a). The subscales of the HAI are correlated and load onto a higher-order factor (i.e., Hope-Centered Career Competencies; Yoon, 2017). A high score on a subscale indicates that the individual has a significant level of its

respective Hope-Centred Career Competency. Furthermore, a high score total score on the Hope-Centred Career Competencies indicates the individual overall has strong career competencies for effective career management.

The HAI, and its previous versions, have been found the theorized seven-factor hierarchical model to have moderate to excellent fit (Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015). The only study to evaluate the theorized factor structure with the HAI found the model to have moderate fit across all indices (RMSEA = 0.06, SRMR = 0.06, NNFI = 0.88, and CFI = 0.89; Yoon, 2017). The HAI has shown good to excellent reliability with a coefficient alpha of .92 for the total scale and good to acceptable reliability for each subscale (Niles et al., 2010a; Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015). In a previous sample of undergraduate students, Niles and colleagues (2010a) provided validity evidence by examining the correlations between the Career Flow Index, one of the precursors to the HAI, and the AHS (Snyder et al., 1991a), the AHA (Yoon, 2009, 2011), and the VI scale (Holland et al., 1980; $r = .74, .82, \text{ and } .45$, respectively). The AHS assesses hopefulness as it is defined in Snyder's Hope Theory (Snyder et al., 1991a). The AHA scale assesses the four core features of human agency (i.e., intentionality, forethought, self-reactiveness, and self-reflectiveness) and is based on Bandura's Human Agency Theory (2001). The VI scale assesses an individual's vocational goals, interests and talents (Holland et al., 1993). The samples used in Niles et al.'s (2010a) and Yoon et al.'s (2015) studies were university students from Canada and the United States. No demographic characteristics available for Schreiber et al.'s (2013) or Yoon's (2017) studies.

3.3 Procedure

3.3.1 Community recruitment

Community substance use support centres were contacted via phone, and the researcher sought permission for conducting this study from each centre's manager or director. The seven community substance use support centres that agreed to take part in the study were given a short presentation on the project. The investigator also collaborated with each centre to determine appropriate recruitment techniques for their clients. The following recruitment strategies were presented to each centre: posters in the centre, pamphlets in the center, posters near public computers in the centre, centre staff offering the opportunity to clients directly, study sign-up sheets at reception, paper copies of the study materials available in the centre, and research assistants located on-site to recruit participants (see Appendices F and G). As different centres were more comfortable with certain types of recruitment, the investigator was accommodating and collaborative in regards to recruitment strategies.

In addition to this recruitment strategy, posters were posted in the community on public notice boards. For example, they were placed in community centers, community boards near support group meeting locations, where support group meetings are held, and notice boards near community resources (e.g., libraries). Community recruitment took place from May 27, 2019 to January 31, 2020.

3.3.2 Community administration

Participants had the option to either e-mail the investigator to participate online via a survey link, participate while a research assistant was on-site, ask a staff member at the centre to

participate onsite (i.e., be given a paper survey), complete the survey on a computer located in the centre, or provide their e-mail contact information on a sign-up sheet located in the centre. To ensure that participants who completed the survey online and on paper were reading each question, two attention check questions (i.e., “If you are reading this please select mostly false” and “If you are reading this please select I agree a little”) were placed in the survey (Kung et al., 2018; see Appendix H). A second attention check question was used due to the length of the survey and the time expected to complete it. Although the research on attention checking is extremely scarce, previous research has found that the inclusion of two instructed-response attention check items did not affect the validity of a scale (Kung et al., 2018). Participants who did not provide the correct response to these attention check questions were removed from the analyses ($n = 115$). As there were several centres included in the sampling frame, the investigator and research assistants were not able to physically recruit participants at each center every day. As such, manila envelopes including all the study materials (i.e., consent form, demographic questionnaires, CAGE-AID, and HAI) were available at each site that agreed to this form of data collection (see Appendix I). Upon completion of the study materials, participants were asked to seal the envelope containing all study materials to ensure the confidentiality of their responses and return them to the center staff or a research assistant onsite. The investigator’s contact information was made available to each centre and for participants who may have had questions or concerns. Every two weeks, or at a different time as requested by the facility, the researcher or research assistant visited each centre to collect completed questionnaire packages and answer any questions or concerns the centre had. This was done routinely to maintain a positive relationship with each centre and to ensure secure storage of the completed questionnaires. A secure storage location for completed study materials was established at each centre to maintain

anonymity and data security (e.g., lockbox or locked filing cabinet onsite). When transporting completed study materials from the centres to the University of British Columbia (UBC), all materials were transferred into a secure lockbox during transport. Upon arriving at UBC, the completed study materials were transferred into a secure locked filing cabinet located in a locked office.

Upon completion of the study materials, each participant recruited through a substance use support centre was entered into the draw for one of four \$25.00 gift cards to local restaurants (e.g., Tim Horton's, Subway, Starbucks) at their request. Participants were asked to provide contact information (i.e., e-mail address) in order to deliver the gift cards if they were randomly selected at the end of the study (see Appendix J). Participant's contact information was stored separately from their completed paper survey materials. Those participants who completed the survey online were directed to a separate survey window where they had the option to provide their contact information in order to be entered into the draw. This ensured that their survey responses were stored separately from their personal contact information.

Furthermore, each participant was offered a copy of their results on the HAI to be provided via e-mail (see Appendix K). Permission for doing so was granted by the measure's author (H. J. Yoon, personal communication, January 22, 2019). Participants were encouraged to discuss the results of the HAI with a career or mental health professional. This was suggested to reduce the potential risks of participants receiving their HAI results and not being able to understand the results. Furthermore, this was suggested to increase the participant's ability to work on improving in areas that were weaker with support from a mental health professional. However, it is possible that participants were not able to access a mental health professional and therefore potentially had a reduced ability to understand their results on the HAI and implement

changes to improve areas of weakness if they wanted to. Participants who completed paper survey packages had the option to check a box on their reimbursement contact form to indicate whether they wanted a copy of their results on the HAI. The results of the HAI were written specifically for each individual participant, at the participant's request, and were designed for self-action. Participants who completed the survey online were asked to create a password on the final page of the survey and then send the investigator an e-mail with that password and request their HAI results. The password was used to identify the participants HAI responses and corresponding results. This ensured that each participants' anonymity was upheld as their e-mail addresses were not attached to their data, while allowing the investigator to match each participant with their HAI results.

3.3.3 MTurk recruitment

Participants were recruited on MTurk from November 12, 2019 to January 23, 2020 through posting a Human Intelligence Task (HIT) on the online worker platform (see Appendices L, M, and N). A HIT is a single task found on the MTurk worker platform that a person can complete and submit to collect a reward. A screening test was first posted on MTurk with the CAGE-AID and the following additional question: "Have you ever received any form of treatment or detox for alcohol or drug use?" This screening test allowed the investigator to narrow the inclusion criteria to only those MTurk workers who receive a score of 2 or greater on the CAGE-AID or endorse the additional question with a 'yes'. MTurk workers were reimbursed \$0.05 USD for completing this screening test. MTurk workers had to meet the following criteria to be eligible to participate in the full study: be located in Canada or the United States, have a HIT approval rate no less than 90% (i.e., at least 90% of the MTurk workers previous HITs must

have been approved), and receive a score of 2 or greater on the CAGE-AID or endorse the additional screening question. Furthermore, MTurk requires workers to be 18 years or older.

3.3.4 MTurk administration

Participants who met the inclusion criteria were sent an invitation to participate in the full study through MTurk via e-mail (Smith, n.d.; see Appendices M and O). MTurk participants were presented with the same materials as the community sample (see consent forms in Appendices N and P). Two attention check questions (i.e., “If you are reading this please select mostly false” and “If you are reading this please select I agree a little”) were placed throughout the survey to ensure that participants were reading each question. At the end of the survey, participants were presented with a randomized code and asked to paste the code into the MTurk HIT in order to receive reimbursement.

The study took approximately 15 to 20 minutes to complete and participants recruited on MTurk were reimbursed \$0.75 USD. This rate of pay (\$2.25 per hour) is above the average, with the median hourly wage for MTurk HITs being \$1.38 (Horton & Chilton, 2010). While \$0.75 is above average, it is not uncommon or exponentially more than the average and was thought to be needed to tap into a highly stigmatized population such as problematic substance users.

Participants were also offered their HAI results at the end of the survey as an additional incentive. To receive their HAI results, participants were asked to e-mail the investigator and provide their MTurk Worker ID to allow the investigator to locate their HAI responses and provide the participant with their corresponding HAI results, which were password protected.

3.4 Demographics

Data were collected from two samples: (a) community sample of those residing in the Greater Vancouver area of BC and (b) MTurk workers. The demographics of both samples will be described separately below (Table 3.1).

3.4.1 Community sample

A total of 38 participants were recruited in the community (i.e., 32 in person and 6 online). All of the participants recruited in person in the community met the CAGE-AID inclusion criteria and answered both of the attention check questions correctly. However, only three of the six participants recruited online in the community met the CAGE-AID inclusion criteria and answered both the attention check questions correctly. After removing those participants who did not meet the inclusion criteria, the community sample included 35 participants. The majority of community participants ($n = 28$, 80%) endorsed four items; 17.1% ($n = 6$) endorsed three items, and 2.9% ($N = 1$) endorsed two items on the CAGE-AID. Additionally, 94.3% ($n = 33$) endorsed the additional screening question and of this group, 100% ($n = 33$) also endorsed two or more of the CAGE-AID items.

The majority of the participants were female ($n = 21$, 60%) and 40% were male ($n = 14$). Furthermore, the majority of participants were European ($n = 22$, 62.86%) followed by Aboriginal ($n = 2$, 5.71%), Chinese ($n = 2$, 5.71%), Arab/West Asian ($n = 1$, 2.86%), Filipino ($n = 1$, 2.86%), South East Asian ($n = 1$, 2.86%), and 6 (17.14%) participants endorsed the “other” ethnicity category. The average age of participants was 42.97 years old ($SD = 14.39$, range = 23–68) and the majority were single and never married ($n = 15$, 42.86%). The majority of participants had completed high school ($n = 12$, 34.29%), were unemployed and looking for

work ($n = 19$, 54.29%), and had worked full-time an average of 14.81 years ($SD = 10.77$, range = 1–40).

Participants' average score on the CAGE-AID was 3.77 ($SD = 0.49$, range = 2–4) and 33 (94.29%) participants reported ever attending treatment or detox. On average, participants reported using 10.49 ($SD = 4.46$, range = 2–18) different psychoactive substances in the past. Participants most frequently reported drinking alcohol ($n = 35$, 100%) and using cocaine ($n = 31$, 88.57%) followed by cannabis ($n = 30$, 85.71%), psilocybin ($n = 30$, 85.71%), tobacco ($n = 28$, 80%), ecstasy/ Methylendioxyamphetamine (MDMA)/Molly ($n = 27$, 77.14%), crack cocaine ($n = 22$, 62.86%), benzodiazepines ($n = 22$, 62.86%), Lysergic Acid Diethylamide (LSD; $n = 22$, 62.86%), opioids ($n = 22$, 62.86%), crystal methamphetamine ($n = 20$, 57.14%), heroin ($n = 18$, 51.43%), amphetamines ($n = 17$, 48.57%), Gamma Butyrolactone (GHB)/ Gamma Hydroxybutyrate (GHB; $n = 16$, 45.71%), and ketamine ($n = 12$, 34.29%).

3.4.2 MTurk sample

A total of 2,788 participants were recruited through MTurk for the screening survey. The average score on the CAGE-AID for the total sample was 1.44 ($SD = 1.52$, minimum = 0, maximum = 4). Of those who completed the screening survey, 44.9% ($n = 1,253$) met inclusion for the main survey. Of those participants who met the inclusion criteria, 33.6% ($n = 421$) endorsed two items, 66.8% ($n = 396$) endorsed three items, and 41.6% ($n = 332$) endorsed four items. Additionally, 25.5% ($n = 318$) endorsed the additional screening question and, of this group, 93.7% ($n = 298$) also endorsed two or more of the CAGE-AID items. Up to three reminder e-mails were sent to those participants who met the inclusion criteria of the main survey to take part in the main survey.

For the main survey, data were initially collected from 1,131 participants, however, some MTurk workers completed the survey more than once and were subsequently removed. After removing duplicate responses ($n = 66$, 5.84%), those participants who did not receive a score of 2 or greater on the CAGE-AID or endorse the additional screening question ($n = 248$, 21.93%), participants who did not correctly answer the attention check questions ($n = 115$, 10.17%), and participants who did not answer any of the HAI items ($n = 42$, 3.71%) a total of 716 participants were included in the final analyses.

All of the participants recruited through MTurk were from North America with 94.27% ($n = 675$) being from the United States and 5.73% ($n = 41$) being from Canada. The majority of participants were female ($n = 371$, 51.82%), 48.04% were male ($n = 344$), and one participant reported identifying with another gender. In terms of ethnicity, the majority of participants were European ($n = 564$, 78.77%) followed by Black ($n = 43$, 6.01%), Latin American ($n = 35$, 4.89%), Filipino ($n = 12$, 1.68%), South Asian ($n = 8$, 1.12%), Chinese ($n = 7$, 0.98%), Korean ($n = 6$, 0.84%), South East Asian ($n = 5$, 0.70%), Japanese ($n = 4$, 0.56%), Aboriginal ($n = 4$, 0.56%), Arab/West Asian ($n = 3$, 0.42%), and 25 (3.49%) participants identified with another ethnicity. The average age of participants was 35.86 years old ($SD = 10.27$, range = 19–72). The majority were married ($n = 240$, 33.52%), had earned a Bachelor's degree ($n = 237$, 33.1%), and worked full-time ($n = 489$, 68.3%). Additionally, participants reported working full-time for an average of 12.56 years ($SD = 9.51$, range = 0–48).

Participants' average score on the CAGE-AID was 2.95 ($SD = 0.84$, range = 0–4) and 174 (24.3%) participants reported attending treatment or detox. On average, participants reported using 6.55 ($SD = 4.29$, range = 1–20) different psychoactive substances in the past. Participants most frequently reported drinking alcohol ($n = 701$, 97.91%) and using cannabis products ($n =$

586, 81.84%) followed by tobacco ($n = 571$, 79.75%), opioids ($n = 419$, 58.52%), benzodiazepines ($n = 338$, 47.21%), cocaine ($n = 300$, 41.90%), psilocybin ($n = 284$, 39.66%), ecstasy/MDMA/Molly ($n = 247$, 34.45%), amphetamines ($n = 246$, 34.36%), LSD ($n = 241$, 33.66%), crack cocaine ($n = 133$, 18.58%), crystal methamphetamine ($n = 130$, 18.16%), ketamine ($n = 101$, 14.11%), heroin ($n = 96$, 13.41%), and GHB/GBL ($n = 73$, 10.20%).

Table 3.1

Community and MTurk Sample Demographics

Variables		Community ($n = 35$) n (%), M (SD)	MTurk ($n = 716$) n (%), M (SD)	Combined ($N = 751$) n (%), M (SD)
Gender	Male	14 (40.0%)	344 (48.04%)	358 (47.67%)
	Female	21 (60.0%)	371 (51.82%)	392 (52.20%)
Relationship	Never legally married	6 (17.14%)	123 (17.18%)	129 (17.18%)
	Single never married	15 (42.86%)	235 (32.82%)	250 (33.29%)
	Legally married (and not separated)	1 (2.86%)	240 (33.52%)	241 (32.09%)
	Separated, but still legally married	3 (8.57%)	9 (1.26%)	12 (1.60%)
	Common law	6 (17.14%)	25 (3.49%)	31 (4.13%)
	Divorced	1 (2.86%)	77 (10.75%)	78 (10.39%)
	Widowed	1 (2.86%)	7 (0.98%)	8 (1.07%)
Education	Some high school or less	5 (14.29%)	4 (0.56%)	9 (1.20%)
	Graduated high school	12 (34.29%)	151 (21.09%)	163 (21.70%)
	Attending 2-3 year college	3 (8.57%)	50 (6.98%)	53 (7.06%)
	Attending 4 year college	0	60 (8.38%)	60 (7.99%)
	Associate degree or diploma/certificate, completed	6 (17.14%)	77 (10.75%)	83 (11.05%)

	Bachelor's degree, completed	2 (5.71%)	237 (33.10%)	239 (31.82%)
	Attending graduate school, master's level	1 (2.86%)	15 (2.09%)	16 (2.13%)
	Master's degree of equivalent, completed	0	88 (12.29%)	88 (11.72%)
	Attending graduate school, doctoral level	0	10 (1.40%)	10 (1.33%)
	Doctoral degree or equivalent, completed	0	18 (2.51%)	18 (2.40%)
	Completed an Apprenticable Trade	3 (8.57%)	6 (0.84%)	9 (1.20%)
Work Experience	Years of any work experience	22.91(14.89)	15.61(10.24)	15.95(10.60)
	Years full-time work experience	14.81(10.77)	12.56(9.51)	12.66(9.57)
Employment Status	Unemployed, not looking for work	19 (54.29%)	58 (8.10%)	77 (10.25%)
	Unemployed, looking for work	8 (22.86%)	50 (6.98%)	58 (7.72%)
	Part-Time	2 (5.71%)	119 (16.62%)	121 (16.11%)
	Full-Time	6 (17.14%)	489 (68.30%)	495 (65.91%)
Ethnicity	European	22 (62.86%)	564 (78.77%)	586 (78.03%)
	Aboriginal	2 (5.71%)	4 (0.56%)	6 (0.80%)
	Black	0	43 (6.01%)	43 (5.73%)
	Arab/West Asian	1 (2.86%)	3 (0.42%)	4 (2.86%)
	Chinese	2 (5.71%)	7 (0.98%)	9 (1.20%)
	Filipino	1 (2.86%)	12 (1.68%)	13 (1.73%)
	Japanese	0	4 (0.56%)	4 (0.53%)
	Korean	0	6 (0.84%)	6 (2.86%)
	Latin American	0	35 (4.89%)	35 (4.66%)
	South Asian	0	8 (1.12%)	8 (1.07%)
	South East Asian	0	5 (0.70%)	6 (2.86%)
	Other	6 (17.14%)	25 (3.49%)	31 (4.13%)

3.4.3 Sample size adequacy

A variety of recommendations for determining an appropriate sample size for conducting confirmatory factor analysis have been reported (Furr & Bacharach, 2014; Myers et al., 2011; Yong & Pearce, 2013; Williams et al., 2010). The present sample ($N = 751$) exceeds the suggested number of participants recommended per parameter (i.e., 5 to 10 participants per estimated parameter; Kline, 2010). The present sample had 10.58 participants per parameter. The complexity of a structural model and the number of model parameters estimated affects sample size requirements for structural equation modeling and confirmatory factor analysis, with more complex models and a large number of parameters requiring a larger sample size (Kline, 2016). This is notable given that this model is hierarchical, with one higher-order factor and seven lower-order factors, and had 71 model parameters influencing sample size requirements; thus, the obtained sample size of 751 exceed the upper level recommendation of 710 participants (Furr & Bacharach, 2014). It is also often recommended that a minimum ratio of 5 to 20 participants per item be collected to conduct confirmatory factor analysis (Furr & Bacharach, 2014; Myers et al., 2011). The HAI consists of 28 items and the current sample exceed the suggested ratio of 20 participants per item. According to these sample size suggested guidelines, the present sample is considered adequate for to perform hierarchical confirmatory factor analysis for this present study and the tested model.

3.5 Data Analysis

3.5.1 Descriptive statistics

The means, standard deviations, ordinal omega, and polychoric and Pearson correlations for the seven lower-order factor scores of the HAI and the overall total score of Hope-Centered Career Competencies for the combined community and MTurk samples were calculated. Ordinal omega was used in the present analysis because the HAI response options are on a 4-point Likert-type response scale and the data is therefore ordinal. Ordinal omega has been found to estimate reliability more accurately than Cronbach's alpha, as well as other estimates of reliability, when the model is multidimensional and the response scale is ordinal in nature (Dunn et al., 2014; Peters, 2014; Revelle & Zinbarg, 2009; Zumbo et al., 2007). A key difference between ordinal omega and Cronbach's alpha is that the former is based on the polychoric correlation matrix, which is used with ordinal data allowing ordinal omega to more accurately estimate the relationship among underlying variables, and Cronbach's alpha is based on the Pearson covariance matrix (Gadermann et al., 2012; Zumbo et al., 2007). Furthermore, the use of Pearson covariance matrices is based on the assumption that the data is continuous, which is violated when Likert-type response scale options are used (Gadermann et al., 2012). Additionally, omega has fewer assumptions than Cronbach's alpha (Dunn et al., 2014). Omega assumes a congeneric structure (i.e., a homogenous factor structure with potentially unique path coefficients and error variances; Terry & Kelly, 2012). Whereas, the assumptions of Cronbach's alpha include: that the scale adheres to tau equivalence, items are continuous and normally distributed, item errors do not covary, and the scale is unidimensional (McNeish, 2018).

Theoretically, the HAI has one higher-order factor (i.e., Hope-Centered Career Competencies) and seven lower-order factors (i.e., Hope, Self-Reflection, Self-Clarity, Visioning, Goal Setting and Planning, Implementing, and Adapting) which are theorized to load onto the higher-order factor, making the model multidimensional with correlated dimensions (Furr & Bacharach, 2014). In this model, the seven lower-order factors are theorized to be affected by an individual's degree of Hope-Centered Career Competencies, suggesting that the lower-order factors are associated with each other (Furr & Bacharach, 2014). As the seven lower-order factors are correlated, an oblique rotation was applied to the model for the HCFA analysis (Furr & Bacharach, 2014).

3.5.2 Hierarchical Confirmatory Factor Analysis

Before completing the Hierarchical Confirmatory Factor Analysis (HCFA), a preliminary review of the items was completed. Any items with missing values were replaced using person mean substitution. Person mean substitution is a mean imputation method where a person's mean score on observed items is used to impute missing values (Huisman, 2000). When less than 20% of item responses are missing, person mean substitution provides a very good representation of the original data, is appropriate for Likert-type data, more accurate estimate of the variances, and good estimates of reliability (Downey & King, 1999; Dodeen, 2003; Raaijmakers, 1999). However, as the percent of missing data increases, the covariance between missing items and completed items becomes inflated resulting in an increase in total variance (Downey & King, 1999). Person mean substitution can also result in overestimates of internal consistency (Huisman, 2000). Data were missing at the item level from the HAI scale items for four community participants. There were three participants missing one item on the HAI and one

participant missing two items, each from a different subscale. This missing data was handled using person mean substitution. There was no missing data on the HAI scale for any of the MTurk participants.

Additionally, each item was analyzed to determine if it had low or negative inter-item (i.e., the degree to which an individual item is correlated with other test items), item-total (i.e., the degree to which differences among an individual's responses to individual items are consistent with differences in an individual's total test scores), and factor intercorrelations (i.e., the degree to which each factor is correlated with other factors) correlations (Furr & Bacharach, 2014; Gignac, 2014). Correlations between .10 and .29 are considered weak, between .30 and .49 are considered medium, and between .50 and 1.00 are considered strong (Cohen, 1988). As the items and subscales in the HAI were designed to be part of the same construct, it was expected that there would be positive correlations between items, item-totals, and factors.

The underlying bivariate normal distribution assumption of the HCFA was also examined prior to conducting the HCFA analysis through visualizing the data (e.g., histograms and QQ-plots). The data were found to be non-normally distributed, as was found in Niles and colleagues (2010a), so the diagonally weighted least squares (WLSMV) method for the HCFA was used to account for the violation of normality and the ordinal nature of the data (Li, 2016; Mîndrilă, 2010). The data were summarized with a polychoric correlation matrix. A polychoric correlation matrix was used because it can estimate the linear relationship between ordinal variables and has been found to have the best utility when the data were ordinal in nature (Zumbo et al., 2007).

In order to test whether the previously established hierarchical seven-factor structure was replicated with this new population, R (version 3.6.2.; see Appendix Q) was used to conduct hierarchical confirmatory factor analysis (HCFA) with an oblique rotation and polychoric

correlations to determine the extent to which the previously proposed seven-factor hierarchical structure of the HAI can be generalized to the present sample (Niles et al., 2010a; Yoon, 2017). The pattern of factor loadings were also examined to assess the number of dimensions of the HAI.

3.5.3 Assessing model fit

For the HCFA, five fit indices were implemented including chi-square (a test of absolute fit), Root-Mean-Square Error of Approximation (RMSEA, a test of absolute fit), Standardized Root Mean Square Residual (SRMR, a test of absolute fit), comparative fit index (CFI, a test of incremental fit), and goodness of fit index (GFI, a test of absolute fit). It is suggested that researchers report chi-square, RMSEA, and SRMR with additional fit indices based on the model being tested (Schumacker & Lomax, 2016). For absolute fit indices, smaller values indicate better model fit. For the RMSEA, it is suggested that .01, .05, and .08 indicate excellent, good, and moderate fit, respectively (MacCallum et al., 1996). Hu and Bentler (1999) examined the adequacy of conventional cut-off criteria by evaluating the rejection rates for simple and complex models with various combinations of model fit cut-off values. The findings of this study suggested using an SRMR cut-off value of .08 or less because these values result in lower Type II error rates, with acceptable costs to Type I error rates (Hu & Bentler, 1999). These criteria indicating adequate model fit and will be used in the current study (Furr & Bacharach, 2014; Hu & Bentler, 1999). When assessing CFI or NNFI fit indices, values greater than .95 indicate good fit (Furr & Bacharach, 2014; Hu & Bentler, 1999). For both of these fit indices, larger values indicate better model fit, with 1.00 indicating a perfectly fitting model.

3.6 Ethical considerations

The sample recruited in this study is a vulnerable population. The study protocol, methods for recruitment, and reimbursement take this into consideration. For example, the honorarium amounts and form of reimbursement (i.e., gift cards) were selected because they are thought to be equitable while reducing the likelihood of harm. Utilizing pre-paid gift cards of a reasonable amount rather than cash could be considered as a form of harm reduction because what can be bought is predetermined to an extent (e.g., food and beverage products). It was possible for participants to sell the gift cards for cash; however, gift cards were selected for locations that were accessible and participants who are able to consent to the research study are considered autonomous in how they utilize the reimbursement (Research Ethics Policy and Advisory Committee, 2011). This study was granted ethical approval from the Behavioural Research Ethics Board of the University of British Columbia in Vancouver, Canada.

Chapter 4: Results

4.1 Preliminary analyses

Preliminary analyses were conducted to assess inter-item and item-total correlations as well as normality. These analyses will be discussed here.

4.1.1 Inter-item and item-total correlations

The inter-item correlations for the HAI ranged from $\rho = .04-.82$ (see Table 4.1.1; see Footnote 1). Items from the Hope subscale (i.e., item 1, item 8, item 15, and item 22) were positively correlated with each other ($\rho = .39-.78$). Items from the Self-Reflection subscale (i.e., item 2, item 9, item 16, and item 23) were positively correlated with each other ($\rho = .36-.71$). Items from the Self-Clarity subscale (i.e., item 3, item 10, item 17, and item 24) were positively correlated with each other ($\rho = .38-.67$). Items from the Visioning subscale (i.e., item 4, item 11, item 18, and item 25) were positively correlated with each other ($\rho = .55-.64$). Items from the Goal Setting and Planning subscale (i.e., item 5, item 12, item 19, and item 26) were positively correlated with each other ($\rho = .50-.72$). Items from the Implementing subscale (i.e., item 6, item 13, item 20, and item 27) were positively correlated with each other ($\rho = .60-.69$). Items from the each other ($\rho = .55-.68$). All of the HAI items were positively correlated with each other, which makes sense given that they are all measuring the same overarching construct. As no pair of

¹ The polychoric correlation is utilized when the data consists of two ordinal variables (Salkind, 2010). The Pearson correlation is utilized when comparing interval data (Field, 2009).

items were correlated above the .90 threshold, which would suggest item redundancy, all items were retained for the HCFA (Jacobs et al., 2017).

Item-total correlations ranged from $r = .22-.74$ for the HAI scale (see Table 4.1.1). The majority of the subscale's items had moderate item-total correlations with the subscale total score including the Hope subscale ($r = .64-.72$), the Self-Clarity subscale ($r = .45-.61$), the Visioning subscale ($r = .60-.64$), the Goal Setting and Planning subscale ($r = .55-.74$), the Implementing subscale ($r = .68-.73$), and the Adapting ($r = .56-.63$). However, in the Self-Reflection subscale ($r = .22-.67$), item 2 had an item-total correlation of $r = .22$ suggesting this item has weak discrimination in this sample.

4.1.2 Normality

Normality was assessed by examining histograms, QQ-plots, and item-level descriptive statistics for each of the HAI items (see Table 4.1.2). The histograms, QQ-plots, and item-level descriptive statistics revealed that the items on the HAI were non-normally distributed and were positively skewed. To account for the non-normal distribution, diagonally weighted least squares (WLSMV) method was applied for the HCFA (Li, 2016; Mîndrilă, 2010).

Table 4.1.1

Inter-item and Item-total Correlation Matrix for the HAI

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
1	1.00																												
2	.04	1.00																											
3	.43	.07	1.00																										
4	.55	.21	.36	1.00																									
5	.47	.06	.44	.41	1.00																								
6	.52	.05	.44	.36	.76	1.00																							
7	.40	.21	.32	.37	.37	.45	1.00																						
8	.75	-.03	.41	.59	.46	.52	.43	1.00																					
9	.02	.44	.18	.31	.16	.09	.31	.14	1.00																				
10	.48	.18	.53	.34	.44	.44	.42	.44	.22	1.00																			
11	.44	.10	.39	.57	.45	.46	.33	.50	.22	.39	1.00																		
12	.39	.08	.27	.43	.57	.52	.37	.44	.24	.36	.45	1.00																	
13	.47	.05	.39	.34	.66	.69	.38	.49	.13	.44	.44	.51	1.00																
14	.39	.18	.28	.34	.42	.38	.61	.40	.28	.39	.38	.34	.49	1.00															
15	.82	.02	.45	.55	.49	.55	.45	.78	.08	.50	.52	.44	.53	.46	1.00														
16	.29	.36	.25	.39	.30	.31	.40	.29	.50	.37	.36	.38	.29	.29	.36	1.00													
17	.45	.06	.67	.34	.46	.51	.34	.44	.18	.54	.36	.35	.49	.31	.52	.34	1.00												
18	.41	.30	.35	.64	.41	.37	.35	.38	.37	.40	.55	.40	.42	.42	.46	.52	.39	1.00											
19	.30	.11	.26	.35	.50	.46	.30	.37	.19	.34	.37	.72	.42	.27	.37	.35	.34	.36	1.00										
20	.52	.03	.45	.43	.68	.67	.47	.57	.19	.46	.47	.61	.68	.49	.59	.35	.51	.43	.53	1.00									
21	.38	.20	.36	.32	.39	.37	.55	.41	.28	.45	.37	.33	.47	.58	.44	.39	.40	.42	.32	.56	1.00								
22	.66	-.03	.40	.40	.46	.55	.44	.64	.11	.43	.46	.37	.51	.45	.73	.35	.47	.40	.30	.52	.51	1.00							
23	.19	.45	.29	.30	.30	.25	.35	.19	.55	.34	.33	.38	.25	.28	.26	.71	.31	.46	.32	.30	.40	.35	1.00						
24	.27	.22	.38	.21	.26	.29	.32	.18	.26	.42	.24	.25	.30	.32	.25	.36	.48	.41	.22	.33	.37	.33	.39	1.00					
25	.28	.32	.30	.59	.43	.37	.35	.37	.45	.32	.58	.40	.37	.41	.38	.47	.31	.64	.39	.45	.40	.35	.46	.34	1.00				
26	.57	.10	.48	.55	.63	.57	.40	.58	.18	.49	.60	.55	.61	.46	.62	.37	.53	.53	.50	.69	.45	.51	.32	.29	.56	1.00			
27	.44	.09	.44	.35	.60	.63	.48	.49	.25	.48	.46	.49	.62	.44	.53	.36	.51	.44	.47	.69	.48	.51	.32	.36	.43	.66	1.00		
28	.44	.19	.35	.36	.47	.45	.55	.42	.29	.49	.43	.31	.50	.61	.46	.39	.42	.45	.30	.51	.68	.55	.42	.41	.44	.52	.59	1.00	
Item Total	.64	.22	.55	.61	.68	.68	.56	.67	.36	.60	.64	.63	.67	.57	.72	.53	.61	.63	.55	.73	.60	.67	.50	.45	.60	.74	.69	.63	

Table 4.1.2

Item Level Descriptive Statistics

Item	N	Min	Max	Mean	SD	Skewness		Kurtosis	
						Statistic	SE	Statistic	SE
1	751	1	4	3.09	0.86	-7.71	-4.33	1.24	3.49
2	751	1	4	3.50	0.62	-9.29	-5.21	3.17	8.91
3	751	1	4	3.16	0.74	-5.50	-3.08	-1.18	-3.31
4	751	1	4	3.17	0.82	-7.47	-4.29	4.66	1.31
5	751	1	4	2.85	0.84	-3.05	-1.71	-5.42	-1.52
6	751	1	4	2.95	0.80	-3.19	-1.79	-5.15	-1.44
7	751	1	4	3.27	0.68	-7.16	-4.01	6.01	1.69
8	751	1	4	2.83	0.91	-3.61	-2.02	-7.02	-1.97
9	751	1	4	3.29	0.72	-8.20	-4.60	4.91	1.38
10	751	1	4	3.23	0.86	-8.92	-5.00	-2.75	-7.72
11	751	1	4	2.90	0.92	-4.68	-2.62	-6.23	-1.75
12	751	1	4	2.93	0.88	-4.60	-2.58	-5.13	-1.44
13	751	1	4	2.97	0.80	-4.08	-2.29	-3.42	-9.60
14	751	1	4	3.31	0.65	-5.80	-3.25	1.10	3.08
15	751	1	4	2.96	0.90	-5.12	-2.87	-5.38	-1.51
16	751	1	4	3.31	0.70	-8.06	-4.52	5.60	1.57
17	751	1	4	3.01	0.82	-3.97	-2.22	-5.75	-1.61
18	751	1	4	3.20	0.74	-6.12	-3.43	-7.32	-2.05
19	751	1	4	2.95	0.89	-4.60	-2.58	-6.04	-1.70
20	751	1	4	3.03	0.75	-4.76	-2.67	-9.97	-2.90
21	751	1	4	3.23	0.69	-6.69	-3.75	5.03	1.41
22	751	1	4	2.94	0.86	-5.06	-2.84	-3.76	-1.05
23	751	1	4	3.35	0.72	-1.07	-6.00	1.25	3.50
24	751	1	4	3.42	0.69	-9.70	-5.49	5.88	1.65
25	751	1	4	3.19	0.76	-6.41	-3.59	-6.75	-1.89
26	751	1	4	3.03	0.84	-5.31	-2.98	-3.71	-1.04
27	751	1	4	3.12	0.74	-6.23	-3.49	2.76	8.11
28	751	1	4	3.20	0.68	-6.07	-3.40	4.69	1.32

4.2 HAI participant descriptive statistics

Community participants' average score on the HAI was 3.19 ($SD = 0.45$, minimum = 2.21, maximum = 4.00). Participants' average scores on the subscales were: Hope ($M = 3.18$, $SD = 0.75$), Self-Reflection ($M = 3.59$, $SD = 0.40$), Self-Clarity ($M = 3.19$, $SD = 0.49$), Visioning (M

= 3.05, $SD = 0.70$), Goal Setting and Planning ($M = 2.81$, $SD = 0.64$), Implementing ($M = 3.0$, $SD = 0.61$), and Adapting ($M = 3.5$, $SD = 0.56$).

MTurk participants' average score on the HAI was 3.12 ($SD = 0.47$, range = 1–4).

Participants average scores on the subscales were: Hope ($M = 2.94$, $SD = 0.76$), Self-Reflection ($M = 3.35$, $SD = 0.51$), Self-Clarity ($M = 3.20$, $SD = 0.59$), Visioning ($M = 3.12$, $SD = 0.64$), Goal Setting and Planning ($M = 2.94$, $SD = 0.68$), Implementing ($M = 3.02$, $SD = 0.64$), and Adapting ($M = 3.24$, $SD = 0.53$).

4.3 Hierarchical Confirmatory Factor Analysis

A HCFA was performed on the combined community and MTurk samples to confirm if the previously reported factor structure of the HAI (Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015) would be replicated with the current sample (see Table 4.3.1). The community and MTurk samples were considered to be similar enough to be combined. Moreover, while the community sample was small ($n = 35$) this sample included individuals who were significantly older than the MTurk sample on average ensuring greater age coverage in the sample, thereby expanding the potential generalizability of the results to a wider range of age groups (see Appendix R). The hypothesized hierarchical structure (i.e., one higher-order factor and seven lower-order factors) fit the data well ($\chi^2(343) = 1710.60$, $p < 0.001$, NNFI = .98, CFI = .98, RMSEA = .07, SRMR = .07; see Table 4.3.1). The NNFI and CFI were above the recommended .95. The RMSEA and SRMR were below the recommended .08. The standardized factor loadings for the seven subscales ranged from .40 to .93 (see Figure 4.1). The standardized factor loadings from seven subscales onto the higher-order factor ranged from .57 to .94 (see Figure

4.1). The majority of the standardized factor loadings exceeded .70, which is considered satisfactory (Kline, 2016).

Table 4.3.1

Measures of Fit

	χ^2	<i>df</i>	NNFI	CFI	SRMR	RMSEA
Niles et al., 2010a (<i>N</i> = 382)	-	-	1.00	1.00	.05	.00
Schreiber et al., 2013 (<i>N</i> = 116)	565.39**	343	.91	.91	-	.07
Yoon et al., 2015 (<i>N</i> = 1,685)	3138.00***	343	.94	.95	.06	.07
Yoon, 2017 (<i>N</i> = 738)	126.70***	343	.88	.89	.06	.06
Current Study (<i>N</i> = 751)	1710.60***	343	.98	.98	.07	.07

Note. * $p < .05$; ** $p < .01$, *** $p < .001$. NNFI = none-normed fit index, CFI = comparative fit index, SRMR = standardized root mean squared residual, RMSEA = root mean square error of approximation. Please note it is not clear whether Niles et al. (2010a) tested the seven-factor hierarchal model or a simple seven-factor model.

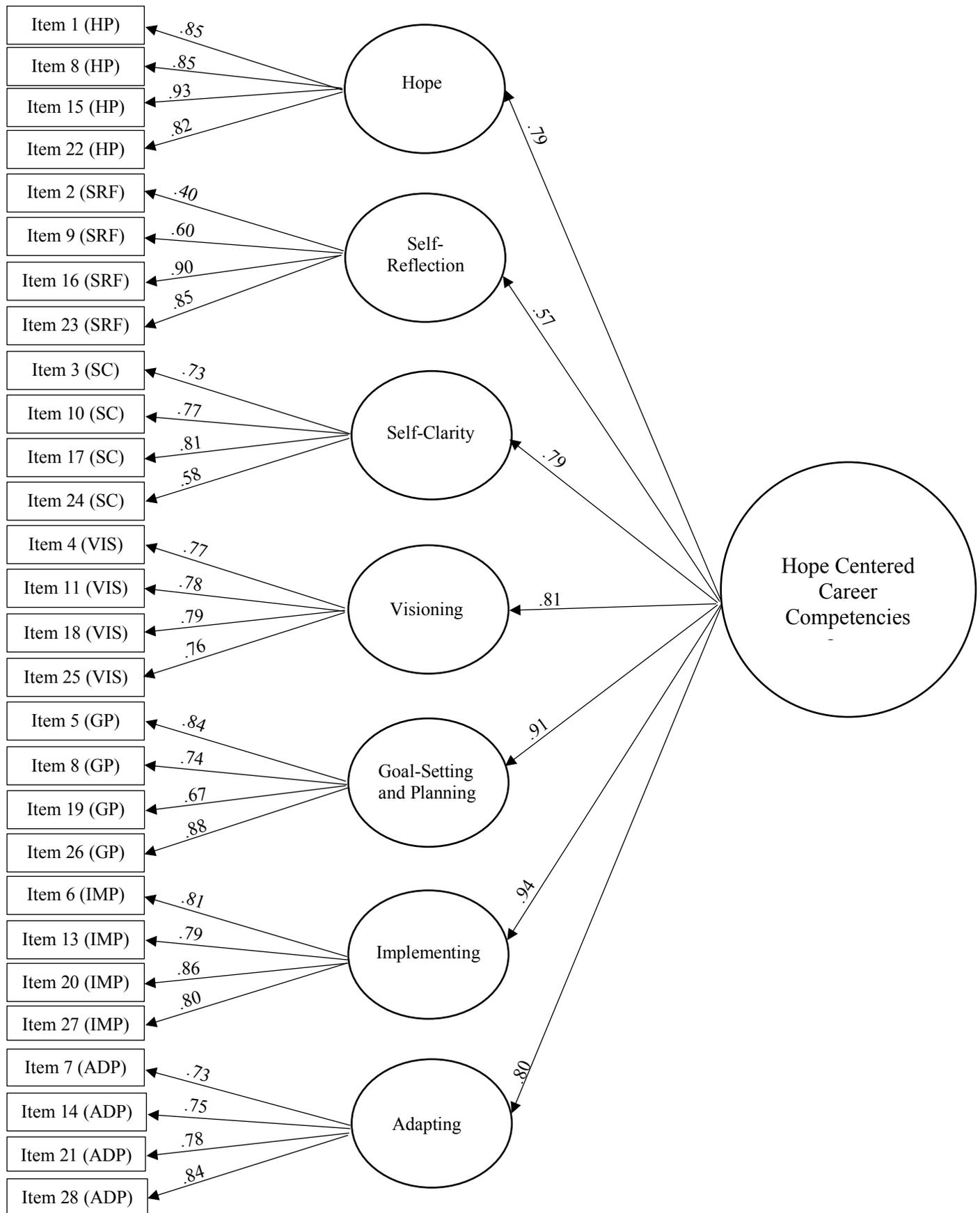


Figure 4.1 Hierarchical Confirmatory Factor Analysis for HAI

4.4 Descriptive statistics, correlations, and internal consistency

Means, standard deviations, ordinal omegas, and correlations for the seven-factor scores of the HAI and overall total score for Hope-Centered Career Competencies for the total sample are shown in Table 4.4.1. The mean values for the total scale and each of the subscales were above the median (i.e., 2.5) suggesting that, on average, participants positively endorsed the majority of the HAI items. The average HAI total score was 3.12 ($SD = 0.47$). On average, participants received higher scores on the Self-Reflection subscale ($M = 3.35$, $SD = 0.51$) followed by the Adapting subscale ($M = 3.24$, $SD = 0.53$), the Self-Clarity subscale ($M = 3.2$, $SD = 0.59$), the Visioning subscale ($M = 3.12$, $SD = 0.64$), the Implementing subscale ($M = 3.02$, $SD = 0.64$), the Hope subscale ($M = 2.94$, $SD = 0.76$), and the Goal Setting and Planning subscale ($M = 2.94$, $SD = 0.68$).

All seven HAI factor scores were significantly positively correlated with each other (see Table 4.4.1). Factor intercorrelations ranged from $r = .21$ – $.82$ for the HAI scale. The majority of the subscale's had moderate factor intercorrelations. However, in the Self-Reflection subscale had weak to moderate factor intercorrelations with all correlations with this subscale being below $.50$ suggesting that this factor is the least related to the other career competencies assessed by the HAI. Overall, the lower-order factors showed strong correlations with the HAI higher-order factor (i.e., Hope-Centered Career Competencies) which all exceed $r = .70$, with the exception of the Self-Reflection subscale (i.e., $r = .55$).

Additionally, the responses from the total sample resulted in an ordinal omega (ω_o) of $.95$, 95% CI [$.94$, $.95$] for the total scale of the HAI. The individual scale coefficients were: $.92$, 95% CI [$.91$, $.93$] (Hope), $.81$, 95% CI [$.78$, $.83$] (Self-Reflection), $.81$, 95% CI [$.78$, $.83$] (Self-

Clarity), .86, 95% CI [.84, .87] (Visioning), .85, 95% CI [.83, .86] (Goal Setting and Planning), .89, 95% CI [.87, .90] (Implementing), and .86, 95% CI [.84, .87] (Adapting).

Table 4.4.1

Means, Standard Deviations, Ordinal Omegas, and Correlations among HAI Factors (N = 751)

Measure	1	2	3	4	5	6	7	8
1. Hope	1							
2. Self-Reflection	.21	1						
3. Self-Clarity	.53	.36	1					
4. Visioning	.55	.47	.46	1				
5. Goal Setting and Planning	.56	.34	.51	.60	1			
6. Implementing	.62	.28	.58	.53	.76	1		
7. Adapting	.53	.42	.51	.49	.49	.60	1	
8. Overall HAI	.78	.55	.74	.78	.82	.84	.75	1
<i>M</i> (total sample)	2.94	3.35	3.2	3.12	2.94	3.02	3.24	3.12
<i>SD</i> (total sample)	0.76	0.51	0.59	0.64	0.68	0.64	0.53	0.47
ω_o (total sample)	0.92	0.81	0.81	0.86	0.85	0.89	0.86	0.95

Chapters 5: Discussion

The purpose of this study was to evaluate the factor structure of the HAI with a sample of individuals with clinically significant substance use issues. To do this, hierarchical confirmatory factor analysis was conducted in an attempt to confirm the previously established hierarchical structure of the HAI (Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015). The present study found the hierarchical factor structure reported with the HAI in previous studies with different populations (i.e., German participants and university students from Canada and the United States; Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015) fit the data well.

The factor loadings onto the higher-order factor in the present study ranged from .57–.94. These factor loadings are similar to what has been found in previous studies (i.e., .37–.89; Schreiber et al., 2013, and .51–.89; Yoon, 2017). Specifically, the Self-Reflection subscale was the weakest loading subscale and the Implementing subscale was the strongest loading subscale in the present study as well as in both previous studies (Schreiber et al., 2013; Yoon, 2017). Additionally, the Self-Reflection subscale was the only factor loading below .70 (i.e., .57) on to the higher-order factor suggesting that the majority of the factor loadings onto the higher-order factor were satisfactory (Kline, 2016). However, a factor loading of .57, as was found with the Self-Reflection subscale, is acceptable and therefore this subscale can be retained.

The factor loadings onto the lower-order factors (i.e., subscales) in the present study had a larger range (.40–.93) than was found in previous studies (i.e., .56–.83, Niles et al., 2010a; .40–.84, Schreiber et al., 2013; and .54–.85, Yoon, 2017). However, the majority of the factor loadings were strong, suggesting adequate construct validity with 85.71% ($n = 24$) of the lower-order factor loadings being above .70 (Kline, 2016). The average factor loadings on to the

subscales were .86 ($SD = .05$) on the Hope subscale, .69 ($SD = .23$) on the Self-Reflection subscale, .72 ($SD = .10$) on the Self-Clarity subscale, .78 ($SD = .01$) on the Visioning subscale, .78 ($SD = .10$) on the Goal Setting and Planning subscale, .82 ($SD = .03$) on the Implementing subscale, and .78 ($SD = .05$) on the Adapting subscale. The results found in the present study do show stronger lower-order factor loadings than have previously been reported. For example, Schreiber and colleagues' (2013) study with the German version of the HCCI and German participants reported 15 lower-order factor loadings below .70 (including item 2 and item 24) and Yoon (2017) reported 10 lower-order factor loadings below .70 (including item 24). As such, the current study found that the HAI items loaded better on the hierarchical structure than in previous studies with the same version of the HAI (Yoon, 2017) as well as compared to the German version of the HCCI (Schreiber et al., 2013).

The sample size used by Yoon (2017) was also very similar to the present study ($N = 738$). However, Schreiber and colleagues' (2013) sample only included 116 participants. Based on the minimum determined sample size for the present sample (i.e., $N = 710$) it is likely that the analyses in Schreiber et al. (2013) study did not have an adequate sample size to conduct hierarchical confirmatory factor analysis on a complex multilevel model without an increased likelihood of bias in the parameter estimates and standard errors, solution propriety (i.e., an adequate number of participants for the model to converge without improper solutions or impossible parameter estimates), and not achieving adequate power (Cohen, 1988; Gagne & Hancock, 2006; Maxwell et al., 2008; Wolf et al., 2013). This may have impacted the strength of the resulting factor loadings. It is also possible that the results were impacted by the English to German translation of the HCCI with German participants.

While the present study found strong factor loadings, there were a few items that showed weaker fit with their respective subscales. In particular, item 2 (factor loading = .40) on the Self-Reflection subscale (“I think about things that have happened to me”), item 9 (factor loading = .60) on the Self-Reflection subscale (“I think about what is the common theme among the things I like”), item 24 (factor loading = .58) on the Self-Clarity subscale (“I know what I like and dislike”), and item 19 (factor loading = .67) on the Goal Setting and Planning subscale (“I make a list of things that I want to complete”). Item 2 and item 9 did not correlate higher with any other subscale items. However, item 24 did correlate higher with an item from the Visioning subscale (i.e., item 8, $\rho = .64$) and an item from the Self-Reflection subscale (i.e., item 23, $\rho = .39$). Furthermore, item 19 correlated higher with three items from the Implementing subscale (i.e., item 6, $\rho = .46$, item 20, $\rho = .56$, and item 27, $\rho = .39$) and an item from the Visioning subscale (i.e., item 25, $\rho = .39$). The weaker factor loadings found with the Self-Reflection subscale and correlations found between items on the Self-Reflection subscale and items from other subscales does provide some explanation for why this subscale was found to load weaker on to the Hope-Centered Career Competencies higher-order factor. While these items with weaker fit do not make theoretical sense on the other subscales, assuming the results of this study are replicated, future studies could explore how to strengthen the fit of these items with their intended subscales (e.g., rephrasing the items; Ximénez, 2009; 2016).

The second aim of this study was to evaluate the reliability of the HAI. The present study utilized ordinal omega rather than Cronbach’s alpha because ordinal omega can more accurately estimate reliability when a model is multidimensional, the data were ordinal, and polychoric correlations are utilized (Dunn et al., 2014; Peters, 2014; Revelle & Zinbarg, 2009; Zumbo et al., 2007). The ordinal omega values found in the present study all exceed the .70 cut-off value

suggesting that the HAI total scale and subscales were reliable. Additionally, the ordinal omega values showed similar trends as those found in previous studies (Niles et al., 2010a; Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015). Notably, in prior studies Cronbach's alpha values for the Self-Reflection subscale have repeatedly been found to be lower than the other subscales (i.e., $\alpha = .74$, Niles et al., 2010a; $\alpha = .37$, Schreiber et al., 2013; $\alpha = .51$, Yoon, 2017; $\alpha = .61$, Yoon et al., 2015; $\alpha = .71$, Yoon et al., 2020). In the present study, both the Self-Reflection and Self-Clarity subscales had lower ordinal omega values ($\omega_o = .81$ and $.81$, respectively); however, they both still exceeded the $.70$ cut-off value suggesting they were both reliable. With regards to the total scale, in the present study, the total scale ordinal omega was $.92$. This was consistent with what has been found in previous studies that consistently reported a Cronbach's alpha greater than $.90$ (Niles et al., 2010a; Yoon, et al. 2015; Yoon, 2017; Yoon et al., 2020). These differences between previous studies and the present findings could be attributed to the use of ordinal omega and thus more accurately estimating reliability. Overall, the HAI was found to have good reliability.

Descriptive statistics were also conducted on the HAI total scale and subscales. The average HAI total scale score in the present sample was 3.12 ($SD = 0.47$). Three previous studies found lower scores on the HAI total scale compared to the present sample (Amundson et al., 2018; Schreiber et al., 2013; Yoon et al., 2020). One of these studies was with the German translated version of the HCCI and German participants which found a slightly lower average HAI total scale ($M = 3.08$, $SD = 0.36$; Schreiber et al., 2013). The second was with unemployed job seekers which found even lower average scores on the HCCI total scale ($M = 2.27$, $SD = 0.29$; Amundson et al., 2018). Notably, participants include in Amundson et al.'s (2018) study were selected if they had low hope as suggested by an initial HCCI assessment. The third was

with individuals diagnosed with ASD, which found lower average scores on the HAI total scale both pre- and post-program ($M = 2.98, SD = 0.45$ and $M = 3.06, SD = 0.47$, respectively; Yoon et al., 2020). While HAI total scores improved post-program this samples overall lower HAI scores may be due to the difficulties this population often faces with regards to employment and poor vocational outcomes (Yoon et al., 2020).

Conversely, previous studies with university students from Canada and the United States ($M = 3.23, SD = 0.38$ and $M = 3.40, SD = 0.36$, respectively; Yoon et al., 2015), refugees in Canada ($M = 3.47, SD = 0.32$; Yoon et al., 2019), and unemployed Canadian immigrant job seekers ($M = 3.30, SD = 0.32$; Clarke et al. 2016) found higher average scores on the HAI total scale. However, it is not known if these differences were statistically significantly different and if they are significant, the effect size seems quite small. Assuming that the differences are significant, there are a few possible reasons for why these previous studies with non-clinical populations found higher average scores on the HAI than the current clinical sample of problematic substance users. It is possible that participants in studies examining the influence of Hope-Centered Career Competencies had greater HAI total scores, such as the participants in Clarke et al.'s (2016) study who were given the HAI prior to any Hope-Action Theory interventions. It is possible that being offered the opportunity to improve career competency skills may have increased these participants' degree of hopefulness and goal setting and planning prior to receiving any Hope-Action Theory interventions, for example. Therefore, simply being admitted to a study aimed at providing tools for improving the seven career competencies assessed in the HAI may have increased the participants average pre-intervention HAI total scores. Additionally, the average HAI total score was the largest in Yoon et al.'s (2019) study. The pre-intervention HAI total scores were not reported in this publication so the average HAI

total score immediately following Hope-Action Theory interventions were used for comparison. Given that the participants in this study had just finished the Hope-Action Theory interventions, these participants likely had elevated career competencies resulting in increased HAI total scores from baseline.

The previous study that was most similar to the present study was conducted through an online survey with university students from Canada and the United States (Yoon et al., 2015). While the average HAI total score found in the current study appears lower than those found in other studies, it is only slightly lower than the average total score found in this similar study ($M = 3.12$, $SD = 0.47$ vs. Canadian Students $M = 3.23$, $SD = 0.38$ and American Students $M = 3.40$, $SD = 0.36$, respectively; Yoon et al., 2015). This may be attributed to the similarities in study design (i.e., online survey); however, there are also many notable differences between the present sample and the samples from previous studies with the HAI.

Ruling out measurement error and sampling error, and assuming there to be a statistically significant difference between these values, a possible reason why average HAI total scores were slightly lower in the present study may be related to the population being sampled. Previous research with individuals who have experienced problematic substance use has found that this population often experiences limited self-confidence in solving problems, feel less able to meet work demands, limited motivation, limited work experience, and often give up easily (Bauld et al., 2012; Fauziah & Naresh, 2009; Glenn & Moore, 2008; Sung & Chu, 2011; Zanis et al., 2001). Given that this population is more likely to have weakened career competencies, such as hopefulness and goal setting and planning, it is not surprising that they would be more likely to receive lower scores on the HAI on average, but a larger difference could perhaps be expected. Therefore, participants in the present study may have had lower HAI average total scores

because of this population's prior experiences with problematic substance use and often limited work experiences, which may have influenced their ability to develop strong career competencies, noting that the HAI is specifically intended to assess seven career competencies. Furthermore, the HAI total score provides information on how competent an individual is generally at navigating career decisions and challenges. The sample used in Yoon et al.'s (2015) study included Canadian and American university students who, in gaining an education, are actively working towards a career and/or career exploration. As such, this population is expected to have stronger career competencies and higher total scores on the HAI as they are more likely to be actively strengthening their career competencies through the process of developing their careers. It is also possible that unemployed immigrant and refugee participants from previous studies had higher HAI scores because they may have previously had success in gaining employment and navigating career before coming to a new country (Clarke et al. 2016; Yoon et al., 2019). For example, all of the participants in Clarke et al.'s (2016) study held a professional registration in the home country (e.g., registered nurse) suggesting that they had previously navigated career exploration successfully and previously possessed at least some of the career competencies measured by the HAI. Perhaps they had previously developed strong career competencies leading to higher overall scores on the HAI and, during the time of these previous studies, they had retained some of these career competencies and were working on strengthening them further and/or strengthening those that were weaker due to new employment difficulties due to being in a new country. In sum, the present sample may have had lower average scores on the HAI due to the compounding difficulties they experienced related to career development and employment due to their experiences with problematic substance use.

When examining the average scores on the HAI subscales in the present study, the Self-Reflection subscale was found to have the highest average score ($M = 3.35$, $SD = 0.51$). However, previous studies have found participants to have higher scores on the Adapting subscale, including studies with the German version of the HCCI and German participants ($M = 3.36$, $SD = 0.46$; Schreiber et al., 2013), Canadian university students ($M = 3.39$, $SD = 0.45$; Yoon et al., 2015), and unemployed job seekers ($M = 3.39$, $SD = 0.45$; Amundson et al., 2018). Additionally, university students from the United States had higher average scores on the Visioning subscale ($M = 3.52$, $SD = 0.50$; Yoon et al., 2015) and unemployed Canadian immigrant job seekers had higher average scores on the Hope subscale ($M = 3.57$, $SD = 0.44$; Clarke et al., 2016). It is possible that the current sample had higher scores on the Self-Reflection subscale because a notable portion of participants ($n = 207$, 27.56%) had engaged in some form of substance use treatment, which is most likely higher than in samples of non-clinical individuals like the other samples used in extant research. Many substance use treatment programs follow the 12-step recovery model for addictions, a component of which is engaging in Self-Reflective activities (McMillen, 2000; Stephenson & Zygouris, 2007; W, 1976). Additionally, a subset of the sample ($n = 33$, 4.39%) was recruited from substance use support centers and were actively engaged in substance use treatment. So, therefore, they are more likely to actively be engaging in self-reflection as part of their treatment recovery leading to higher Self-Reflection scores. Furthermore, the sample included in this study had to meet the CAGE-AID inclusion criteria. Having the insight to endorse two or more items on the CAGE-AID could suggest that the participants included in this study had engaged in self-reflection in order to endorse the CAGE-AID questions about their substance use and perhaps had better self-reflection abilities than average.

Conversely, the present study found that participants received the lowest average scores on the Hope subscale ($M = 2.94$, $SD = 0.76$) and the Goal Setting and Planning subscale ($M = 2.94$, $SD = 0.68$). Similarly, both the university students from Canada and the United States received lower average scores on the Goal Setting and Planning subscale ($M = 3.08$, $SD = 0.59$ and $M = 3.19$, $SD = 0.59$, respectively; Yoon et al., 2015), as did the German participants with the German version of the HCCI ($M = 2.51$, $SD = 0.62$; Schreiber et al. 2013), unemployed job seekers ($M = 2.34$, $SD = 0.52$; Amundson et al., 2018), unemployed Canadian immigrant job seekers ($M = 2.89$, $SD = 0.75$; Clarke et al., 2016), and individuals diagnosed with ASD ($M = 2.61$, $SD = 0.75$; Yoon et al., 2020). As such, the present sample did not differ from those included in previous studies with the HAI who were also found to have the lowest average scores on the Goal Setting and Planning subscale. Perhaps the Goal Setting and Planning career competency is one that individuals struggle with the most in general given that it has consistently been found to receive the lowest scores across different groups of individuals.

However, there are some possible reasons why the current sample had lower scores on the Hope subscale, which was not found in other studies. Every participant included in this study endorsed two or more items on the CAGE-AID. A score of 2 or greater is considered clinically significant, which indicates an increased likelihood of the individual experiencing substance abuse (Brown & Rounds, 1995). Given that participants in the present study self-reported a potential problem with substance use, it is likely that they would also be experiencing feelings of decreased hope because of the barriers that this population faces (Coduti & Schoen, 2014). In other words, generally low hope is common in individuals with a substance use problem (Coduti & Schoen, 2014) and some of this lack of general hope will coincide with a lack of career-related hope.

Assessing for an individual's level of hope, in general, is particularly important when working with individuals who have experienced problematic substance use because hopefulness has been linked to better outcomes in substance use recovery (Dekhtyar et al., 2012; Ferrari et al., 2012; Grigson, 2008; May et al. 2015). For example, Dekhtyar and colleagues' (2012) longitudinal study found that increased hopefulness was predictive of better outcomes and, specifically, a reduced likelihood of reincarceration for individuals who have experienced problematic substance use. Moreover, the HAI has been found to have good construct validity with Snyder's Adult Hope Scale (Snyder et al., 1991a) which provides support for the HAI's ability to perhaps tap somewhat into general hopefulness (Niles, 2010a; Schindler et al. 2014). This lends credence to the HAI's utility with a problematic substance use population given the importance of identifying hopefulness in this population to provide direction when supporting their recovery. Furthermore, the HAI's Hope subscale allows clinicians the ability to assess hopefulness quickly with regards to employment.

5.1 Strengths and limitations

There are a number of strengths in the present study. First, a key one is the large sample size ($N = 751$) used to examine the factor structure and reliability of the HAI. The present study had the second-largest sample size following Yoon and colleagues' (2015) study with a sample size of 1,685 undergraduate and graduate students from Canada and the United States. The sample in Yoon et al.'s (2015) study was collected through an online survey with an easily accessible population aiding in the large sample collected in that study (i.e., university students; Hanel & Vione, 2016; Yoon et al., 2015). Having a large sample size is important when conducting confirmatory factor analysis on a complex multilevel model for achieving adequate

statistical power, solution propriety, minimizing bias in the parameter estimates and standard errors (Cohen, 1988; Gagne & Hancock, 2006; Maxwell et al., 2008; Wolf et al., 2013).

Second, the portion of respondents from MTurk who scored 2 or greater on the CAGE-AID was similar to a study conducted through MTurk with American participants (Shapiro et al., 2013). Shapiro and colleagues (2013) found that 37.1% of their sample endorsed one or more items on the CAGE-AID items. The present study found that 44.94% of MTurk participants, which was predominantly from the United States, endorsed two or more items on the CAGE-AID. The proportion of individuals with potentially problematic substance use identified in the present sample was slightly larger than the proportion found in Shapiro and colleagues' (2013) study. As such, the present CAGE-AID findings suggest this study is reasonably representative of the MTurk pool of workers who have experienced problematic substance use.

A third strength was that the analyses used in this study accounted for the ordinal nature of the data, which was not done in previous studies (Niles et al., 2010a; Schreiber, et al., 2013; Schindler et al., 2014; Yoon, 2017; Yoon et al., 2015). Fourth, a thorough examination of item characteristics and factor loadings was conducted and reported in this study, which was not done in previous studies. Assessing scale diagnostics has been suggested to allow researchers to compose a more complete overview of a scale performance (Peters, 2014). Therefore, a fifth strength of the present study was the thorough review of the HAI scale diagnostics that can be used as a point of comparison in future examinations of the HAI. For example, future research with different populations, with new potential HAI items (e.g., revised items or test items), or translated versions of the HAI into other languages can use the scale diagnostics reported in the present study as source of comparison to examine how well the HAI is functioning under new or different circumstances. In particular, future research could revise items on the Self-Refection

and Self-Clarity subscales which both showed the lowest internal consistency. It is possible that revising items on these subscales could strengthen the subscales and the HAI scale overall. The sixth strength of this study was the thorough description provided on the hierarchical confirmatory factor analysis that was conducted to assess the previously reported seven-factor hierarchical structure of the HAI (Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015). Previous reports on the factor structure of the HAI provided limited written descriptions on the structural model and how it was tested. What was available was images of the structural model (Schindler et al., 2014; Schreiber et al., 2013; Yoon, 2017) and statistical reports on factor analyses and model fit indices, which included the degrees of freedom (Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015). From the images of the structural model and the same reported degrees of freedom for each tested model it can be deduced that the same seven-factor hierarchical structure was tested in the three most recent studies of the HAI (Schreiber et al., 2013; Yoon, 2017; Yoon et al., 2015). The present study added to this literature base by providing a thorough written description of the seven-factor hierarchical model and how it was tested, which has not previously been done.

In addition to the statistical strengths of this study, the seventh strength of this study is that the population included in this study has never previously been sampled to evaluate the HAI. Exploring the utility of the HAI with new populations potentially provides support for its use across different groups, including other non-community or clinical groups, as was found here for problematic substance users.

There are a few limitations to consider in the present study. First, while the CAGE-AID and an additional screening question were used, it is still possible that some respondents had not experienced a substance use issue in the past or at the time of the survey (i.e., feigned substance

use problems). The additional screening question was added to account for the use of a screening measure that does not detect deceptive responding. In other words, the additional screening question addressed the potential of a false negative with the CAGE-AID by explicitly asking if they had ever been to treatment or detox, which would confirm they had experienced problematic substance use. However, the clinically significant cut-off score on the CAGE-AID (i.e., a score of 2 or greater) was used to reduce the likelihood of including participants in the final sample who had never experienced any clinically significant issues with substance use. Future research with this population could use a screening measure that can identify feigned responses to improve the accuracy of sample selection. Second, the community and MTurk samples were combined in the present study on the assumption that there were similar without assessing measurement invariance. However, given the small sample collected in the community measurement invariance could not be conducted. Small differences were expected to be present between the samples due to uncontrolled variables and the sample not being randomly selected (i.e., standard sampling variability). For example, small differences could be attributed to the methods of data collection or the different geographical regions in which participants were located. For a more thorough review of sample differences please see Appendix R.

Third, the results of this study may not be generalizable to other populations, behavioural addictions (e.g., gambling addiction), or countries due to possible cultural differences with regards to employment and the Hope-Centered Career Competencies. Moreover, the sample was limited to individuals residing in North America. Therefore, the results of this study may not be generalizable to individuals from other countries. The HAI has predominantly been tested with North American populations as well as one study with German participants, limiting the HAI's generalizability to individuals from other countries (Niles et al., 2010a; Schreiber, et al., 2013;

Schindler et al., 2014; Yoon, 2017; Yoon et al., 2015; Yoon et al., 2020). Furthermore, the sample collected for this study is not a random sample of problematic substance users, reducing its degree of generalizability. Therefore, the results of the study may disproportionately reflect individuals who choose to participate in this type of research for specific reasons such as finding the topic interesting or personally meaningful/relevant, the need for work or those who strongly needed the honorarium (Brawley & Pury, 2016; Paolacci et al., 2010; Ross et al., 2010). MTurk workers previously have reported that they complete tasks for reasons such as a way to make money, for entertainment, or to “kill time” (Paolacci et al., 2010; Ross et al., 2010). Therefore, these reasons could further differentiate the MTurk sample from non-MTurk samples. Additionally, a study examining the characteristics of individuals who have experienced problematic substance use who decide to participate in research found that females, those with significant others, older clients, and urban outpatient clients are more likely to participate in addictions research (Vaughn et al., 2002). Therefore, this should also be considered when assessing the possible self-selected nature of the sample in this study.

Another limitation of this study was the extent of representativeness of the sample to Canadian and American problematic substance users. The average age of the total sample ($M = 36.15$ years, $SD = 10.56$) did not reflect the ages of individuals who most frequently experience problematic substance use in the United States and Canada. In the United States, the highest rate of problematic substance use is among adults aged 18–25 (18.9%) compared to those aged 26 years old or older (7.0%; Substance Abuse and Mental Health Statistics and Quality [SAMHSA], 2012). Similarly, Statistics Canada reports that individuals aged 15–24 have the highest rates of substance use disorder (11.9%) and those 45 years old and older have the lowest rates (1.9%; Statistics Canada, 2013). Furthermore, a recent study conducted in Ontario found that the

majority of their sample of cannabis users were between 18 and 34 years old ($n = 107$, 48.2%) followed by those aged 35–54 ($n = 74$, 33.2%) and those 55 years old or older ($n = 41$, 18.6%; Goulet-Stock et al., 2017). Additionally, a study in Vancouver, British Columbia found that 25% ($n = 214$) of their sample was 50 years old or older (Sztramko et al., 2014). Therefore, the existing literature suggests that the highest rate of substance use is commonly found among those aged 18 to 34 whereas problematic substance user among those aged 50 and older is less common.

Participants were included in this study if they had ever experienced problematic substance use which may explain why the present samples' average age is higher than the age ranges reported for Canada and the United States. Although, the age range found in the present sample (i.e., ages 19–72) does capture those who are most likely to have previously experienced problematic substance use it also captures those who are less likely, allowing the results of this study to be generalizable to a wide range of age groups (Goulet-Stock et al., 2017; SAMHSA, 2012; Statistics Canada, 2013; Sztramko et al., 2014). Furthermore, the present sample reflects the source that the large majority of participants were sampled from: MTurk. MTurk workers, on average, are around 30 years old, which is close to the average age found in the present sample, so the results speak best to MTurk workers with problematic substance use (Berinsky et al., 2012; Paolacci et al., 2010; Shapiro et al., 2013; Walters et al., 2018). Moreover, the average age of participants found in this study does reflect those reported by Vaughn and colleagues' (2002) who found that older individuals are more likely to participate in addictions research. Therefore, the older average age in the present study represents an expected, replicated sampling bias with research that does not randomly select participants.

In sum, the present sample is characteristic of substance users who are more likely to participate in addictions research as well as those who are MTurk workers. Furthermore, this sample is inclusive of those age groups who are more likely to engage in substance misuse given the large age range captured in this study. While the age groups captured in the study do not primarily represent those most likely to engage in substance misuse, it does include a broad spectrum of individuals both young and old. This may increase the generalizability of the results to a wide age range of individuals who have experienced problematic substance use in North America. It is important to note that it is possible that these differences were found due to the broad inclusion criteria used in the present study with the only requirements being that participants were from North America, were 18 years old or older, and had experienced problematic substance use measured by the CAGE-AID and additional screening item. Furthermore, many of the reports on Canadian and American problematic substance users were reporting on individuals who had experienced problematic substance use in the past 12 months (Statistics Canada, 2013; SAMHSA, 2012) whereas the present study included individuals who had ever had an issue with problematic substance use.

The present study also had more female ($n = 392, 52.2\%$) than male ($n = 358, 47.67\%$) participants, which does not reflect the rates of problematic substance use in Canada (6.4% of males and 2.5% of females; Statistics Canada, 2013) or the United States (9.4% of males and 5.2% of females; SAMHSA, 2012). However, this finding was similar to Vaughn and colleagues' (2002) finding that females are more likely to participate in addictions research. Furthermore, it has also been reported that MTurk workers are more likely to be female (Berinsky et al., 2012; Paolacci et al., 2010). Therefore, given these findings, it is not surprising that the present sample had more female participants than would be expected. However, the

proportion of female and male participants was almost even, allowing for greater generalizability of the findings to both male and female problematic substance users. Future research could seek a less biased and more representative problematic substance sample through random sampling techniques rather than a convenience sample.

The ethnicity of the participants included in the present study did more closely reflect the rates of substance use reported for different ethnic groups in Canada and the United States with those who are White, Black, and Latin American having the highest rates of substance use in the present sample (i.e., White ($n = 586$, 78.03%), Black ($n = 43$, 5.73%), Latin American ($n = 35$, 4.66%), Filipino ($n = 13$, 1.73%), Chinese ($n = 9$, 1.2%), South Asian ($n = 8$, 1.07%), Korean ($n = 6$, 0.79%), South East Asian ($n = 6$, 0.8%), Aboriginal ($n = 6$, 0.8%), Arab/West Asian ($n = 4$, 0.53%), Japanese ($n = 4$, 0.53%)). A study conducted in Canada reported White individuals are more likely to report current substance use (80.7%) than South Asian and Chinese individuals (41.0% and 63.5%, respectively), which was found in the present study (Nakamura et al., 2011). However, the present sample was not representative of the Aboriginal populations in Canada and the United States. A study with Aboriginal individuals in Canada found that 33.3% ($N = 67$) of the sample was abusing substances (Jacobs & Gill, 2001). Another study in Vancouver, British Columbia found that 36.96% ($n = 316$) of their sample of current and former substance users identified as Aboriginal (Sztramko et al., 2014). Similarly, in the United States, the highest rates of substance use have been found with American Indians and Alaskan Natives (21.8%) followed by African Americans (10.1%), Hispanics or Latinos (8.8%), Whites (8.7%), Native Hawaiians and Pacific Islanders (7.8%), and Asian Americans (3.2%; SAMHSA, 2012). With only six (0.8%) Aboriginal participants in the present study, the generalizability of the results to this group are limited. A possible reason why the present sample has different demographics than

those reported for Canada and the United States, in general, may be because the majority of the sample was recruited through MTurk. Previous research on the demographic characteristics of MTurk workers has found the large majority of workers reside in the United States and India with less than 25% of workers from other parts of the world (Paolacci et al., 2010; Ross et al., 2010). Specifically, within the United States, there is an overrepresentation of Asian MTurk workers and an underrepresentation of Hispanic and Black MTurk workers (Berinsky et al., 2012). This is represented in the present sample with 6.66% ($n = 50$) of the sample being Asian, exceeding the proportion of Hispanic ($n = 35$, 4.66%) and Black ($n = 43$, 5.73%) participants. The overrepresentation of Asian MTurk workers is further supported by the United States Census Bureau (2019), who reported that the majority of the United States population is White (76.5%) followed by 18.3% Hispanic or Latino, 13.4% Black, and 5.9% Asian. Overall, MTurk workers are more likely to be White or Asian, which is likely why the majority of the present sample reported being White (78.03%; Berinsky et al., 2012). Therefore, the present results may be less generalizable to other ethnic groups.

With regards to employment status, in the present sample, the majority of participants were employed full-time (i.e., 65.91% employed full-time, 16.11% employed part-time, 17.97% unemployed). Similarly, a study with current and former substance users in Vancouver, British Columbia found that 78.95% ($n = 675$) of their sample reported being currently employed (Sztramko et al., 2014). Moreover, similar employment demographics have been reported among adults 18 years old or older in the United States with 51.9% of those with substance dependence or abuse being employed full-time (SAMHSA, 2012). When compared to the entire United States population 16.9% of unemployed individuals, 10.3% of those employed part-time, and 9.1% of those employed full-time have substance dependence or abuse (SAMHSA, 2012).

Furthermore, in the present study the majority of participants had completed a Bachelor's degree ($n = 239$, 31.82%) or had graduated from high school ($n = 163$, 21.7%). Similarly, in the United States, those who have not graduate high school have the highest rate of substance dependence (10.3%) followed by those with some college education (9.7%), those with no college education (8.8%), and those who have graduated from college or university (7.2%; SAMHSA, 2012). Therefore, a larger proportion of individuals who have not graduated from high school have substance use dependence or abuse than those who graduated high school, those with some college education, and those who graduated from college or university. The present sample included individuals who had ever experienced problematic substance use. Therefore, they may have experienced problematic substance use in the past and are no longer experiencing employment difficulties resulting in more participants reporting working full-time. Relatedly, the present sample may have more participants with higher degrees of education due to their problematic substance use occurring in the past and therefore not affecting subsequent educational achievement. Furthermore, MTurk workers on average are more likely to have completed college, be underemployed, and have lower socioeconomic status than the general population (Berinsky et al., 2012; Paolacci et al., 2010; Shapiro et al., 2013; Walters et al., 2018). This was somewhat representative of the present sample whom the majority had completed a Bachelor's degree.

Moreover, the present sample may have reported working more than the average problematic substance user due to MTurk work increasing their income and working hours. In sum, the present sample may be more representative of problematic substance users who have gained a Bachelor's degree and are working full-time rather than those who have not gained any post-secondary education, are working part-time, or are unemployed. Therefore, the present

findings are less generalizable to those who are unemployed and those with no post-secondary education. However, this sample expands on existing research that has focused on unemployed job seekers (Amundson et al., 2018; Clarke et al. 2016; Yoon et al., 2019) and university students (Niles et al., 2010a; Yoon et al., 2015) by evaluating the HAI on a sample that is predominantly employed and working full-time.

5.2 Implications for research and the counselling profession

This study furthers the psychometric research on the HAI. Moreover, the results of this study could provide further evidence supporting the use of the HAI, in clinical practice, such as with those with problematic substance use, and future research, with individuals currently experiencing substance use issues and with those in recovery. The current study confirmed the hierarchical factor structure of the HAI and found adequate reliability for the total scale and subscale scores. These findings provide further validation for Hope-Action Theory and the seven career competencies assessed by the HAI. Furthermore, this was the first study to assess the psychometric properties of the HAI with a non-developmental disorder clinical population, which expands the utility of the HAI to not only a new population but a new type of population (i.e., common clinical versus community). So, based on the results of this study, it appears that Hope-Action Theory, at least how it is measured by the HAI, appears to be a valid conceptualization for not only typical populations (e.g., university students, unemployed individuals) but clinical populations of problematic substance users. Future research could examine the HAI's use with other clinical populations (e.g., process/behavioural addictions, mental health conditions, physical health conditions).

It is hoped that mental health professionals will find utility in this measure for assessing a substance-abusing client's career-related hope and career competencies. This measure may also be useful for professionals working with individuals with substance use issues to assist them in facilitating hopefulness related to employment. Professionals can utilize the results on the HAI to provide direction on which Hope-Centered Career Competence interventions would be useful to support clients in strengthening areas of weakness addressed by the HAI. Furthermore, the HAI produces a narrative report which could be a useful tool for both professionals and clients for interpreting the HAI results and developing a plan for improving on those career competencies that are not as strong. Moreover, the HAI can provide a quick overview of the strengths and weaknesses among the Hope-Centered Career Competences for clients who has experienced problematic substance use. As such, the HAI may be a useful measure for professionals working with individuals in recovery because it can provide guidance on how to support individuals with lower levels of career hope and weakened pathways for developing and implementing work-related goals and establishing a career development plan.

Securing a desire to re-enter the workforce, developing a plan, and implementing those plans can significantly influence positive outcomes for an individual in recovery from substance use (Ferrari et al., 2012; Grigson, 2008). The HAI may also be a useful tool for assessing the effectiveness of career hope interventions through pre- post-intervention assessment methods. Utilizing validated measures to determine the effectiveness of treatment approaches and interventions can provide useful information for mental health professionals on what works rather than relying solely on unstructured clinical judgement. Relatedly, the HAI could be included as an intake measure to help mental health professionals determine what types of services may be useful and/or appropriate for a new client. Utilizing the HAI as an intake

measure could provide useful information for mental health professionals on where a new client is at with regards to career-related hope and career competencies. This information could help mental health professionals determine where to begin when working with a new client and which career competencies may need to be strengthened before employing advanced interventions. The HAI has a wide range of utility for mental health professionals and this study provides support for its use with problematic substance users.

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Appendices

Appendix A: Substance Use Centers

Agency	Program	Location
Circle of Eagles Lodge Society		Vancouver
Starting Over Society		Vancouver
Avalon Women's Centre		Vancouver
Turning Point Recovery	Women's Program	Vancouver
Turning Point Recovery	Men's Program	Richmond
Turning Point Recovery	Women's Program	Richmond
Charlford House Society for Women		Burnaby

Appendix B: Recruitment Poster



THE UNIVERSITY
OF BRITISH COLUMBIA

PARTICIPANTS NEEDED FOR CAREER HOPE STUDY

Participants will be asked to complete a survey related to career hope. Time needed to complete the study is approximately 15-20 minutes. Participants will be offered a copy of their results on the Hope-Action-Inventory and be entered into a draw for 1 of 4 \$25.00 gift cards.

You are eligible to participate if:

- 18 years old or older
- have ever had a significant problem with alcohol or drug use

To participate please e-mail Lauren Currie (lcurrie@ubc.ca), ask reception, or use this QR Code.



For more information please contact:
Lauren Currie



Career Hope Study

PARTICIPANTS NEEDED FOR CAREER HOPE STUDY



Participants will be asked to complete a survey related to career hope. Time needed to complete the study is approximately 15-20 minutes. Participants will be offered a copy of their results on the Hope-Action-Inventory and be entered into a draw for 1 of 4 \$25.00 gift cards.

You are eligible to participate if:

- 18 years old or older
- have ever had a significant problem with alcohol or drug use

To participate please, ask reception, e-mail Lauren Currie (_____), or use this QR Code.



For more information please contact:
Lauren Currie

Principal Investigator: Dr. Robinder Bedi

Appendix D: Demographic Questionnaire

1. Gender:
 - Male
 - Female
 - Other: _____

2. Age: _____

3. Ethnicity:
 - White (European)
 - Aboriginal (Inuit, Metis, North American Indian)
 - Black (e.g., African, Haitian, Jamaican, Somali)
 - Arab/West Asian (e.g., Armenian, Egyptian, Iranian, Lebanese, Moroccan)
 - Chinese
 - Filipino
 - Japanese
 - Korean
 - Latin American
 - South Asian
 - South East Asian
 - Other: _____

4. Relationship Status:
 - Never legally married
 - Single never married
 - Legally married (and not separated)
 - Separated, but still legally married
 - Common law
 - Divorced
 - Widowed

5. Are you currently a student?
 - Yes, full-time
 - Yes, part-time
 - No

6. What is your highest level of education?
 - Some high school or less
 - Graduated high school
 - Attending 2-3 year college
 - Attending 4 year college
 - Associate degree or diploma/certificate, completed
 - Bachelor's degree, completed

- Attending graduate school, master's level
 - Master's degree of equivalent, completed
 - Attending graduate school, doctoral level
 - Doctoral degree or equivalent, completed
 - Completed an Apprenticable Trade
7. How many years of work experience do you have? _____
8. How many years of full-time work experience do you have throughout your career? _____
9. What is your current employment status?
- Unemployed, not looking for work
 - Unemployed, looking for work
 - Part-Time
 - Full-Time
10. If unemployed, what is the length of time unemployed (in months)?

11. If unemployed, how long have you been looking for work (in months)?

12. If employed, which best describes your current position in the organization you work for?
- Not Applicable
 - Executive
 - Manager/Supervisor
 - Individual Contributor
13. Have you ever attended treatment or detox for substance use?
- Yes
 - No
14. Previous criminal justice system involvement?
- Prior arrests
 - Jail or Prison time
 - No previous criminal justice system involvement
15. Are you currently on probation or parole?
- Yes, I am on probation
 - Yes, I am on parole
 - No

Appendix E: Substance Use Questionnaire

When did you last use the following drugs?

	Never	In the last 30 days	Between 31 days and 12 months	More than 12 months
Alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Amphetamine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Benzodiazepines (e.g., Valium/Xanax)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cannabis products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cocaine (powder)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crack Cocaine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crystal Methamphetamine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ecstasy/MDMA/Molly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
GHB/GBL	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heroin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ketamine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LSD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Magic Mushroom (Psilocybin)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Opioid Painkiller Pills (e.g., Codine, Morphine, Oxycontin, Percocet)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tobacco/cigarettes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other substances [please describe]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other substances [please describe]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other substances [please describe]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other substances [please describe]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other substances [please describe]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix F: CAGE-AID

When thinking about drug use, include illegal drug use and the use of prescription drug use other than prescribed.

1. Have you ever felt you ought to cut down on your drinking or drug use? **Yes** **No**
2. Have people annoyed you by criticizing your drinking or drug use? **Yes** **No**
3. Have you felt bad or guilty about your drinking or drug use? **Yes** **No**
4. Have you ever had a drink or used drugs first thing in the morning to steady your nerves or to get rid of a hangover? **Yes** **No**

Appendix G: Hope Action Inventory

For each item, rate how true each of the statements is for you using the response scale shown below.

	Definitely False	Somewhat False	Somewhat True	Definitely True
I am hopeful when I think about my future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think about things that have happened to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can describe who I am.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often dream about my future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I set deadlines to complete my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I keep myself focused so that I can complete my plans.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am willing to try new experiences that might help me to achieve my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe my dreams will come true.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often think about how my situation affects me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can list at least five things I am good at.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often vision my future 2, 5, or 10 years from now.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often list things I need to do to reach my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I work hard to meet my goals even when there are distractions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am open to change that might improve my chance to reach my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think positively about my future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think about how my person experience influence my decisions in life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am clear about who I am	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often imagine possible future events in my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make a list of things what I want to complete.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take the next steps to meet my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am open to making changes to my plans when necessary.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general, I stay hopeful even when I face difficulties in my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I think about how my life experiences have influenced me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know what I like and dislike.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I spend time thinking about what will happen in my future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I plan for my future..	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take action once I have clear goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am prepared to make changes if the situation changes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix H: Community Online Consent Form

Consent Form Career Hope Study

Principal Investigator: Robinder Bedi, Ph.D., R. Psych., Department of Educational and Counselling Psychology, and Special Education, UBC, tel: _____, email: _____

Co-Investigator(s): Lauren Currie, Master's Student, Department of Educational and Counselling Psychology, Education Department, UBC, email: _____

Sponsor:

This study is not funded. The researchers declare no conflicts of interest.

Purpose:

The purpose of this study is to examine the validity of a measure of career related hope.

Study Procedures:

This study will be completed in one online session. You will be asked questions about your employment experiences and hope related to career. This study is expected to take approximately 15 minutes in total.

Potential Risks:

There are no known risks associated with this study. You may withdraw without penalty from this study at any time if you no longer wish to participate and you will be provided with information about mental health resources at the end of the study in case of any residual distress.

Potential Benefits:

Participation in this study will increase your knowledge of the study topic. At the end of the study you will be provided with Dr. Bedi's lab website address and his research assistant's contact information so that you can find the results of this study in the future, if you are interested.

Confidentiality:

This study can be completed anonymously. Participants would like to be entered into the draw or receive their results on a measure of career related hope will need to provide the researchers with their e-mail address.

This online survey is hosted by Qualtrics, a web survey company hosted by UBC. Qualtrics has ISO (Information Security Management System) 27001 Certification. It also meets the privacy and protect standards outlines in the Health Information Technology for Economic and Clinical Health Act (HITECH) and complies with the BC Freedom of Information and Protection of Privacy Act (FIPPA). This survey or questionnaire does not ask for personal identifiers or any information that may be used

to identify you. The websurvey company servers record incoming IP addresses of the computer that you use to access the survey but no connection is made between your data and your computer's IP address. If you choose to participate in the survey, you understand that your responses to the survey questions will be stored and backed up in the Canada. The security and privacy policy for the websurvey company can be found at the following link: <http://www.qualtrics.com/security-statement/>

Once the data are collected, all information will be coded and stored as numbers in a statistical database on password-protected computers in Dr. Bedi's Research Lab. The only people who will be able to access these files are Dr. Bedi and his research assistants, who have signed confidentiality forms making sure that they will not reveal the content of files. The data will be kept in locked cabinets or in password-protected computer files for five years after the publication of any paper(s) based on the result of this study, as required by the University, before being destroyed. When the results of this study are published the researcher may be required to make the data publicly available. Making data publicly available has the potential for increasing participant risk. However, the published data will not contain any information that is personally identifying. Once the data is made publicly available, participants will no longer be able to withdraw their data from the study.

Remuneration/Compensation:

You will be entered into a draw in which participants will be eligible to receive one of four \$25.00 CAN gift cards. When the study is completed four participants will be selected randomly to receive each gift card. Participants will also be offered a report based on their results on the Hope-Action-Inventory which participants may find useful for better understanding their degree of career related hope.

Participants who choose to withdraw must phone or e-mail the researchers as soon as possible indicating their withdrawal. By doing so the researchers will be able to grant these participants with the appropriate credit by entering them into the draw and provide a debriefing form.

Contact for information about the study:

If you have any questions or desire further information with respect to this study, you may contact Dr. Robinder Bedi (tel: _____ ; email: _____) or Lauren Currie (email: _____)

Contact for concerns about the rights of research participants:

If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the UBC Office of Research Ethics at 604-822-8598 or if long distance e-mail RSIL@ors.ubc.ca or call toll free 1-877-822-8598.

Contact for concerns about health and wellness:

If you have any concerns about your health and wellness, you may contact any of the following resources:

Canada

24-Hour Crisis Line: 1-833-456-4566 (toll-free)

Crisis Text Line: 45645

Alcohol and Substance Use Helpline: 1-877-327-4636 (toll-free)

Consent:

Your participation in this study is entirely voluntary and you may refuse to participate or withdraw from the study at any time.

By clicking the box below, you are indicating that you have read the consent form, that you are free to withdraw without consequence at any time, and hereby consent to voluntarily participate in this study.

I have read and understand the nature of the present study

Appendix I: Community Consent Form

Consent Form Career Hope Study

Principal Investigator: Robinder Bedi, Ph.D., R. Psych., Department of Educational and Counselling Psychology, and Special Education, UBC, tel: _____, email: _____

Co-Investigator(s): Lauren Currie, Master's Student, Department of Educational and Counselling Psychology, Education Department, UBC, email: _____

Sponsor:

This study is not funded. The researchers declare no conflicts of interest.

Purpose:

The purpose of this study is to examine the validity of a measure of career related hope.

Study Procedures:

This study will be completed on paper. You will be asked questions about your employment experiences and hope related to career. This study is expected to take approximately 15 minutes in total.

Potential Risks:

There are no known risks associated with this study. You may withdraw without penalty from this study at any time if you no longer wish to participate and you will be provided with information about mental health resources at the end of the study in case of any residual distress.

Potential Benefits:

Participation in this study will increase your knowledge of the study topic. At the end of the study you will be provided with Dr. Bedi's lab website address and his research assistant's contact information so that you can find the results of this study in the future, if you are interested.

Confidentiality:

This study can be completed anonymously. Participants would like to be entered into the draw or receive their results on a measure of career related hope will need to provide the researchers with their e-mail address.

Once the data are collected, all information will be coded and stored as numbers in a statistical database on password-protected computers in Dr. Bedi's Research Lab. The only people who will be able to access these files are Dr. Bedi and his research assistants, who have signed confidentiality forms making sure that they will not reveal the content of files. The data will be kept in locked cabinets or in password-protected computer files for five years after the publication of any paper(s) based on the result of

this study, as required by the University, before being destroyed. When the results of this study are published the researcher may be required to make the data publicly available. Making data publicly available has the potential for increasing participant risk. However, the published data will not contain any information that is personally identifying. Once the data is made publicly available, participants will no longer be able to withdraw their data from the study.

Remuneration/Compensation:

You will be entered into a draw in which participants will be eligible to receive one of four \$25.00 CAN gift cards. When the study is completed four participants will be selected randomly to receive each gift card. Participants will also be offered a report based on their results on the Hope-Action-Inventory which participants may find useful for better understanding their degree of career related hope.

Participants who choose to withdraw must phone or e-mail the researchers as soon as possible indicating their withdrawal. By doing so the researchers will be able to grant these participants with the appropriate credit by entering them into the draw and provide a debriefing form.

Contact for information about the study:

If you have any questions or desire further information with respect to this study, you may contact Dr. Robinder Bedi (tel: _____; email: _____) or Lauren Currie (email: _____)

Contact for concerns about the rights of research participants:

If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the UBC Office of Research Ethics at 604-822-8598 or if long distance e-mail RSIL@ors.ubc.ca or call toll free 1-877-822-8598.

Contact for concerns about health and wellness:

If you have any concerns about your health and wellness, you may contact any of the following resources:

Canada

24-Hour Crisis Line: 1-833-456-4566 (toll-free)

Crisis Text Line: 45645

Alcohol and Substance Use Helpline: 1-877-327-4636 (toll-free)

Consent:

Your participation in this study is entirely voluntary and you may refuse to participate or withdraw from the study at any time.

By completing this questionnaire, you are consenting to participate in this study.

Appendix J: Gift Card Draw Contact Form

Gift Card Draw and HAI Results Contact Form

Thank you for participating in this survey! If you would like to be entered in to the draw please select “I would like to be entered into the draw” and provide an e-mail address below. This information will be used by the researcher to contact you if you are randomly selected to win one of four \$25.00 gift cards to Tim Hortons, Starbucks, or Subway. Please note that you are not required to complete this form if you would prefer to not be entered into the draw or receive a copy of your HAI results.

- I would like to be entered into the draw

If you would like to a copy of your results on the Hope-Action-Inventory indicate this below by selecting “I would like to receive my Hope-Action-Inventory results” and provide your preferred e-mail address for your results to be sent to. The Hope-Action-Inventory measures hopefulness and hope-centered career competencies for effective career self-management (hope, self-reflection, self-clarity, visioning, goal setting, implementing, and adapting).

- I would like to receive my Hope-Action-Inventory results

E-mail Address: _____

Please place all study materials inside the envelope and seal the envelope before returning it to the researcher onsite of staff.

Appendix K: Hope-Action-Inventory Results E-mail

Thank you for participating in the study entitled “Career Hope Study.” You requested a copy of your results on the Hope-Action-Inventory (attached here). The Hope-Action-Inventory measures hopefulness and hope-centered career competencies for effective career self-management (hope, self-reflection, self-clarity, visioning, goal setting, implementing, and adapting).

NOTICE:

There is the possibility that the results do not accurately show your current status. This could depend on your response patterns (for example, too strict for yourself or too generous for yourself). Therefore, please keep in mind that your results of the Hope-Action-Inventory assessment may not reflect your actual situation or ability. As such the results attached here should be reviewed cautiously. The researchers in this study are not able to provide additional follow-up services related to the Hope-Action-Inventory results. Please discuss your results with a career or mental health professional before acting on the results presented here.

Sincerely,

Lauren Currie
University of British Columbia

Appendix L: MTurk Screening Survey Advertainment

Title

Short Survey Screening (~1 minute)

Description

You are invited to participate in a brief pre-screening survey to determine your eligibility for our main 15-minute research survey that pays \$0.75. If you meet eligibility criteria, the Main survey will be made available to you.

Principal Investigator: Dr. Robinder Bedi

Time Allotted

10 min

Expires

120 days

Qualifications Required

Location is one of: CA or USA

HIT approval rate (%) is not less than 95

Appendix M: MTurk Main Survey Advertainment

Title

Career Hope Study (~15 minutes)

Description

You are invited to participate in a study examining the validity of a measure of career related hope. The study will take approximately 15 minutes to complete.

If you are interested determining your eligibility for this study please complete the pre-screening survey, "Short Survey Screening (~1 minute)"

While there are multiple batches of this HIT you can only complete it once. Only your first HIT will be approved.

Principal Investigator: Dr. Robinder Bedi

Time Allotted

1 hour

Expires

120 days

Qualifications Required

Location is one of: CA or USA

HIT approval rate (%) is not less than 95

Pre-screen is not less than 1

Appendix N: MTurk Screening Survey Consent Form

Consent Form Screening Survey

Principal Investigator: Robinder Bedi, Ph.D., R. Psych., Department of Educational and Counselling Psychology, and Special Education, UBC, tel: _____, email: _____

Co-Investigator(s): Lauren Currie, Master's Student, Department of Educational and Counselling Psychology, Education Department, UBC, email: _____

Sponsor:

This study is not funded. The researchers declare no conflicts of interest.

Purpose:

The purpose of this pre-screening survey is to determine your eligibility for the main study, "Career Hope Study".

Study Procedures:

This study will be completed in one online session. You will be asked questions about your substance use. This survey is expected to take approximately 1 minute in total.

Potential Risks:

There are no known risks associated with this study. You may withdraw without penalty from this study at any time if you no longer wish to participate.

Potential Benefits:

Participation in this survey will determine your eligibility for the main study.

Confidentiality:

This study can be completed anonymously. Participants will be asked to provide their MTurk Worker ID to allow the researcher to contact participants through MTurk who are eligible for the main study. This online survey is hosted by Qualtrics, a web survey company hosted by UBC. Qualtrics has ISO (Information Security Management System) 27001 Certification. It also meets the privacy and protect standards outlines in the Health Information Technology for Economic and Clinical Health Act (HITECH) and complies with the BC Freedom of Information and Protection of Privacy Act (FIPPA). This survey or questionnaire does not ask for personal identifiers or any information that may be used to identify you. The websurvey company servers record incoming IP addresses of the computer that you use to access the survey but no connection is made between your data and your computer's IP address. If you choose to participate in the survey, you understand that your responses to the survey questions will be stored and backed up in the Canada. The security and privacy policy for the websurvey company can be found at the following link: <http://www.qualtrics.com/security-statement/>

Once the data are collected, all information will be coded and stored as numbers in a statistical database on password-protected computers in Dr. Bedi's Research Lab. The only people who will be able to access these files are Dr. Bedi and his research assistants, who have signed confidentiality forms making sure that they will not reveal the content of files. The data will be kept in locked cabinets or in password-protected computer files for five years after the publication of any paper(s) based on the result of this study, as required by the University, before being destroyed. When the results of this study are published the researcher may be required to make the data publicly available. Making data publicly available has the potential for increasing participant risk. However, the published data will not contain any information that is personally identifying. Once the data is made publicly available, participants will no longer be able to withdraw their data from the study.

Remuneration/Compensation:

Once you have completed the study you will earn \$0.05 USD payable via your account on MTurk.

Participants who choose to withdraw their data from the study must phone or e-mail the researchers indicating their withdrawal within four weeks. To withdraw your data from the study you will have to provide the researcher with your MTurk Worker ID. If you contact the researcher you will be identifiable.

Contact for information about the study:

If you have any questions or desire further information with respect to this study, you may contact Dr. Robinder Bedi (tel: _____ ; email: _____) or Lauren Currie (email: _____)

Contact for concerns about the rights of research participants:

If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the UBC Office of Research Ethics at 604-822-8598 or if long distance e-mail RSIL@ors.ubc.ca or call toll free 1-877-822-8598.

Contact for concerns about health and wellness:

If you have any concerns about your health and wellness, you may contact any of the following resources:

Canada

24-Hour Crisis Line: 1-833-456-4566 (toll-free)

Crisis Text Line: 45645

Alcohol and Substance Use Helpline: 1-877-327-4636 (toll-free)

United States

24-Hour Crisis Line: 1-800-273-8255

Crisis Text Line: Text MHA to 741741

Addiction and Alcohol Hotline: 844-244-3171 (toll-free)

Consent:

Your participation in this study is entirely voluntary and you may refuse to participate or withdraw from the study at any time.

By clicking the box below, you are indicating that you have read the consent form, that you are free to withdraw at any time, and hereby consent to voluntarily participate in this study.

I have read and understand the nature of the present study

Appendix O: MTurk Main Survey Invitation E-mail

Subject: You qualify for the Main Survey! ~ 15 mins, \$0.75

Message from BediLab ()

Thank you for participating in our Pre-Screen Survey. You are now eligible and are being invited to participate in a study looking at career related hope.

HIT Name: Career Hope Study (~15 minutes)

Requester: BediLab

While there are multiple batches of this HIT you can only complete it once. Only your first HIT will be approved.

If you have any questions, please contact Lauren Currie at

Thank you for your past participation, and hope you enjoy this HIT.

Lauren Currie
University of British Columbia
Principal Investigator: Dr. Robinder Bedi

Greeting from Amazon Mechanical Turk,

The message above was sent by an Amazon Mechanical Turk user.
Please review the message and respond to it as you see fit.

Sincerely,
Amazon Mechanical Turk
<http://www.mturk.com>

Appendix P: MTurk Main Survey Consent Form

Consent Form Career Hope Study

Principal Investigator: Robinder Bedi, Ph.D., R. Psych., Department of Educational and Counselling Psychology, and Special Education, UBC, tel: _____, email: _____

Co-Investigator(s): Lauren Currie, Master's Student, Department of Educational and Counselling Psychology, Education Department, UBC, email: _____

Sponsor:

This study is not funded. The researchers declare no conflicts of interest.

Purpose:

The purpose of this study is to examine the validity of a measure of career related hope.

Study Procedures:

This study will be completed in one online session. You will be asked questions about your employment experiences and hope related to career. This study is expected to take approximately 15 minutes in total.

Potential Risks:

There are no known risks associated with this study. You may withdraw without penalty from this study at any time if you no longer wish to participate.

Potential Benefits:

Participation in this study will increase your knowledge of the study topic. At the end of the study you will be provided with Dr. Bedi's lab website address and his research assistant's contact information so that you can find the results of this study in the future, if you are interested.

Confidentiality:

This study can be completed anonymously. Participants will be asked to provide their MTurk Worker ID to allow the researcher to connect their responses in the screening survey to the main study. Participants would like to receive their results on a measure of career related hope will need to e-mail the researchers.

This online survey is hosted by Qualtrics, a web survey company hosted by UBC. Qualtrics has ISO (Information Security Management System) 27001 Certification. It also meets the privacy and protect standards outlines in the Health Information Technology for Economic and Clinical Health Act (HITECH) and complies with the BC Freedom of Information and Protection of Privacy Act (FIPPA). This survey or questionnaire does not ask for personal identifiers or any information that may be used to identify you. The websurvey company servers record incoming IP addresses of the

computer that you use to access the survey but no connection is made between your data and your computer's IP address. If you choose to participate in the survey, you understand that your responses to the survey questions will be stored and backed up in the Canada. The security and privacy policy for the websurvey company can be found at the following link: <http://www.qualtrics.com/security-statement/>

Once the data are collected, all information will be coded and stored as numbers in a statistical database on password-protected computers in Dr. Bedi's Research Lab. The only people who will be able to access these files are Dr. Bedi and his research assistants, who have signed confidentiality forms making sure that they will not reveal the content of files. The data will be kept in locked cabinets or in password-protected computer files for five years after the publication of any paper(s) based on the result of this study, as required by the University, before being destroyed. When the results of this study are published the researcher may be required to make the data publicly available. Making data publicly available has the potential for increasing participant risk. However, the published data will not contain any information that is personally identifying. Once the data is made publicly available, participants will no longer be able to withdraw their data from the study.

Remuneration/Compensation:

Once you have completed the study you will earn \$0.75 USD payable via your account on MTurk. Participants will also be offered a report based on their results on the Hope-Action-Inventory which participants may find useful for better understanding their degree of career related hope.

Participants who choose to withdraw their data from the study must phone or e-mail the researchers indicating their withdrawal within four weeks. To withdraw your data from the study you will have to provide the researcher with your MTurk Worker ID. If you contact the researcher you will be identifiable.

Contact for information about the study:

If you have any questions or desire further information with respect to this study, you may contact Dr. Robinder Bedi (tel: _____; email: _____) or Lauren Currie (email: _____)

Contact for concerns about the rights of research participants:

If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the UBC Office of Research Ethics at 604-822-8598 or if long distance e-mail RSIL@ors.ubc.ca or call toll free 1-877-822-8598.

Contact for concerns about health and wellness:

If you have any concerns about your health and wellness, you may contact any of the following resources:

Canada

24-Hour Crisis Line: 1-833-456-4566 (toll-free)

Crisis Text Line: 45645

Alcohol and Substance Use Helpline: 1-877-327-4636 (toll-free)

United States

24-Hour Crisis Line: 1-800-273-8255

Crisis Text Line: Text MHA to 741741

Addiction and Alcohol Hotline: 844-244-3171 (toll-free)

Consent:

Your participation in this study is entirely voluntary and you may refuse to participate or withdraw from the study at any time.

By clicking the box below, you are indicating that you have read the consent form, that you are free to withdraw at any time, and hereby consent to voluntarily participate in this study.

I have read and understand the nature of the present study

Appendix Q: R Code

```
###-----Hierarchical Confirmatory Factor Analysis-----###
```

```
install.packages("lavaan")
install.packages("semPlot")
install.packages("semTools")
install.packages("psych")
library(lavaan)
library(semPlot)
library(semTools)
library(psych)
```

#Specifying the Model

```
spec.1 <- '
HAI =~ ADP + GP + HP + IMP + SC + SRF + VIS
ADP =~ HAI7 + HAI14 + HAI21 + HAI28
GP =~ HAI5 + HAI12 + HAI19 + HAI26
HP =~ HAI1 + HAI8 + HAI15 + HAI22
IMP =~ HAI6 + HAI13 + HAI20 + HAI27
SC =~ HAI3 + HAI10 + HAI17 + HAI24
SRF =~ HAI2 + HAI9 + HAI16 + HAI23
VIS =~ HAI4 + HAI11 + HAI18 + HAI25
'
```

#HCFA Model (“ordered” option will use DWLSL with polychoric correlations)

```
model <- cfa(spec.1, data = chs, rotation="oblique", ordered=c("HAI1", "HAI2", "HAI3",
"HAI4", "HAI5", "HAI6", "HAI7", "HAI8", "HAI9", "HAI10", "HAI11", "HAI12", "HAI13",
"HAI14", "HAI15", "HAI16", "HAI17", "HAI18", "HAI19", "HAI20", "HAI21", "HAI22",
"HAI23", "HAI24", "HAI25", "HAI26", "HAI27", "HAI28"))
```

#Model Summary

```
summary(model, fit.measures=TRUE, standardized=TRUE, rsquare=TRUE)
```

#Create Visual Path Model

```
semPaths(model, "std", nCharNodes = 8, sizeMan = 8, edge.label.cex = 1.2)
```

#Check Model Parameters

```
lavInspect(model)
```

#Visualize Residual Covariance Matrix (Unstandardized)

```
residuals(model)
```

#Visualize Model Implied Covariance Matrix (Unstandardized)

```
fitted(model)
```

#List Estimates of Path Coefficients

```
coef(model)
```

#Model Parameters

```
parameterEstimates(model, standardized=TRUE)
```

#Model Unstandardized and Standardized Estimates

```
standardizedSolution(model)
```

###-----Internal Consistency-----###

#Extract Measures of Internal Consistency (McDonald's Omega)

```
install.packages("foreign")
library(foreign)
install.packages("MBESS", dependencies = TRUE)
library(MBESS)
```

#HAI

```
scaleReliability(dat=NULL, items = c('HAI1','HAI2','HAI3','HAI4','HAI5','HAI6','HAI7','HAI8',
  'HAI9','HAI10','HAI11','HAI12','HAI13','HAI14','HAI15','HAI16','HAI17','HAI18',
  'HAI19','HAI20','HAI21','HAI22','HAI23','HAI24','HAI25','HAI26',
  'HAI27','HAI28'), digits = 2, ci = TRUE,
  interval.type="normal-theory", conf.level=.95,
  silent=FALSE, samples=1000, bootstrapSeed = NULL,
  omega.psych = TRUE, poly = TRUE)
```

#ADP

```
scaleReliability(dat=NULL, items = c('HAI7','HAI14','HAI21','HAI28'), digits = 2, ci = TRUE,
  interval.type="normal-theory", conf.level=.95,
  silent=FALSE, samples=1000, bootstrapSeed = NULL,
  omega.psych = TRUE, poly = TRUE)
```

#GP

```
scaleReliability(dat=NULL, items = c('HAI5','HAI12','HAI19','HAI26'), digits = 2, ci = TRUE,
  interval.type="normal-theory", conf.level=.95,
  silent=FALSE, samples=1000, bootstrapSeed = NULL,
  omega.psych = TRUE, poly = TRUE)
```

#HP

```
scaleReliability(dat=NULL, items = c('HAI1','HAI8','HAI15','HAI22'), digits = 2, ci = TRUE,
  interval.type="normal-theory", conf.level=.95,
  silent=FALSE, samples=1000, bootstrapSeed = NULL,
  omega.psych = TRUE, poly = TRUE)
```

#IMP

```
scaleReliability(dat=NULL, items = c('HAI6','HAI13','HAI20','HAI27'), digits = 2, ci = TRUE,
  interval.type="normal-theory", conf.level=.95,
  silent=FALSE, samples=1000, bootstrapSeed = NULL,
  omega.psych = TRUE, poly = TRUE)
```

#SC

```
scaleReliability(dat=NULL, items = c('HAI3','HAI10','HAI17','HAI24'), digits = 2, ci = TRUE,
  interval.type="normal-theory", conf.level=.95,
  silent=FALSE, samples=1000, bootstrapSeed = NULL,
  omega.psych = TRUE, poly = TRUE)
```

#SRF

```
scaleReliability(dat=NULL, items = c('HAI2','HAI9','HAI16','HAI23'), digits = 2, ci = TRUE,
  interval.type="normal-theory", conf.level=.95,
  silent=FALSE, samples=1000, bootstrapSeed = NULL,
  omega.psych = TRUE, poly = TRUE)
```

#VIS

```
scaleReliability(dat=NULL, items = c('HAI4','HAI11','HAI18','HAI25'), digits = 2, ci = TRUE,
  interval.type="normal-theory", conf.level=.95,
  silent=FALSE, samples=1000, bootstrapSeed = NULL,
  omega.psych = TRUE, poly = TRUE)
```

```
###-----Inter-Item and Item-Total Correlations-----###
```

```
install.packages("corr")
library(corr)
install.packages("magrittr")
library(magrittr)
```

```
#Inter-Item Correlations
```

```
polychoric(HAIdata,y=NULL,smooth=TRUE,global=TRUE,polycor=FALSE,ML=FALSE,
std.err=FALSE, weight=NULL,correct=.5,progress=TRUE,na.rm=TRUE, delete=TRUE)
```

```
#Item-Total Correlations
```

```
HAIdata$score <- rowMeans(HAIdata) #calculate total score
head(HAIdata)
item_total <- HAIdata %>% polycor() %>% focus(score)
item_total
print(item_total, n = 28)
```

Appendix R: Comparison of Community and MTurk Samples' Demographics

The combined sample demographics are presented below (see Table R1). The combined sample demographics more closely resemble the MTurk sample due to the sample size discrepancy. To explore the differences in demographics, seven chi-square tests and four *t*-tests were conducted. On average, participants in the community sample ($M = 42.97$, $SD = 14.39$) were significantly older ($t(31.34) = -2.72$, $p < .01$, $d = 0.68$) than participants in the MTurk sample ($M = 35.86$, $SD = 10.27$). Additionally, participants in the community sample ($M = 22.91$, $SD = 14.89$) had significantly more years of work experience ($t(35.59) = -2.87$, $p < .001$, $d = 0.70$) than participants in the MTurk sample ($M = 15.61$, $SD = 10.24$). However, no significant difference was found for participants' years of full-time work experience ($t(33.2) = -1.16$, $p = 0.25$, $d = 0.24$). There were no significant differences found between the MTurk and community samples on the other demographic variables. As the community sample was found to be older, it makes sense that they would have accumulated more years of work. Furthermore, due to the limited number of older participants (i.e., 5.33% were older than 55) in the total sample, the results of this study may not generalize well to this group.

To explore the differences on HAI total and subscale scores, eight *t*-tests were conducted. On average, participants in the community sample ($M = 3.49$, $SD = 0.56$) had significantly higher scores on the Adapting subscale ($t(36.97) = -2.56$, $p < .05$, $d = 0.47$) than participants in the MTurk sample ($M = 3.24$, $SD = .53$). Additionally, participants in the community sample ($M = 3.59$, $SD = 0.40$) had significantly higher scores on the Self-Reflection subscale ($t(35.59) = -2.87$, $p < .001$, $d = 0.48$) than participants in the MTurk sample ($M = 3.35$, $SD = 0.51$). However, no significant difference was found for the Goal Setting and Planning subscale, Hope subscale, Implementing subscale, Self-Clarity subscale, Visioning subscale, or the HAI total

score. As the majority of the community sample was recruited through substance use support centers, it is possible that these participants were more actively adapting to their new surroundings or lifestyle and engaging in more self-reflection as part of their recovery programs than participants recruited through MTurk (McMillen, 2000).

It is also possible that because multiple *t*-tests and chi-square tests were conducted to examine any differences between the MTurk and community samples, the probability of making a Type I error on demographic comparisons was 18.55% due to an inflated experiment-wise alpha level (Field, 2009). As such, some of the significant differences found may have reasonably been due to chance. The same is possible for the multiple *t*-tests that were conducted for the HAI scores for the MTurk and community samples, which increased the probability of making a Type I error to 33.66% (Field, 2009). Additionally, it should be noted that measurement invariance should typically be conducted in order to properly compare groups (i.e., the community and MTurk samples). As measurement invariance was not conducted in this study the demographic comparisons provided here are intended for the readers convivence and accessibility.

Table R1

Community and MTurk Sample Demographics

Variables		Community (<i>n</i> = 35) <i>n</i> (%), <i>M</i> (<i>SD</i>)	MTurk (<i>n</i> = 716) <i>n</i> (%), <i>M</i> (<i>SD</i>)	Combined (<i>N</i> = 751) <i>n</i> (%), <i>M</i> (<i>SD</i>)
Gender	Male	14 (40%)	344 (48.04%)	358 (47.67%)
	Female	21 (60%)	371 (51.82%)	392 (52.2%)
Relationship	Never legally married	6 (17.14%)	123 (17.18%)	129 (17.18%)
	Single never married	15 (42.86%)	235 (32.82%)	250 (33.29%)
	Legally married (and not separated)	1 (2.86%)	240 (33.52%)	241 (32.09%)
	Separated, but still legally married	3 (8.57%)	9 (1.26%)	12 (1.6%)
	Common law	6 (17.14%)	25 (3.49%)	31 (4.13%)
	Divorced	1 (2.86%)	77 (10.75%)	78 (10.39%)
	Widowed	1 (2.86%)	7 (0.98%)	8 (1.07%)
Education	Some high school or less	5 (14.29%)	4 (0.56%)	9 (1.2%)
	Graduated high school	12 (34.29%)	151 (21.09%)	163 (21.7%)
	Attending 2-3 year college	3 (8.57%)	50 (6.98%)	53 (7.06%)
	Attending 4 year college	0	60 (8.38%)	60 (7.99%)
	Associate degree or diploma/certificate, completed	6 (17.14%)	77 (10.75%)	83 (11.05%)
	Bachelor's degree, completed	2 (5.71%)	237 (33.1%)	239 (31.82%)
	Attending graduate school, master's level	1 (2.86%)	15 (2.09%)	16 (2.13%)
	Master's degree of equivalent, completed	0	88 (12.29%)	88 (11.72%)
	Attending graduate school, doctoral level	0	10 (1.4%)	10 (1.33%)

	Doctoral degree or equivalent, completed	0	18 (2.51%)	18 (2.4%)
	Completed an Apprenticiable Trade	3 (8.57%)	6 (0.84%)	9 (1.2%)
Work Experience	Years of any work experience	22.91(14.89)	15.61(10.24)	15.95(10.6)***
	Years full-time work experience	14.81(10.77)	12.56(9.51)	12.66(9.57)
Employment Status	Unemployed, not looking for work	19 (54.29%)	58 (8.1%)	77 (10.25%)
	Unemployed, looking for work	8 (22.86%)	50 (6.98%)	58 (7.72%)
	Part-Time	2 (5.71%)	119 (16.62%)	121 (16.11%)
	Full-Time	6 (17.14%)	489 (68.3%)	495 (65.91%)
Ethnicity	European	22 (62.86%)	564 (78.77%)	586 (78.03%)
	Aboriginal	2 (5.71%)	4 (0.56%)	6 (0.8%)
	Black	0	43 (6.01%)	43 (5.73%)
	Arab/West Asian	1 (2.86%)	3 (0.42%)	4 (2.86%)
	Chinese	2 (5.71%)	7 (0.98%)	9 (1.2%)
	Filipino	1 (2.86%)	12 (1.68%)	13 (1.73%)
	Japanese	0	4 (0.56%)	4 (0.53%)
	Korean	0	6 (0.84%)	6 (2.86%)
	Latin American	0	35 (4.89%)	35 (4.66%)
	South Asian	0	8 (1.12%)	8 (1.07%)
	South East Asian	0	5 (0.7%)	6 (2.86%)
	Other	6 (17.14%)	25 (3.49%)	31 (4.13%)

Note. * $p < .05$; ** $p < .01$, *** $p < .001$.