

The Protagonist:

Using Artificial Intelligence & Storytelling to Make Value-Based Career Decisions

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### Abstract

Choosing what career to pursue is an important life decision for many. For students in higher education, career indecision can be a major source of anxiety. Values play an essential role in helping one clarify their identity and find a meaningful career that is aligned with one's authentic self. After a review of the limitations of existing quantitative value clarification tools and explicating the benefits of its qualitative and narrative-based alternatives, this paper proposes a technology-empowered value discovery intervention in the form of a smartphone application (and companion site) that aims to promote and semi-automate the value discovery and mobilization process and bolster the career decision-making and well-being of college students. A proposal for the app is presented in the context of the theories and practices that support its design. A brief review of the technological capabilities that enable text analysis automation would also be discussed.

*Keywords:* higher education, mental health, well-being, values, meaning and purpose, storytelling, career indecision, career counselling, positive psychology, artificial intelligence

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## Introduction

Choosing what career to pursue can be an important life decision for many. It can also be an existential one as a career is often considered to be a source of meaning and fulfillment (Miller & Rottinghaus, 2014). Career indecision, the inability to make or implement an educational or career decision (Kelly & Lee, 2002), has been found to be particularly significant for college students (Gati et al., 2011) because they are in a transitional period during which they need to decide on and implement a career choice (Miller & Rottinghaus, 2014).

In the meantime, anxiety and other mental illnesses have been plaguing North American college campuses at alarming and increasing rates: 65.7% of US college students and 68.9% of Canadian college students reported having experienced “overwhelming anxiety” at some point in the last 12 months (American College Health Association, 2019a, 2019b). A study that examined the nationwide trends in the mental health of U.S. undergraduates from 2011–2012 to 2017–2018 found that students who reported overwhelming anxiety and depression increased by 24% and 34% respectively (Duffy et al., 2019). According to Holm-Hadulla and Koutsoukou-Argraki’s (2015) survey, the prevalence of psychological problems and mental disorders among university students is nothing short of a global phenomenon and has become an important professional concern worldwide.

Multiple empirical studies have found a two-way relationship between career indecision and anxiety. A cluster analysis found anxiety to be one of the factors leading to career indecision, together with self-concept, identity, and pessimistic views (Saka et al., 2008), while another study suggested that college students who experience trouble with their career decision-making are more likely to suffer from anxiety (Miller & Rottinghaus, 2014), consistent with previous research findings on career indecision and anxiety (Fuqua et al., 1988).

Compounded by the competition from globalization and job displacement by advanced technologies such as Artificial Intelligence (Dobson et al., 2014), and most recently the global economic crisis caused by the COVID-19 pandemic, career decision-making can be increasingly a predicament faced by more and more college students and having a larger negative impact on their well-being.

As university counselling centres battle with growing demand for services without proportional increase in resources (Gallagher, 2014), most started to increase their efforts in mental health disorder prevention (Holm-Hadulla & Koutsoukou-Argyragi, 2015). One opportunity that can be explored more as part of this overall preventive approach is for universities to support students on their personal growth such as gaining knowledge of their values.

In my work as a career coach in higher education, I have constantly encountered students who either still don't know what they want to do "when they grow up" or find it hard to reconcile pursuing their passion versus a higher-paying career. A common practice supported by multiple career counselling theories is to take a value-based approach where individuals identify their core values and select occupations and work environments congruent with such values (Sagiv et al., 2015; VanVoorhis & Protivnak, 2012; Brown, 2002, 2012).

Despite values being one of the most important factors in making career and educational decisions, they can be hard to articulate and not always referred to in the career decision-making process (Esquibel et al., 2014; Smith & Campbell, 2009). Through my work in higher education, I observed limited time being invested by both students and career practitioners on educating and clarifying students' values. This is often due to resource constraints, mounting coursework and extracurricular activities, and a lack of emphasis, expertise and effective tools suitable to support



value clarification and the subsequent career decision-making. A survey of existing literature on value clarification tools used in career counselling revealed that many tools used are based on a pre-determined set of values (e.g. the Knowdell Career Values Card Sort; Knowdell Card Sorts™, n.d.). Although they are easy and efficient to use, they can be subject to the user's biases, reveal insights too abstract to resonate with the user or exclude values that can be more idiosyncratic.

The use of narratives is considered to be preferable in value discovery as it is more conducive to helping people discover their values through making meaning of their lives and work experiences (Patton, 2000). Narrative career counselling is also aligned with the "life design" paradigm which advocates an individual's continuous reconstruction of their identity in response to their ever-changing social context (Savickas, 2015). This approach is considered to be more suitable for navigating the increasingly non-linear and individualized careers in the current postmodern world (Savickas, 2015). Narrative career counselling is especially relevant to college students as going to college could be an important life transitional period that challenges a young person's identity and narrative about themselves. Such a life change can cause incoherence and meaninglessness and requires one to re-examine and reconstruct their narrative (King & Hicks, 2007). Therefore, discovering one's values in a storied format can not only facilitate a young person's career exploration but also facilitate their identity development and improve their psychological well-being.

Despite storytelling's transformative and generative benefits, a narrative counselling approach and the related practices advocated by career counselling experts in *The Future of Careers* (Collin & Young, 2000) are limited and seem to still remain a practice of the future. Empirical studies on narrative career counselling interventions are also sparse (Stead & Davis,

2015). The good news is that near-ubiquitous smartphone adoption in North American post-secondary institutions, students' increasing demand for personalized education (Roll & Wylie, 2016), and emerging technologies such as big data and Artificial Intelligence can allow us to take another look at how to develop a technology-empowered intervention to solve the perennial question of "What do I want to do when I grow up?"

A value discovery and application intervention that functions in the format of a smartphone application with a companion site, the proposed tool's core concept is to leverage the power of Artificial Intelligence (AI) and text analysis to replicate and semi-automate the value discovery process adopted by coaches or counsellors that are often story-based, qualitative in nature, effective but time-consuming. It also consists of an application component where the user can put their values into action as they design their career.

Since the main differentiator of the proposed tool is to help its users discover their identities through storytelling and use the insights from the app to author the next chapter of their life stories with agency, I name this tool, *the Protagonist*.

Drawing upon theories, research and practices in positive psychology, vocational psychology, and technology, this paper discusses how a qualitative and narrative value discovery approach can be superior to traditional quantitative approaches in revealing more meaningful and accurate insights, and actions the user can take to mobilize their values to enhance their career decision-making and well-being. A proposal for the app is presented in the context of the theories and practices that support its design. A brief review of the technological capabilities that enable the text analysis automation would also be discussed.

## Literature Review

### *Positive Psychology, the Study of Well-being*

Calvo and Peters (2014) keenly observed that across so many languages spoken by different cultures in the world, people greet each other by asking them how they are doing. An assessment of one's well-being is either something we genuinely care about or indicative of insights that guide our interaction with them.

For centuries, philosophers and great thinkers have explored the definitions and pathways leading to well-being. Aristotle is considered to be the one who has considered this the most thoroughly (Kashdan et al., 2008). In *Nicomachean Ethics*, Aristotle (1999) famously suggested the concept of *eudaemonia*, which can be loosely translated to “well-being” or “flourishing” (Melchert, 2002). He argued that the ability of humans to exercise their rational power with excellence leads to the “good” in human life and ultimately human happiness (Melchert, 2002). Virtues, or excellence, according to Aristotle, are not capacities humans naturally possess, but they can be cultivated just as all habits can be learned. He believed that achieving “the good life” lies in humans’ mastering of *practical wisdom*, i.e. knowing how much virtue(s) to apply in each given situation, and that the ability of humans to live in accordance with our virtues leads to *eudaemonia* (Melchert, 2002).

In the realm of psychology, theorizing, and research on well-being have started before the term “positive psychology” was introduced (Linley et al., 2006). It has been argued to date back to the geneses of psychology such as William James’ (1917) work on “healthy mindedness” and later found in studies in humanistic psychology (e.g. meaning in life by Frankl, 1959 and Yalom, 1980; self-actualization by Maslow, 1968).

Fast forward to the turn of the millennium. There emerged a paradigm shift within the

field of psychology marked by pioneering psychologist Martin Seligman's presidential address to the American Psychological Association in 1998 and Seligman and Csikszentmihalyi's (2000) special edition of *American Psychologist* dedicated to positive psychology (Seligman, 2002). The duo argued that since World War II, psychology has focused on its first mission, bringing people out of their sufferings, but neglected its other two missions of studying what brings people to lead flourishing lives and identifying and cultivating high talent. They called for a "resurrection" of psychology's two forgotten missions by introducing the field of positive psychology where scientists conduct more research on human strengths and virtues, and practitioners focus on fostering strengths and creating strengths-based climates in communities and organizations.

What is positive psychology? Positive psychology studies the "conditions and processes that contribute to the flourishing or optimal functioning of people, groups, and institutions" (Gable & Haidt, 2005, p.104). It operates at the individual level and "macro" level (Seligman & Csikszentmihalyi, 2000). At the individual level, it studies positive traits (Seligman & Csikszentmihalyi, 2000) and emphasizes the well-being benefits of identifying and fostering one's character strengths (morally valued traits considered by different cultures to lead to a fulfilling life; Peterson & Seligman, 2004; Park & Peterson, 2009). Positive psychology also examines optimal functioning at a macro level by studying civic virtues that lead to better citizenship such as responsibility and altruism (Seligman & Csikszentmihalyi, 2000).

Since the birth of positive psychology, there has been a proliferation of well-being theories and definitions (Forgeard et al., 2011). Well-being can be defined and measured both objectively and subjectively (Butler & Kern, 2016). Objective measures can include opportunities for education, environmental health, resources to satisfy basic needs. Subjective

measures reveal an individual's own assessment of their well-being. *Subjective well-being* (SWB; Diener et al., 2003), considered to be the most widely used construct in the field, takes a *hedonic approach* to the psychology of well-being and reports individuals' subjective account of their positive emotions and life satisfaction (Jayawickreme et al., 2012).

Using subjective well-being as a measure for well-being has been criticized for a number of reasons, some of which being its dependence on an individual's mood and the information available to them (Haybron, 2007; Forgeard et al., 2011). As a complement to the hedonic approach arose the *eudaemonic approach* which accounts for other important aspects of positive psychological functioning such as *self-acceptance, personal growth, positive relations with others, environmental mastery, purpose in life, and autonomy* (Ryff, 1989). Since the proposed app aims to support young people's career decision-making and pursuit of a fulfilling life, an eudaemonic approach is more suitable in our context. Such an approach is more comprehensive and scholars have shared the consensus that multi-dimensional models can better capture the complexity of optimal functioning (Forgeard et al., 2011; Huppert & So, 2013). Since a review of all the existing eudaemonic well-being theories is beyond the scope of this paper, we will focus our discussion on one of the most well-known multi-dimensional well-being constructs, Seligman's (2011) PERMA theory, and use it as a framework to provide a cursory understanding of the seminal theories and findings relevant to each facet of this model.

Seligman's (2011) well-being theory consists of five measurable elements: *Positive emotion, Engagement, Relationships, Meaning, and Accomplishment*, popularly known as the acronym, "PERMA". For each element to be included in the well-being model, it must represent what people pursue for their own sake rather than to get to any of the other elements, and it must be able to be defined and measured independently of the other elements.

In the domain of positive emotions, one of the most notable theorizations backed by empirical findings is Fredrickson's (2001) *Broaden-and-Build Theory*. This theory posits that positive emotions (e.g. joy, gratitude, and serenity) broaden the range of thoughts and actions that come to a person's mind and that such broadened mindsets can in turn build enduring physical, intellectual, psychological and social resources.

Engagement is about being absorbed in an activity without any consciousness of one's thoughts and emotions (Seligman, 2011). The leading scholar studying engagement is Csikszentmihalyi (1996) who used the term *flow* to refer to high levels of engagement. According to Csikszentmihalyi (1996), the flow state is characterized by an individual having clear goals, personal control, and an intrinsic interest in a task; the task is both challenging but also matching the individual's skill level and providing immediate and direct feedback; the individual is fully immersed in their task in a way that their action and awareness are merged.

Relationships underscore how well-being is almost always attained through the involvement of others (Seligman, 2011). Social support has been recognized as one of the most (if not the most) influential causes of well-being for people across all cultures and age groups (Reis & Gable, 2003). Research on high-quality connections (HQCs), i.e. short-term, dyadic interactions that provide positive subjective experience in the connected individuals, concluded that HQCs are characterized by feelings of vitality, positive regard (e.g. feeling known, loved, respected or cared for), and felt mutuality in both parties' participation in the connection (Dutton & Heaphy, 2003; Stephens et al., 2012).

Meaning refers to having a sense of belonging and serving something bigger than oneself (Seligman, 2011). After reviewing multiple different theories of meaning, Martela and Steger (2016) concluded that meaning in life emerges from three sources: significance (i.e. people

feeling that their lives matter), comprehension (or coherence, i.e. making sense of their lives) and purpose (i.e. working towards their desired futures or a broader life purpose).

Accomplishment is about success and mastery, achieving for the sake of winning (Seligman, 2011). It involves the efforts one invests towards their goals and the mastery and efficacy in completing tasks (Butler & Kern, 2016). According to the *Self-Determination Theory* (SDT; Ryan & Deci, 2000), *competence*, an individual's sense of efficacy regarding their internal and external environments (Ryan et al., 2008), is one of the basic psychological needs that lead to well-being.

### ***Applications of Positive Psychology***

The burgeoning body of research in positive psychology has translated to real-life applications in an increasing number of fields (e.g. education and career counselling; Seligman, 2011; Robertson, 2015). Here we focus our discussion on how positive psychology has been applied in education and technology domains.

*Positive Education* is defined to be education that teaches traditional skills, complemented by skills that promote well-being, including positive mental health (Seligman, 2011). A considerable amount of evidence from well-controlled studies has shown that skills that promote resilience, positive emotion, engagement, and meaning can be taught to children and can promote better learning (Seligman et al., 2009). Many studies and applications of positive psychology in education can be found in secondary education with a focus on resilience (Oades et al., 2011; Gillham et al., 1995, 2013; Reivich & Gillham, 2010). Lagging behind secondary education is higher education's integration of positive psychology (Oades et al., 2011).

According to Oades and colleagues (2011), establishing a positive university requires a systemic application of positive psychology to create an educational environment, that enables its learners

to develop their own and others' well-being. It should teach its learners knowledge and skills but also go beyond the conventional, transactional understanding of the teaching-learning dynamics. It is my vision that the Protagonist contributes to such a movement by teaching students well-being skills, starting from gaining knowledge about themselves such as their values.

Positive psychology's focus on fostering individual agency and amplifying individuals' positive traits is aligned with the postmodern "life design", or narrative career counselling paradigm, and has informed new career counselling theories and interventions (e.g. Robertson, 2015; Zikic & Frankin, 2010; Di Fabio, 2014). The positive psychology movement has challenged career counselling to adopt a more holistic view of well-being by blurring the lines between concepts of job satisfaction and life satisfaction, meaningful life and meaningful work (Robertson, 2015).

According to a meta-analysis by Sin and Lyubomirsky (2009), positive psychology interventions, intentional activities aimed at promoting positive feelings, behaviours, or cognitions, can significantly improve well-being and reduce depressive symptoms. The proposed app consists of a series of positive psychology interventions designed to improve an individual's self-knowledge and foster behaviours that enhance their career decision-making and well-being.

The rapid development of technology has aided the diversification, accessibility, and effectiveness of positive psychology interventions. This has given rise to *Positive Technology* (PT), the "scientific and applied approach that uses technology to improve the quality of our personal experience with the goal of increasing wellness and generating strengths and resilience in individuals, organizations and society" (Botella et al., 2012, p. 1).

PT can be traced back to the 1970s and has been used to augment psychological treatments through the use of the Internet, computerized systems, and virtual reality (Botella et



al., 2012). Currently, a large number of well-being smartphone apps focus on improving mental health (Bakker et al., 2016) and healthy lifestyle behavioral change (McKay et al., 2019).

When it comes to career exploration, the number of apps for this purpose lags far behind apps supporting physical and mental health. A search with the keyword “career” in the Apple app store returns eight apps (e.g. PathSource, Career Test, CareerPilot), all of which are based on quantitative assessments that match the users’ interests, skills or personality with an inventory of jobs. In-app recommendations on how to further the user’s career exploration are all static content and lacking in personalization. A search with the keyword “value” in the Apple app store returns Values Ink and Values Discovery which both ask their users to sort through a fixed set of value. With the increasing sophistication of technologies such as AI, significant untapped potential exists for a more personalized, dynamic, and effective app-based positive psychology intervention that facilitates personal reflection, discovery, and meaningful action with more breadth and depth.

### *Values*

The construct of values has been studied extensively in social sciences and humanities (Sagiv & Roccas, 2017). Values represent our basic motivations (Sagiv & Roccas, 2017). They are goals that are desirable and relevant across situations that can guide people throughout their lives (Kluckhohn, 1951; Rokeach, 1973; Schwartz, 1992, 2012). Values help us express our identity to the world as they indicate what is most important about us (Peterson, 2006). Values justify what we do and feel as they guide our actions and how we evaluate ourselves, others, and the world (Schwartz, 2012). The higher a value is important to a person, the more likely that person is to act to attain that value (Kluckhohn, 1951; Rokeach, 1973; Schwartz, 1992). Since values transcend different situations, they can predict behaviours that are both specific such as

the intention to donate money and general behaviours such as choosing a career (Sagiv & Roccas, 2017).

Values also have the social functions of organizing people with shared values into the same group and regulating the functioning of the group (Peterson, 2006). Although most values are universally desired by everyone, we all have our own value systems comprised of different value priorities (Schwartz, 2012). Values are intricately linked to emotions (Schwartz, 2012). A person can experience joy when their value is activated and feel violated when their value is threatened.

It is important to note that the definitions of values differ at varying extent depending on the field of study and context of discussion. Since we are primarily concerned about personal values and how they drive career decision-making related behaviours, the definition of values discussed above represents one that has received the most consensus from leading scholars in social, cross-cultural, and personality psychology. I have observed from my professional experience that since the definition of values and discovery of personal values are not commonly taught in our educational systems, and societal and cultural values (i.e. values endorsed by one's social and cultural environments) tend to be more salient and do influence personal values, people often adopt societal and cultural values as their personal values and lose sight of values that are more uniquely their own. These idiosyncratic values are what the proposed app is intended to reveal as part of its overall value discovery process.

Although values are ideal standards that we endorse, we don't always live according to our values. Peterson (2006) posited that values can lose their meaning if one does not mobilize their values to achieve their desired goals. Such emphasis on putting values into action embodies the key distinction between values and character strengths, a concept closely related to values.

Character strengths are psychological processes or mechanisms that lead to the attainment of virtues and a fulfilling life (Peterson & Seligman, 2004). Guided by six wide categories of virtues deemed universal and consistently attributional to good character by moral philosophers and theologians, the VIA Classification of Character Strengths Classification includes 24 character strengths and was created to provide a common language to talk about and bring out what is best in humanity (Niemiec & McGrath, 2019).

Character strengths researchers argued that values represent what people hold dear in their thoughts and emotions which don't necessarily predict actions, while character strengths signify values that have been put into action (Niemiec, 2017; Peterson & Seligman, 2004). Since character strengths are inherently values, the vast body of character strengths interventions and research could be applicable to the domain of values.

### *Values & Well-Being*

The relationships between values and well-being are complex (Boer, 2017). Surprisingly, research on the subject has not been extensive and only started to flourish recently (Schwartz & Sortheix, 2018). The majority of the research on values and well-being uses the aforementioned subjective well-being (SWB; Diener et al., 2003) as a measure, which includes a cognitive component (i.e. life satisfaction) and emotional component (i.e. positive and negative affect).

Scientists have used the ten values considered to be universal across different cultures by Schwartz (1992, 2012) in many studies to analyze their association with SWB. Schwartz (1992, 2012) discovered that ten different values are universally shared by people around the world and distinguished from one another based on the type of motivation or goal it expresses. He mapped these values into a circumplex model which depicts the tradeoffs among the values. An adapted version of the circular structure (Sortheix & Schwartz, 2017) can be found in Figure 1. Values

close to each other in the circle are more compatible while those more distant from each other express competing motivations. Four higher order values, *Openness to Change*, *Self-Transcendence*, *Conservation*, and *Self-Enhancement*, summarize the conflicts between competing values. *Person-focused* versus *social-focused* depict the interest that value attainment serves. The circle is also organized by values' relations to anxiety: *Self-Protection/Anxiety-control* versus *Growth/Self-Expansion/Anxiety-Free*.

Studies on value-SWB associations have found that not all values correlate positively to SWB, which reflects the theorizing that some values are “healthy” while others are “unhealthy” (Sagiv & Schwartz, 2000; Strupp, 1980). Building on previous studies and after their own multi-level analysis across 35 countries, Sortheix and Schwartz (2017) confirmed their hypotheses that 1. Openness to Change values (*Self-Direction*, *Stimulation*, *Hedonism*), which are growth-oriented and personally focused, positively relate to SWB; 2. Conservation values (*Security*, *Conformity*, *Tradition*), which are self-protection oriented and have a social focus, relate negatively to SWB. Other researchers have drawn on the SDT (Ryan & Deci, 2000) and argued that values that are extrinsically driven such as wealth and fame relate negatively to SWB (Deci & Ryan, 2000; Kasser et al., 2004).

**Figure 1**

*The Circular Structure of 10 Basic Values, Four Higher Order Values and Two Underlying Motivational Sources*



Reprinted from “Values that Underlie and Undermine Well-being: Variability across Countries” by F. M. Sørtheix and S. H. Schwartz, 2017, *European Journal of Personality*, 31(2), p. 189. Copyright 2017 by European Association of Personality Psychology

Despite such findings, the relationships between values and SWB are far from being so “clean-cut” because they are confounded by social and cultural contexts (Schwartz & Sørtheix, 2018). In addition to the approach of studying values’ direct relationships with SWB as discussed above, other approaches used by researchers to understand values-SWB associations have revealed that 1. Contexts such as friends, family, community, workplaces, etc. contribute to the opportunities and constraints for attaining one’s valued goals and moderate the association between one’s values and their SWB; 2. Value congruence, i.e. sharing values with those in

one's close social context, also enhances SWB (Schwartz & Sortheix, 2018). For example, a seminal study by Sagiv and Schwartz (2000) found that business students who place higher importance on power and achievement values, which are values that prevail in business contexts, experience value congruence with their environment and better well-being as a result.

The Protagonist intends to help its user clarify their *personal* values and values from their social and cultural contexts to determine their value priority and in turn support their career decision-making. The following section delineates the mechanisms through which values contribute to career decision-making.

### ***Values & Career Decision-Making***

Frank Parsons, who is considered to be the founder of career counseling (McMahon & Patton, 2017), suggested that choosing a vocation is based on knowledge of the self, the world of work, and “true reasoning on the relations of these two groups of facts” (Parsons, 1909, p. 5). Career decision-making involves a variety of activities such as exploring one's identity, strengths, interests, seeking advice from others, trying out possible career options through internship search, and reflections. Awareness of one's values and their relative priorities are crucial in enhancing an individual's success in the career decision-making process for the following reasons.

Firstly, values are integral to one's identity (Maslow, 1968), which is essential to career decision-making. The aforementioned cluster analysis found that career indecision can stem from a lack of self-concept and identity, which manifests as trait anxiety, low self-esteem (i.e. self-worth), and *uncrystalized identity* (Saka et al., 2008). Uncrystalized identity refers to an individual's difficulties in establishing a stable sense of personal identity, e.g. challenges in articulating “consolidated beliefs, values, preferences and life goals” (Saka et al., 2008, p. 408).

Therefore, individuals with a clear sense of their values and preferences are better equipped to resolve conflicts between different career choices, conflicts between personal aspirations and parental expectations, and conflicts between their personal values and cultural values (Leung et al., 2010). A clearer identity can help students learn about what kind of work they may find meaningful. Duffy and Dik (2013) found that students who have a calling, i.e. career that they found meaningful and prosocial, have better clarity and confidence with their career decisions, are more satisfied with their academic studies and life overall, and experience higher levels of meaning in life. More recent longitudinal studies have confirmed these effects (Duffy et al., 2014; Hirschi & Hermann, 2013; Praskova et al., 2014).

Secondly, values can provide the intrinsic motivation one needs to explore various career options and commit to a career decision. The Self-Determination Theory (SDT; Ryan & Deci, 2000) posits that intrinsic motivation reflects one's interests and values while extrinsic motivation comes from external factors (e.g. money, pressure from others). Extrinsically motivated behavioural change can be short-lived, while intrinsically motivated changes are sustainable and consolidated into the individual's identity (Deci & Ryan, 1985). Given the sheer number of choices and influence by peers and authority figures, exploring career options may require a young person to change their existing behaviours (e.g. overcoming shyness or the habit of following others' advice). Once they decide on a career choice, they may also need to act differently to pursue that career direction (e.g. overcoming the initial discomfort of publishing a blog post after deciding to go into journalism). Knowing their values can help students tap into their intrinsic motivation and activate the actions or behavioural changes needed to honour those values in their career decisions.

Thirdly, a clear awareness of one's values can help an individual cultivate the resilience

to navigate the career decision-making process that could be fraught with uncertainties and setbacks. Reflecting on one's important values can improve one's ability to cope with stress and stop them from ruminating after failures (Branstetter-Rost et al., 2009). It can also offer an individual an internal sense of control (Maglio et al., 2005). According to Maslow (1960, as cited in Maglio et al., 2005), when there is a breakdown of external value systems, one often shifts internally to find an "internal locus of values" (p. 79). This internal focus on values can offer an individual direction and stability in the face of constant changes and chaos (Maglio, et al., 2005). Students trying out a new career choice will quite likely receive rejections in their job search process due to lack of experience. Connecting with their values can build their resilience and help them stay committed to their career goals.

Finally, clarity of one's values can enhance the job search success and well-being on the job. Person-environment value congruency is an important goal in vocational counselling because identifying a vocational environment aligned with an individual's values can lead to better job satisfaction and well-being (Sagiv et al., 2015), and lack of fit can lead to losing one's sense of belonging and fulfillment (Rich et al., 2010). Knowing one's values allows one to craft their tasks, interactions with others, and interpretation of their work to better express their values (i.e. job crafting; Wrzesniewski et al., 2013). Job crafting has been found to improve employees' psychological well-being (Berg et al., 2010), engagement, and performance (Tims et al., 2012). This ability to continuously reinvent oneself is paramount now because there is an even bigger case for an individual to know how to continuously craft their work identity when the world of work is constantly disrupted by automation and the rise of non-permanent and independent work.

From an employer's standpoint, organizations have placed a tremendous focus on finding employees whose values are aligned with the company's values (Kristof-Brown & Guay, 2011),



because being a values-driven organization can foster a highly engaged workforce and lead to higher performance and profit (Barrett, 2013). According to Barrett (2013), values-driven organizations espouse values that reflect what the majority of their employees consider important and align with both their employees' basic needs (e.g. enabling them to form friendships, support their families) and their growth needs (e.g. empowering them to do their best work, foster autonomy and pursue their meaning and purpose). Therefore, students who can articulate their values in the job search process are better equipped to secure roles with organizations aligned with their values and are more likely to enjoy their work after.

In summary, knowing one's values possesses significant benefits for a person's career decision-making and professional pursuit and can contribute to their overall well-being. Although some values may not be considered "healthy", it is important for a young person in the career decision-making process to understand what their values are and prioritize values they want to endorse more in the larger context of their overall life and career goals.

### *A Measurement vs. Discovery Approach to Values*

In understanding people's values, psychologists have primarily taken a scientific measurement approach. They start by identifying values commonly held by general or specific populations, which could be qualitative in nature, but the later stages are dominantly quantitative: They catalogue the values identified and then use the subsequent catalogued list of values to measure their research subjects' values (Peterson, 2006). Chris Peterson (2006) conducted a comprehensive review of the cataloging and measuring of values within existing values literature. Here I will discuss approaches relevant to the scope of this paper.

Rokeach (1973; as cited in Peterson, 2006) identified 18 *terminal values*, beliefs about ideal ways of being largely based on his own notions of what people value. Other psychologists,

such as William Scott, used more systematic approaches such as interviews to identify values, while others deduced a set of values based on existing theories such as Maslow's (1954, 1971) *hierarchy of needs* (Peterson, 2006). According to Peterson (2006), the value catalogues proposed by these psychologists have converged substantially, which was further bolstered by the aforementioned Shalom Schwartz's (1992, 2012) research on basic values. Schwartz's basic values hence became the dominant values framework (Sagiv et al., 2017). His value theory has since been refined to include 19 basic values in total for "greater heuristic and explanatory power" (Schwartz et al., 2012, p. 663; see Appendix A).

To learn about the values of the research subjects, earlier researchers asked research subjects on their specific attitudes and behaviours that the researchers assume may reflect a given value (Peterson, 2006). The drawback of this method is that it was based on the researchers' assumption but not necessarily the subjects' truth (Peterson, 2006). Later on, researchers started to use a different approach where they asked research subjects to endorse a pre-determined list of values. Research participants were asked to answer yes-no questions, indicate their level of agreement with 5-point or 7-point scales, or rank the relative importance of different values (Peterson, 2006). Two of the most notable values measurement tools are the Schwartz Value Survey (SVS; Schwartz, 1992, 2012) and the Portrait Values Questionnaire (PVQ; Schwartz, 2006; Schwartz et al., 2001) developed based on Schwartz's basic values framework. The SVS presents two lists of value items for respondents to rate their level of importance on a 9-point scale. The PVQ is an alternative to the SVS later developed to measure respondents aged 11-14 and those who did not receive a Western education where abstract thinking without context is emphasized (Schwartz, 2012). It includes 40 short verbal portraits describing a different person's goals, aspirations, or desires that reflect a value. For example, "Thinking up new ideas and being

creative is important to him. He likes to do things in his own original way” (p.11) describes a person with self-direction values. Respondents are then asked to rate how much this person is like them.

In practitioners’ values work with their clients, examples of commonly used tools include the Personal Values Assessment by the Barrett Values Centre (n.d.) where the user selects their top ten values from a list of 66 value words or phrases, and the Knowdell Career Values Card Sort which also depends on sorting through a pre-determined list of values (Knowdell Card Sorts™, n.d.).

It is important to point out a fundamental difference between a scientist’s quest to understand the values of their research subjects, which favours parsimony for convenience and simplicity, and an individual’s journey to discover their identity and career direction, which prefers nuance and uniqueness. The measurement approach employed by psychologists and practitioners based on a set list of values has its downsides.

The main weakness of using a pre-determined list of values is that it may exclude idiosyncratic values crucial to the user’s identity. To make the scientific study of human values manageable, scientists often need to balance the very large number of human values in existence with parsimony (Peterson, 2006). Schwartz (2017) called his initial division of the value space into ten basic values to be “an arbitrary scientific convenience” (p. 51). He also attributed initial measurement issues (e.g. with internal reliability) to the attempt to subsume diverse elements into the same basic value. Schwartz and his colleagues’ (2012) later efforts refining the ten basic values into 19 by defining broad values in a narrower fashion demonstrated the merit of having more distinct values. It is important to also note that for a value to qualify as one of Schwartz’s basic values (1992, 2012), it must deliver its four defined functions (1992, 2017). Similarly, in

the space of character strengths (i.e. values that are in action), a value could also have been excluded from the VIA Classification because it does not meet most of the 10 criteria set out by the Classification's creators (Peterson & Seligman, 2004). Therefore, if an individual possesses a value that does not meet the criteria set by the measuring instrument, it may not be revealed.

Another weakness related to the one discussed above is that the language used in values from a pre-determined list may not resonate with the user, hence losing its emotional connection and impact on the user. For example, while the word "novelty" may have resonated with a user perfectly, it would not be revealed to the user who takes the Schwartz Value Survey (Schwartz, 1992, 2012), because "novelty" is captured within the value of "stimulation" in Schwartz's 19 basic values (Appendix A Table 1; Schwartz et al., 2012). Besides, values are abstract (Schwartz, 2017), which means each value can be interpreted differently by each person and it can lose its meaning for the individual when no context is discussed.

From a research methodology standpoint, one major drawback of using a pre-determined catalogue of values as a yardstick to measure an individual is its subjectivity to the user's different biases and lack of self-awareness. Even the most dominant personality model, the Big 5 or Five Factor Model, that relies on a questionnaire to measure a person's typical thoughts and behaviours is not immune to systemic response biases (Kulkarni et al., 2018). One of these biases is *confirmation bias*. Confirmation bias refers to the "seeking or interpreting of evidence in ways that are partial to existing beliefs, expectations, or a hypothesis in hand" (Nickerson, 1998, p. 175). A user may select responses that they are familiar with, such as a value they often hear about at school but are not necessarily important to them. Since values represent what an individual considers desirable, self-reported values are especially vulnerable to *social-desirability bias* and *acquiescence bias* (Schwartz, 2017). Social-desirability bias reflects "a

respondent's tendency to provide socially desirable answers" (Fisher & Katz, 2000, p. 1).

Acquiescence bias means one's tendency to endorse all items in a scale or survey regardless of the content of the item (Savalei & Falk, 2014). Fisher and Katz's (2000) research found that values that are more desired in a culture or social system are more subject to social-desirability bias. In addition to biases, asking an individual to endorse a list of values that reflects them is based on the assumption that they have a clear sense of their identity. In the context of career exploration for college students, some of whom are still in the process of gaining a clearer sense of their identity, such an assumption may not be realistic. Students who have low awareness of their identity can be more vulnerable to the biases discussed above.

Other drawbacks of existing measurement methods are inherent to the instruments in question. For example, the ranking method is a commonly used method among career practitioners. However, in addition to being susceptible to the aforementioned weaknesses, using it in practice, such as asking a person to rank order 18 values index cards, can be "unwieldy" and "slapstick rather than science" (Peterson, 2006, p. 181). When it comes to rating methods, Peterson (2006) also pointed out its susceptibility to *ceiling effects* where the values endorsed are all found near the "ceiling", or higher end of a rating scale. Schwartz (2017) suggested that this tendency could be due to people's social responsibility and acquiescence biases (2017). Ceiling effects can hence become a challenge in understanding the relative importance between values in a meaningful way (Peterson, 2006).

### ***Value Discovery: A Qualitative & Narrative Approach***

Given the limitations of the quantitative measurement approach to value discovery, what are the alternatives? The Protagonist's value discovery process takes a qualitative and narrative approach. By prompting its user to tell personal stories from which values are inferred, it is

designed to minimize the aforementioned biases, uncover unique and nuanced values that may not have been captured by conventional instruments, and leverage the emotional connection with the user's own language and stories to motivate them to design a meaningful and fulfilling career.

Understanding this approach's advantages over quantitative assessments warrants a review of the different career counselling paradigms.

### *Overview of narrative career counselling*

Savickas (2015) chronicled the different career counselling paradigms dating back to the early 20<sup>th</sup> century. In the early 1900s where individuals had decades-long careers with the same employer, the predominant paradigm in the field has been "vocational guidance", a more objective, rational, and static model where individuals are matched to occupations based on their values and similarities with those already employed in those occupations.

After the World War II, the rise of the middle class and bureaucratic hierarchies motivate employees to progress along the organizational hierarchy (Savickas, 2015). Such societal changes introduced the "career development" paradigm which takes a more humanistic perspective where the individual is the subject of their career with the agency to drive their career development.

As we enter the postmodern era where organizations' hierarchies continue to flatten, long-term employment continues to be replaced by contracts, and a 30-year tenure with a single employer becomes a thing of the past, the career development model's rigid and predictable approach gradually becomes unfit for navigating the increasingly non-linear and individualized careers that most people experience (Savickas, 2015). This shift in the landscape of work has given rise to the "life designing" paradigm which takes a constructionist perspective. The core

tenet of this paradigm is that an individual must continuously construct their identity (i.e. their social role) and design their life and career in response to their ever-changing social context. The constructionist approach is rooted in language and narratives because, despite the self's multiple identities, one would still seek to achieve a sense of continuity by forming coherent and meaningful life stories (Savickas, 2015). Therefore, life designing is also synonymous with *narrative career counselling* (Cochran, 1997), or *the storied approach* (Brott, 2001). It is important to mention that constructivism is another epistemology that emphasizes a contextual worldview that largely overlaps with the social constructionist approach (Young & Collin, 2004). Constructivist and social constructionism have therefore been subsumed to the generic term of “constructivism” in social science and psychology literature.

Despite the long history of narrative career counselling, and the strong theoretical support it has received (Brott, 2004; Reid & West, 2011), there have been very few empirical studies on narrative career interventions (Stead & Davis, 2015). The case study research conducted so far has not established support for the narrative approach's advantage over more traditional interventions (Stead & Davis, 2015). Based on my own professional experience, I can also attest that narrative career counselling has not been widely known or practiced, and the century-old matching and career development paradigms are still quite dominant in current career counselling practices. I envision the proposed intervention to add empirical and practical evidence to this body of knowledge by adopting a narrative approach to value discovery and application.

In the rest of this section, I explicate the mechanism of how a narrative or storied approach to career counselling contribute to students' value discovery, career decision-making, and well-being.

*The power of narratives in value discovery*

The process of building a narrative is essentially a meaning-making process. Narrative counseling is “intended to clarify a person’s life story and his or her role in that story” (Cochran, 2011, p. 10) which fills the void of personal meaning that is left out in quantitative career assessments (Cochran, 2011). As discussed in a previous section, the definition of meaning has three dimensions: *significance*, *purpose*, and *comprehension* (also known as *coherence*; Martela & Steger, 2016). Therefore, constructing a coherent life story can significantly contribute to the process of finding meaning in life.

In this process of meaning-making values emerge. Using life narratives as a context is essential to this effect. The process of career decision-making can be fraught with value conflicts for most people, not to mention college students who are early in their life journey. Should one major in accounting and embrace stability just like they have been taught by their parents? Or should one go for a career that could potentially involve more creativity, such as marketing? Is there a job that can offer both? To establish value priority in the face of conflicts, simply asking one which value is more important without context, as found in value ranking exercises, may not produce a substantial and meaningful result (Cochran, 2011). According to Taylor (as cited in Cochran, 2011), a better alternative would be to get a firm understanding of one’s identity, i.e. what type of person one wants to be and the kind of life one wants to have. As mentioned earlier, identity is a social construct and cannot be understood without being set in the context of a person’s life story (Savickas, 2015). Therefore, a narrative approach is more likely to foster awareness of that identity (Cochran, 2011), which reflects one’s values. In fact, according to Savickas (2010; as cited in Di Fabio, 2010), life designing is an “identity intervention that cultivates intention and action through story telling” (p. 382).



*The power of narratives in career decision-making & well-being*

Using a narrative approach can also contribute to an individual's well-being and career decision-making.

Narrative identity is the “internalized, evolving story of the self that each person crafts to provide his or her life with a sense of purpose and unity” (Adler, 2012, p. 367). The theory of narrative identity postulates that individuals create such a narrative of the self by reconstructing their past, perceiving the present, and anticipating the future, starting from late adolescence and early adulthood (McAdams, 2001). Constructing a narrative identity has two major psychological functions: 1. Providing the self with a sense of meaning and purpose; 2. Providing the self with a sense of coherence across time and situations (McAdams, 2001). Both functions positively contribute to psychological well-being (Adler, 2012). Since college is an important period for identity development, helping students discover and develop their identities through storytelling can have a crucial impact on their psychological well-being. As discussed earlier, multiple empirical studies have found a two-way relationship between career indecision and anxiety (Saka et al., 2008; Miller & Rottinghaus, 2014; Fuqua et al., 1988). Therefore, interventions improving an individual's psychological well-being such as the narrative approach could also improve their career decision-making.

Successful career decision-making requires a person's agency to be the producer of their life's events and experiences. Agency is central to narrative career counselling or constructivist approach where the counsellor collaborates with the client and the counselling process facilitates the client's agency, i.e. their active engagement in constructing their lives (McMahon & Patton, 2017). This is in stark contrast to the traditional objective and positivist “vocational guidance” paradigm which emphasizes objective, value-free knowledge over subjective feelings and career

counsellors are positioned as the experts who assess the client and advises them on what to do (McMahon & Patton, 2017). In addition, the process of forming stories, whether done in a spoken or written format, can give people a sense of control about their lives (Pennebaker & Seagal, 1999). Agency is predicated by self-efficacy, i.e. the belief in one's ability to successfully perform certain tasks (Bandura, 2000). *Career decision-making self-efficacy* refers to the belief in one's ability to successfully perform career decision-making tasks such as information collection, goal setting, discerning preferences, planning, and implementing the decision (Betz et al., 1996; Betz & Luzzo, 1996; Taylor & Betz, 1983). Studies have found association between individuals who are high in career decision-making self-efficacy and lower levels of career indecision (Creed et al., 2004; Guay et al., 2006; Nota et al., 2007). Therefore, exploring one's career through narratives can boost an individual's agency and self-efficacy, which is also a goal of the proposed app.

Writing can also provide a shift in perspective, allowing an individual to detach themselves from their surroundings to examine their lives and correct their life course (Pennebaker & Chung, 2006). Forming a narrative about an emotional event and integrating it into the bigger picture may help an individual incorporate the experience into their identity (Pennebaker & Chung, 2006). Thanks to the integral role language plays in this therapeutic process, *expressive writing*, the process of writing about one's deepest thoughts and feelings (Pennebaker & Chung, 2006), has become the subject of a large body of research. Although most research on writing has focused on writing about negative experiences, scientists have found comparable effects with writing about positive experiences (Smyth & Pennebaker, 2008). Social networking tools such as Facebook have made the disclosure of personal experiences to a device more commonplace (Smyth & Pennebaker, 2008). Some studies have shown that self-affirmation

interventions where participants who write about their values can lead to significant positive changes in behavior, improving health, educational achievement, and relationship outcomes (Cohen & Sherman 2014). The Protagonist would be using writing, or the speech-to-text functionality built-in in most smartphones, to help the user discover their values through storytelling and also reap the well-being benefits of writing.

The literature reviewed above undergirds theoretically and empirically the benefits of a narrative approach in value discovery, career decision-making, and well-being. Next, I will move on to discuss why, for the purpose of value discovery, qualitative career assessment should become a more widely used complement to quantitative assessment, which has dominated the world of career assessments (McMahon & Patton, 2017).

### *Qualitative Career Assessment*

One of the main purposes of a career assessment is to facilitate career discussions based on a client's unique situation, regardless of whether it is quantitative or qualitative (Glavin, 2004). The style of assessment can also reflect the philosophy of the counsellor. According to McMahon and Patton (2017), quantitative assessment is more aligned with the traditional objective and positivist "vocational guidance" paradigm. Quantitative assessment has been criticized for its inability to cater to a diverse population, lack of attention to contextual influences on the client, and over-reliance on the career counsellor's expertise (McMahon & Patton, 2017).

Qualitative career assessment, on the other hand, is consistent with the "life designing" paradigm which adopts a constructivist worldview that emphasizes meaning-making, agency of the client, holism, and narratives (McMahon & Patton, 2017). It is also considered to be preferable for value discovery as it is more individually based (Patton, 2000).

Despite qualitative assessment's much closer fit with the current theoretical and practical preference in career counselling, it has been outshone by quantitative assessments (McMahon & Patton, 2017), which, according to McMahon, Watson and Lee (2019), could be attributed to its lack of definitional clarity. Qualitative career assessment has been defined as "informal, flexible, open-ended, holistic, nonstatistical and non-standardised" (Goldman, 1992; Okocha, 1998; Palladino Schultheiss, 2005, as cited in McMahon & Patton, 2017, p. 235). In an extensive literature review of qualitative career assessment, McMahon and colleagues (2019) defined the term to be "a structured qualitative instrument, technique or process that facilitates participant reflection" (p. 421).

According to McMahon and Patton (2017), some of the most common forms of qualitative career assessment include genograms, which help an individual understand their career family history and its influence on them (e.g. Di Fabio, 2010), lifelines, which help an individual explore significant life events and influential people and moments (e.g. Fritz and van Zyl, 2015), card sorts (e.g. Parker and Arthur, 2015) and early recollections, which helps the client identify major life themes through their life stories (e.g. Maree, 2015).

Proponents of qualitative career assessments do not suggest that qualitative assessment replace its quantitative counterparts, but that they complement each other (McMahon & Patton, 2017). Qualitative career assessment has many advantages over quantitative assessments such as being more holistic, fostering self-discovery (Goldman, 1990, 1992; Okocha, 1998). The rest of its advantages according to Goldman (1990, 1992) and Okocha (1998) are delineated below in the context of the proposed app supporting the value discovery of college students.

1. Qualitative assessment cultivates an active role on the client's part in gathering information and expanding on the meaning during the assessment process. The proposed

app aims to foster a sense of volition in the user by guiding them to find information and “teaching them how to fish” rather than “giving them the fish”.

2. Qualitative assessment encourages more collaboration between client and counsellor. The proposed app is designed to facilitate sharing of the user’s values with others such as a counsellor, a parent, or a friend.
3. Qualitative assessment is adaptable which benefits working with clients from diverse backgrounds. With globalization, college campuses are becoming increasingly culturally diverse. The proposed app is rooted in the user’s personal narratives which is qualitative in nature and less susceptible to the barrier that could be caused by quantitative assessments designed with a Western lens.
4. Lastly, qualitative career assessment can cater to different learning styles such as visual, kinaesthetic, or tactile. The proposed app allows the user to write or use voice dictation to tell their stories. It also allows users who are visual or audial learners to upload meaningful photos to facilitate their meaning-making process. The app is also much more interactive than quantitative assessments which would appeal to kinaesthetic learners.

Despite the strong potential and multitude of advantages of qualitative career assessment, it is not without criticism. Qualitative career assessment has been found to be time-consuming and labour intensive to use (Goldman, 1992; Prediger, 1994) and lack scientific rigour (Okocha, 1998; Stead & Davis, 2015). It has been suggested to be used only by experienced and competent counsellors (Goldman, 1990). Next, we will explore how we can leverage the power of technology to address these disadvantages and unleash the power of qualitative assessment.

## **Text Analysis & Artificial Intelligence**

### ***Text Analysis in Surveys***

Traditionally, qualitative data from open-ended survey questions have been manually coded into one of several “classes” or categories before further analysis is done (He & Schonlau, 2019). When it comes to large amounts of data, coding can be automated by using a manually coded subset of texts to create a statistical or machine learning model before it is subsequently used to code uncoded texts (He & Schonlau, 2019).

Software packages based on Computer Assisted Qualitative Data Analysis (CAQDAS) have emerged to semi-automate the coding process using computing tools such as word frequency calculators, text searching functions, and auto-coding facilities (Fielding, Fielding, & Hughes, 2013). Although human input is still needed in the initial manual coding process, a degree of automation thanks to tools such as CAQDAS can reduce human bias and improve accuracy. The original verbatim responses are always available for the user to go back to verify an original analysis (Fielding, Fielding, & Hughes, 2013).

### ***Text Analysis in Psychological Research***

As Tausczik and Pennebaker (2010) argued: “Language is the most common and reliable way for people to translate their internal thoughts and emotions into a form that others can understand. Words and language, then, are the very stuff of psychology and communication” (p. 25). In the realm of psychological research and applications, using text analysis to gain personality insights started at least 50 years ago and has progressed significantly (Adler & Seligman, 2016). As an effort to provide an efficient and effective method to study the emotional, cognitive, and structural components in individuals’ verbal and written speech samples, a text analysis application called Linguistic Inquiry and Word Count, or LIWC, was

developed by James Pennebaker in 1993 (Pennebaker et al., 2015). LIWC has evolved over the decades to LIWC2015, its fourth version now with a significantly updated dictionary and software options.

Social media has also gained momentum as a source for the psychological research of language (Ruths & Pfeffer, 2014) because studies have shown that social media platforms such as Facebook and Twitter contain autobiographical language that can reflect users' psychological characteristics (Eichstaedt et al., 2015; Kosinski et al., 2013). The emergence of “big data”, machine-learning algorithms used on large data sets, also makes studying everyday behavior at scale possible (Kulkarni et al., 2018; Yaden et al., 2018). For example, a study by Pang et al. (2019) concluded that Twitter language can be used to predict character strengths in an inconspicuous and cost-effective manner. In practice, IBM Watson's Personality Insights tool can analyze social media posts etc. to infer an individual's personality characteristics such as values (Personality Insights, n.d.), which has been applied in the drafting of new National Basketball Association (NBA) players (Watson, n.d.).

Advancements in language-based assessments of psychological states and attributes have demonstrated comparable validity to existing survey methodologies (Park et al., 2014). With rapid progress in data-driven approaches, the latest language-based analysis' advantage in predicting outcomes over traditional questionnaires is increasingly evident. A study analyzing Facebook posts by Kulkarni et al. (2018) demonstrated that language-based trait constructs derived from unprompted natural human language use can predict non-questionnaire-based outcomes better than questionnaire-based traits (e.g. Big Five) can.

As Kulkarni et al. (2018) suggested, “[i]ndividual differences have often been based on questionnaire items, which may not capture the richness of everyday human behavior” (p. 14).

The quintessential goal of the Protagonist is to overcome this barrier from traditional research methods and ensure that the value words generated after the text analysis are as authentic to the user's true nature and resonant with them emotionally as possible. Some promising studies that have proven this ideal possible are discussed below.

In a study that aims to create an audience questionnaire for a cultural festival, the researchers performed Emotional Text Analysis (ETA) of research subjects' uninfluenced responses to open-ended questions (Battisti et al., 2016). Afterward, they used dense words, words that "have an immediate, very strong emotional sense" (Carli et al., 2016), that preserved the authenticity and richness of the vocabulary used by the subjects' to construct a closed-ended audience questionnaire in order to achieve a more emotionally "evocative", or resonant effect in the respondent.

Another study that uncovered uninfluenced insights is one conducted by Schwartz et al. (2013). This study demonstrated that a data-driven *open-vocabulary* approach can reveal more insights from social media messages than the typical approach which associates language use with individual attributes by referring to pre-determined sets of words, or word-category lexica. The most widely used lexicon of this kind is the aforementioned Linguistic Inquiry and Word Count or LIWC (Pennebaker et al., 2015). The downside of using *a priori* words or categories like this is that the findings are limited to only the preconceived relationships within the lexicon used. In contrast, a data-driven open-vocabulary approach's lexicon is created from an analysis called *differential language analysis (DLA)* which extracts language features from the text being analyzed (e.g. Facebook messages) to differentiate demographic and psychological attributes. Such an approach produces a more complete description of the differences between groups of people and allows for unexpected findings (Schwartz et al., 2013).



*Artificial Intelligence*

Almost all of the advanced computerized text analyses discussed above are enabled by some kind of AI. Since there are many different theoretical understandings and definitions of this technology, and our main interest is in its application in teaching and learning in higher education, I draw on Popenici and Kerr’s (2017) definition of AI as “computing systems that are able to engage in human-like processes such as learning, adapting, synthesizing, self-correction and use of data for complex processing tasks” (p. 2). From a functional perspective, AI consists of five main areas as described in Table 2 below.

**Table 2**

*Artificial Intelligence Areas*

1. Machine Learning	2. Natural Language Processing	3. Computer Vision and Hearing	4. Responding	5. Decision Making
<ul style="list-style-type: none"> <li>▪ Data Mining</li> <li>▪ Unsupervised Learning</li> <li>▪ Supervised Learning</li> <li>▪ Reinforcement Learning</li> <li>▪ Deep Learning</li> </ul>	<ul style="list-style-type: none"> <li>▪ Natural Language Understanding</li> <li>▪ Machine Translation</li> <li>▪ Sentiment Analysis</li> <li>▪ Topic Segmentation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Speech Recognition</li> <li>▪ Handwriting Recognition</li> <li>▪ Optical Character Recognition</li> <li>▪ Image and Video Recognition</li> <li>▪ Facial Recognition</li> </ul>	<ul style="list-style-type: none"> <li>▪ Speech Synthesis</li> <li>▪ Natural Language Generation</li> <li>▪ Control of other Systems through APIs</li> <li>▪ Recommender Systems</li> </ul>	<ul style="list-style-type: none"> <li>▪ Case-Based Reasoning</li> <li>▪ Expert Systems</li> </ul>

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According to Roll and Wylie (2016), the next 25 years of AI’s application in education should not only involve an evolution of existing practices, but also a revolution where AI

technologies are embedded within students' daily lives in support of their cultures, practices, goals, and communities. I share the same vision that the proposed app plays an integral role in college students' development, helping them design more meaningful lives and learn life-long life and career management skills.

### **A New Way to Discover & Apply One's Values, Powered by Technology**

#### *Overview*

The Protagonist is a value discovery and application tool that functions in the format of a smartphone application with a companion site. Its core concept is to leverage the power of AI to replicate and semi-automate a story-based value discovery process that typically takes place in a coaching or counselling conversation with an experienced practitioner.

The app contains two main components: “*Discover Your Values*” and “*Mobilize Your Values*”, both of which consist primarily of a series of questions and writing prompts. Below is an overview of the app's high-level functionalities. The conceptualization of how the app's text analysis infers core values from a user's text input is inspired by Pang and colleagues' (2019) methodology predicting character strengths using social media language, which is discussed below.

#### *Proposed text analysis process for value discovery*

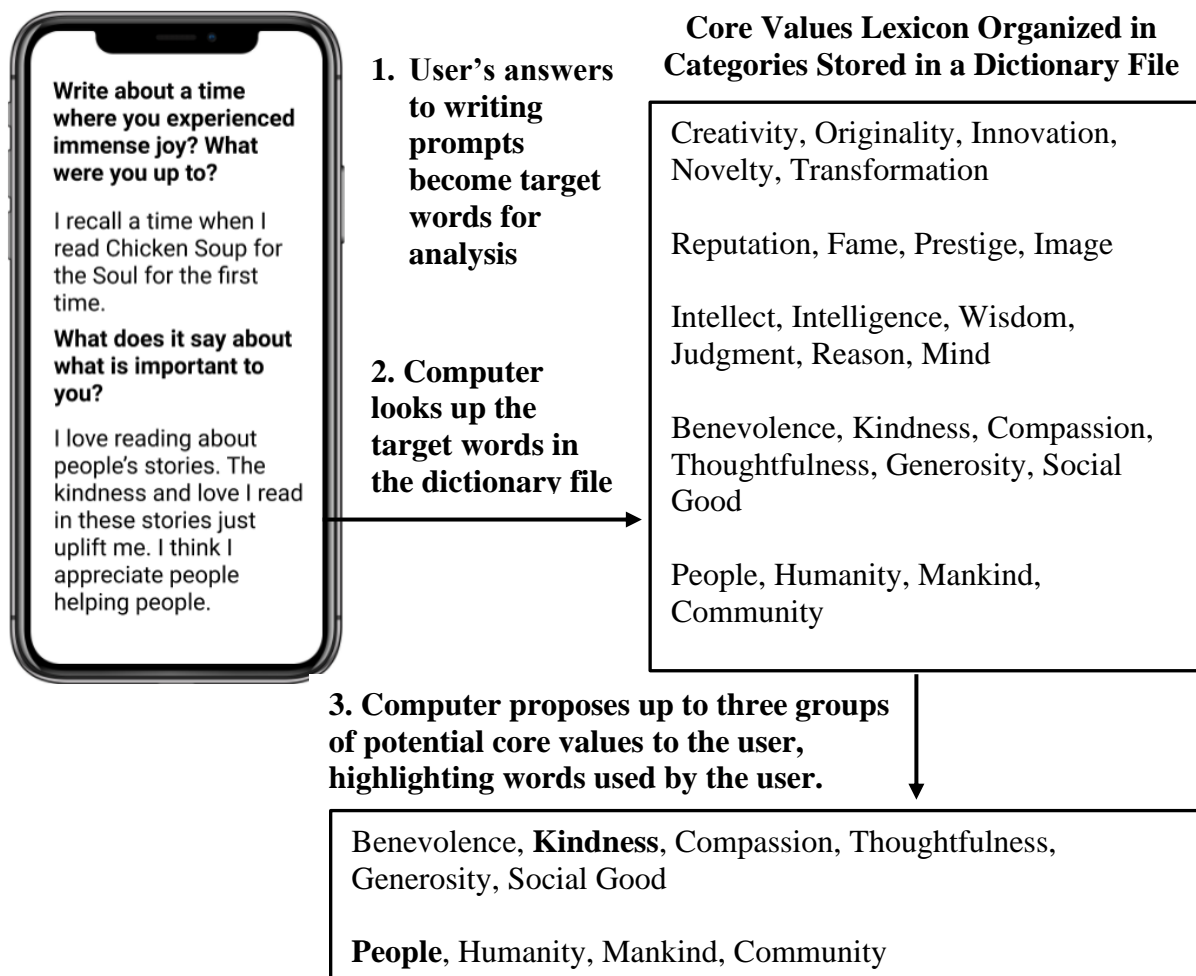
1. To enable the text analysis, a lexicon composed of a large list of core values organized in word categories similar in style to those of LIWC (Pennebaker et al., 2015) needs to be created. Borrowing Pennebaker and colleagues' (2015) terminologies in LIWC, words to be analyzed are called *target words*. Words in the core values lexicon created for this app are referred to as *dictionary words* and are saved in a dictionary file in a computer that does all the back-end processing for the app. Dictionary words similar in meaning, or in

- value expressed (e.g. creativity, imagination, innovation, originality), are grouped together and referred to as *word categories*. Please refer to Figure 3 for a simplified visual depiction of the proposed text analysis process.
2. The user would answer a series of carefully selected open-ended value discovery questions and writing prompts that ask the user to tell a story about an episode of their life. More on the interventions within this component and the rationale behind them would be discussed in more detail under Discovering Values later in this section.
  3. The app would ask probing questions such as “What does this say about what is important to you?” to elicit value words from the user (e.g. achievement, creativity, social good). If the user encounters any challenge at this stage, they can enter anything to their best effort or leave it blank.
  4. The computer would then help the user find potentially more relevant target words by using all the words entered so far to look up words similar in meaning in the dictionary file.
  5. Once the user finishes answering all the value discovery questions, the computer would process each target words by looking it up in the dictionary file similar to how LIWC functions (Pennebaker, et al, 2015): Every time a target word matches a dictionary word, the computer would count the corresponding word category once. For example, if words belonging to the same category of “creativity” such as “creativity”, “innovation”, and “originality” appeared once each in the target words, the computer would count three in total for the “creativity” category.
  6. When the computer finishes processing all the target words, it would present up to five groups (i.e. word categories) of core values that have the highest counts to the user,

- highlighting the words used by the user. For example, 1. “creativity”, “**innovation**”, “originality”; 2. “**status**”, “prestige”, “honour”; 3. “intellect”, “**wisdom**”, “judgement”, etc.
7. The user then examines the proposed core values and associated words and selects one word from each category that resonates the most to form a list of up to five core values. They also have the option of entering value words that resonate with them more than what the app recommends.

**Figure 3**

*Visual Depiction of the Proposed Text Analysis Process*



*Proposed process for value mobilization*

1. Once the user's list of core values is determined, the tool's value mobilization component would prompt them to prioritize each value and then rate from 1-10 how much they have lived according to each of their values and which one they want to honour more going forward.
2. The app would then help the user set goals on actions to take to honour those values and further their career pursuit. More on the interventions in this component and the rationale behind them would be discussed in more detail under Mobilizing Values later in this section.

The Protagonist is designed with the Self-Determination Theory (SDT; Ryan & Deci, 2000) in mind by appealing to and fulfilling its users' needs of *autonomy*, *competence*, and *relatedness*. SDT posits that there are three psychological needs that are primary predictors of well-being: autonomy (the desire to cause change and having a feeling of choice and volition), competence (the desire to be effective and having a sense of efficacy), and relatedness (the need to relate to and be cared for and accepted by others). In fact, the SDT has been considered to be one of the well-being theories that can be used to inform the design and evaluation of a technological application (Calvo & Peters, 2014). The Protagonist helps its users discover their intrinsic motivation, igniting their desire to effect change in their lives, which fosters autonomy. It also provides the favourable condition for its user to build competence by ensuring that its users can take full control of designing the action items with the app's support and keeps accessibility in mind. Vision-impaired users can easily instruct the app to narrate the questions to them and use the built-in speech-to-text functionality to narrate their answers to be captured. For those who prefer larger screens and using keyboards to write, they can use the app's

companion site instead. Another way the app builds competence is through using various goal-setting interventions to build its user's self-efficacy. Lastly, the app caters to the user's need to relate to and be accepted by others by having a social component where they can involve others in their value discovery, career decision-making, and goal attainment.

The rest of this section explicates the rationale behind the questions and writing prompts designed to help the user discover their values and apply the insights to help them with their decision-making, goal-setting and actions. Suggestions on how to use the app in a coaching or counselling relationship are also discussed.

### *Discovering Values*

The value discovery questions and writing prompts chosen for this tool fall under four different categories: *Meaning and Purpose*, *Interests*, *Strengths*, *Role Model*, and *Suppressed Values*. More examples of the questions and writing prompts to be used for this component of the app can be found in Appendix B.

#### *Meaning and purpose*

Values, meaning, and purpose have an inextricable relationship where the knowledge and presence of one reinforce those of another. As discussed earlier, the broad definition of meaning consists of three dimensions: significance, purpose and comprehension (or coherence; Martela & Steger, 2016). Values can be discovered in the process of meaning-making, i.e. making sense of one's life experience, and uncovering what is important. Values can also be revealed in the discovery of one's purpose because according to Erickson (1968, as cited in Bronk, 2011), purpose is part of the formation of a healthy identity and can offer an aim to guide one's identity development. One general consensus about purpose is that it transcends oneself and is personally meaningful (Bronk, 2011).

Based on this theoretical foundation, the questions in this category are designed to elicit insights on one's values by leading the user to explore the three dimensions of meaning: significance, purpose, and coherence. Examples of these questions are “What accomplishments do you think must occur during your lifetime so that you will consider your life to have been satisfying and well lived—a life of few or no regrets?” (significance); “What is a problem in the world that you really want to help solve?” (Purpose).

When it comes to the aspect of comprehension or coherence, the tool would ask the user to build a narrative around their growth journey. This intervention is inspired by a meaning-making intervention, *Growth Narrative*, based on the scientific finding that life stories about growth can facilitate growth-oriented identity formation (Shin & Steger, 2014; Steger et al, 2013). The app would ask the user to reflect on their life starting from childhood and adolescence, write a story about two areas where growth has occurred (e.g., having gained more adaptive self-awareness, insight, or transformation). The user would then be asked to identify themes arising from this narrative and explore how their growth reflects their values.

For users who are more visual or kinaesthetic learners, the app can ask them to upload photos they take or find ones that represent what is meaningful or important to them. They can also rank these photos according to the order of importance to their life's meaning. This exercise is inspired by Steger and colleagues' (2013) “photojournalist” exercise which is designed to help clients discover their values, clarify how they make sense of their lives, and can have the potential of creating a new comprehension system, i.e. new perspectives or ways to examine their lives.

### *Interests*

For individuals with limited life experience, it may be difficult to answer questions

related to purpose. This can be addressed by tapping into the user's interests first. According to developmental psychologist Bill Damon, a sense of purpose can be cultivated from interests (as cited in Duckworth, 2016). Damon's research found that "[e]veryone has a spark" (p. 162) and that spark can be the genesis of one's purpose. Therefore, questions designed to understand the user's interests would be included (e.g. "What is one thing or a few things that have attracted your interest?"). It is important to note that interests are not discovered through mere reflection (Duckworth, 2016). Instead, it is activated in a person's interaction with the outside world and it takes multiple interactions for one to notice that they are interested in something. Therefore, for users who are not confident about their answers to this category of questions, they would be prompted in the application component of the app to pursue more activities to validate or cultivate their interests.

### *Strengths*

Although strengths are different from values, exploring one's strengths can provide insights on one's values. A person's strength can be their natural talent, but in many cases, it could come from a combination of a strong interest or value they place in something and repeated practice as a result. For example, at one point in my life as a teenager growing up in China, inspired by an opportunity to study abroad, I decided that I wanted to become really good at English so that it can afford me a lot more opportunities to explore the world. After about a year of hard work, English became a strength of mine. It is certainly not a value, but the process of developing it into a strength shows how much learning and curiosity mean to me. Questions such as "What is one thing you are really good at doing?" and a follow-up question, "What enabled you to be so good at it?" can be asked. The app can also have a section where the user can save the strengths identified for easy access later. It can also remind the user to consult



strengths questionnaires popular in higher education (e.g. CliftonStrengths; Gallup, n.d.) and the VIA Character Strengths Survey (VIA Institute on Character, n.d.).

### *Role models*

Since values are generally socially desirable, people tend to consider others who share the same values (Schwartz, 2017). Although there is no direct relationship between the presence of a role model and discovery of values, one of the interview questions in William Scott's extensive study of values in the 1960s is to ask people who they admire and what about them is admirable (Peterson, 2006). Being able to observe the purposeful life of a role model also contributes to the development of purpose according to Damon (Duckworth, 2016), which helps one discover their values. Therefore, asking the user to reflect on their role model can facilitate value discovery. Furthermore, vicarious learning from a role model has long been argued to enhance career decidedness according to The Social Learning Theory of Career Decision-Making (SLTCDM; Krumboltz, 1981). A study of 405 college students also found that having a supportive role model and a high-quality relationship with one's role model contributed to the career decidedness of the participants (Perrone et al., 2002). By asking the user to identify their role model(s), this tool intends to elicit the qualities the user admires, offering insights on their values. If a user cannot identify a role model, the app would flag this and assure the user that they would be supported to find one later.

### *Suppressed values*

Kimsey-House and colleagues (2011) posited that any life experience that have a strong impact on a person, including negative experience, can be used to discover their values. Therefore, another way to identify a person's values is to go to the opposite where one of their values is being suppressed (i.e. violated or absent), which often lead to anger, frustration or upset

(Co-Active Training Institute, n.d.). Questions in this category can include “What do you often not tolerate in others?” “What did that adversity reveal that is important to you?”

### *Mobilizing Values*

You must give birth to your images. They are the future to be born. Fear not the strangeness you feel. The future must enter you long before it happens. Just wait for the birth, for the hour of new clarity.

- Rainer Maria Rilke (1929/1984, pp. 23–24)

Values are the seeds that “give birth” to one’s future. They may be dormant, but they are how the future enters one “long before it happens”. They must be cultivated in order to give birth to a flourishing future.

Cultivating one’s values means putting them into action, which is the only way values can truly define a person (Steger et al., 2013). Tapping into one’s values is also a great way to influence desired behaviour. People are more likely to pay attention to situations that threaten their important values or offer opportunities to preserve those values; they are also more likely to formulate plans to achieve those values (Schwartz, 2017).

This component of the app aims to mobilize the user’s values by helping them set goals on how to put their values in action and how to achieve those goals within the context of career decision-making. The key categories of the interventions used in this component of the app and the psychological principles that give rise to them are elucidated in the rest of this section. More examples of the questions and writing prompts to be used can be found in Appendix C.

### *Strengths*

To mobilize a person’s values, Steger et al. (2013) suggested tapping into their personal strengths. The app can ask the user to consult the strengths identified in the value discovery

component of the app and explore career options and activities that allow them to apply their strengths to honour their values. Since character strengths are in fact values in action (Niemiec, 2017; Peterson & Seligman, 2004), the character strengths interventions designed to enhance character strength usage can also be leveraged to activate the corresponding value.

### *Purpose*

Purpose is like “the anchor we throw to pull us to our future” (Steger et al., 2013, p. 255). It is a life goal that provides direction rather than a fixed endpoint to be reached. It is also a process of putting one’s meaning into action and an expression of one’s values. The tool would prompt the user to look back at the purpose-related questions explored in the value discovery component and ask probing questions to help them determine what career options they can consider to help them make the impact they want to make for the world.

### *Career prototypes*

The career options entertained by the user so far would be saved in the career prototype section of the app. The word “prototype” is used to emphasize that exploring different career options is an iterative process. The user would be asked to take notes on their reflections and research findings on each career option in this section for future evaluation. Periodic prompts would be sent to remind them to review this section and make adjustments if needed.

### *Goal setting and goal attainment*

The app would prompt the user to track action steps they plan to take and set deadlines that are synchronized with their digital calendar. Smartphone push notifications can be set up to keep the user engaged with their action plan. To support the user’s goal attainment, strategies to improve the user’s self-efficacy would also be incorporated due to the aforementioned association between high self-efficacy and lower levels of career indecision (Creed et al., 2004;

Guay, et al., 2006; Nota et al., 2007). Moreover, the following goal setting and goal attainment strategies are employed to keep the user motivated and moving forward.

*Signs of progress and potential obstacles:* Since one's purpose can be abstract, it is recommended that it be translated to more specific goals that show signs of progress (Steger et al., 2013). Goals that are specific and short-term focused have been considered to lead to higher motivation and efficacy (Maddux, 2009). Examples of prompts in this category adapted from Steger et al.'s (2013) suggested interventions include: "What are some things that could be accomplished over the next 5 years that demonstrate your progress toward your purpose?" "To achieve these goals, what are some specific milestones?"

The user would also be asked to anticipate potential obstacles that may occur and develop a plan to overcome them. *Mental contrasting with implementation intentions* (MCII), i.e. a strategy that contrasts a potential obstacle with a positive outcome and develops a detailed plan of action, has been found to enhance self-regulation and goal attainment (Duckworth et al., 2011).

*Growth narrative:* The user would be asked to continue their growth narrative started in the value discovery component by writing an account of their life in the future that demonstrates further growth (Steger et al., 2013). The user is encouraged to be specific by including areas of growth, their activities, internal experiences, and social environments. The coherence built in this exercise contributes to their *narrative identity* (i.e. their evolving life story), which can contribute to their psychological well-being and a sense of meaning (Adler, 2012; Martela & Steger, 2016).

*Digital vision board:* To reinforce the user's future-oriented narrative, the app would suggest that the user upload a few photos that represent the future life that they want. These photos can be a combination of ones the user takes themselves and ones they find online.

All the exercises above would allow the user to imagine their effective and ineffective behaviours in the future, creating the *imagined experiences* that have been found to enhance their self-efficacy beliefs (Maddux, 2009).

*Role model:* As mentioned earlier, asking about a person's role model can unveil their values. At the same time, having a role model would allow a person to observe and learn effective behaviours vicariously (Maddux, 2009). A supportive and trustworthy role model can also influence a person's belief in themselves. Such *verbal persuasion* and *vicarious experiences* from one's role model can both improve one's self-efficacy (Maddux, 2009). The app would invite the user to involve their role model(s) in their career decision-making process. For those without a role model, it would provide tips on how to find a role model such as a mentor and how to cultivate relationships.

*Network building:* To further sustain the user's efforts in pursuing their goals, the Protagonist contains a social aspect to encourage them to share their values and goals with a friend or a career practitioner for further support or interact with other users who share similar values. Individuals in the user's network can suggest actions the user can take to honour their values and pursue their goals. The user can also share the app and team up with their friends to work towards their goals together. A study that reviews tech-enabled behavioral change interventions found that many existing applications enable competition rather than cooperation among users (Villalobos-Zúñiga & Cherubini, 2020). Instead, they advocated functionalities that promote collaboration as the sense of teamwork could not only improve intrinsic motivation but also build relatedness and competence, two of the three psychological needs that foster well-being according to the SDT (Ryan & Deci, 2000). To further encourage collaboration, gamification, the application of gaming elements to a non-gaming environment as a way to

motivate users or make potentially unpleasant tasks fun (Calvo & Peters, 2014), can be used to build competence by keeping track of their progress with an in-app “dashboard” where helping each other succeed can earn each user more points.

As mentioned earlier, since character strengths are inherently values (Niemiec, 2017; Peterson & Seligman, 2004), the vast body of character strengths interventions (e.g. strengths-spotting through stories, role models; Niemiec, 2017) can be used as additional interventions to mobilize values.

### *How to Use the Protagonist*

Career decision-making cannot be done effectively in isolation. As mentioned earlier, qualitative career assessment, such as the approach used by the Protagonist for value discovery, inherently promotes collaboration. As such, the Protagonist is not intended to replace the role of a career practitioner or anyone else within its users’ existing support network (e.g. a teacher). In fact, it is intended to maximize the amount of self-exploration the user completes independently before a counselling or coaching conversation to facilitate a more informed and productive dialogue. On the other hand, for users who do not have easy access to an experienced career practitioner or a support network (e.g. students attending underfunded colleges, experiencing long wait times for career counselling), the Protagonist can be considered their digital companion equipped with a comprehensive range of interventions that produce career decision-making and well-being benefits.

To promote students’ adoption of the tool throughout their academic career, I suggest that this app becomes part of the resources a college or university promotes during orientations and be used to support the institution’s career development curriculum or services.

The following is an illustration of how the Protagonist can be used in institutions where

the student-practitioner relationship is more “high-touch”, i.e. students get to develop a coaching or counselling relationship with the same career practitioner (referred to as “coach” for simplicity for the rest of this section) through multiple touchpoints over their academic journey. Variations based on the coach’s individual training and style are encouraged as long as they serve students’ learning.

1. Before a student’s first meeting (e.g. an “intake meeting”) with their career coach, they are asked to create a free account for the Protagonist and spend some quiet time alone to answer the questions in the value discovery section of the app as much as they can. Students are encouraged to take time to reflect and not rush through the exercise. If they feel stuck, they can leave those topics for a later discussion with their coach. They can also complete the exercise over multiple sessions. Some institutions offer students free access to strengths assessments. This is when such assessments can be offered to students to maximize their insights about themselves independently before talking to their coach. Their answers would be saved in the app and can be easily shared via email with their coach to be reviewed prior to the first meeting.
2. During the intake meeting, the coach can ask the student to set the context of their career development goals first, and then walk the coach through any challenges they encounter in the value discovery exercise. For example, the student may have trouble articulating what values a particular life story reveals about them. After learning the student’s account of that story, the coach may be able to suggest a few value words to the student, the best of which could be input into the app. Another meaningful way for a coach to provide assistance is in the value prioritization stage after the student’s core values have been clarified. This is where the student may experience different conflicts such as

- misalignment between their values and their life trajectory so far, or conflicts between their values and parental expectations. The support from the coach at this point can help the student clarify their conflicts and develop a plan to address them.
3. Clarifying the student's values and their relative priorities may take up all the time in a one-hour session. If time permits, another way the coach can help the student move forward with the app would be to ask what kind of career options they would like to explore after considering their values, interests, and purpose. Even if the student is unclear about those options, the coach would be much better informed with insights from the app and can make suggestions on what options to consider and the resources the students can access to explore further. The career options the students agree to explore further can be saved in the *Career Prototype* section of the app.
  4. The most important outcome from any of these earlier sessions is setting short-term goals to further the students' actions with the support of the app's goal-setting functionalities (e.g. calendar reminder, push notifications, sharing with their coach and friends). As the student's clarity about their career options develop, the coach can remind them to use the more "advanced" features in the value mobilization component. For example, after exploring the three career prototypes by reading online resources and talking to alumni, the student decides that becoming an entrepreneur is the most likely prototype they want to pursue. They can use the *Growth Narrative* and *Digital Vision Board* to help them visualize what kind of entrepreneur they want to become and their purpose to help them determine what problem they would like their future business to solve. For students who decide to pursue conventional employment, the self-awareness and storytelling ability they develop through usage of the app would strengthen their performance in the job



search process. For example, they would be able to write cover letters or answer the daunting “tell me about yourself” interview question in a much more authentic, coherent, and touching way.

Although my suggestions above are presented in a linear fashion, the different components of the app don’t need to be used in a linear way. In fact, career decision-making is far from straightforward. It is an iterative process where an individual needs to tap into their self-knowledge, overcome discomfort, make educated assumptions, and know when to remain exploratory and when to start focusing. Career practitioners can play a crucial role in guiding students in this process with insights from the app, student interactions, their experience and intuition.

### *Measurement*

The primary focus of the Protagonist is to bolster its users’ career decision-making with the secondary focus being well-being. In this section, I explain how the Protagonist’s effectiveness can be measured in both an empirical and non-empirical setting by a post-secondary institution.

#### *Empirical setting*

To measure the app’s impact on career decision-making, existing instruments that measure career decision-making difficulties can be considered. Career indecision has been considered to be among the most studied subjects in the field of vocational psychology (Gati et al., 2011). Instruments developed to measure career indecision has evolved in sophistication over the decades to reflect the increasingly multidimensional factors that contribute to a person’s career indecision (Jin et al., 2015). According to Jin et al. (2015), the Career Decision Difficulties Questionnaire (CDDQ; Gati et al., 1996; Osipow & Gati, 1998; See Appendix D for

its taxonomy) is a more sophisticated third-generation assessment that examines three dimensions of career indecision: *Lack of Readiness*, *Lack of Information* and *Inconsistent Information*. Recognizing the lack of emphasis on the identity and emotional dimensions in previous instruments, the Emotional and Personality-Related Career Decision-Making Difficulties Scale (EPCD; Saka et al., 2008; See Appendix E for its taxonomy) consisting of 50 items was developed, followed by the 25-item EPCD–Short Form (EPCD-SF) (Gati et al., 2011). The EPCD measures three major clusters: *Pessimistic Views*, *Anxiety*, and *Self-Concept and Identity* (Saka et al., 2008).

To measure the effectiveness of The Protagonist, I recommend using the EPCD-SF (Gati et al., 2011) as the career decision-making outcome measure for a variety of reasons: This instrument was designed for university students and has been cross-culturally validated in university student samples in Israel and the United States (Saka et al., 2008), Korea (Jin et al., 2015) and China (Hou et al., 2016), and Turkish high school students (Oztemel, 2012). Compared to its predecessors which were more cognitively focused, it recognizes the important role emotion and identity play in career decision-making, which is aligned with the Protagonist's orientation to identity formation through storytelling.

Methods to define and measure well-being abound (Butler & Kern, 2016; Forgeard et al., 2011). The Protagonist's intended well-being impact on its users is multi-faceted. Therefore, I propose that an instrument that is based on a multi-dimensional well-being model be used. Examples of such instruments include the 54-item Comprehensive Inventory of Thriving and the 10-item Brief Inventory of Thriving which are generally meant for the health settings and measures five domains similar to those in PERMA (Seligman, 2011) and two additional areas of autonomy and optimism (Su et al., 2014). Another example is the eight-item Flourishing Scale

(Diener et al., 2010) that measures purpose in life, relationships, self-esteem, feelings of competence, and optimism.

After considering the length and fit with the well-being domains the Protagonist is intended to influence (e.g. optimism is not a direct focus), I recommend that the 23-item PERMA-Profiler, the only instrument that focuses primarily on the five domains in the PERMA model (Seligman, 2011) and uses multiple items to measure each domain (Butler & Kern, 2016), be used to measure the Protagonist's well-being outcome. The PERMA-Profiler also includes items that assess overall well-being, negative emotion, loneliness, and physical health, all of which highly relevant for the Protagonist's user demographic. This instrument has demonstrated satisfactory internal reliability and fit after being tested on a diverse sample of over 15,000 people globally (Khaw & Kern, 2014; Butler & Kern, 2016).

In an empirical setting, a control group of individuals not exposed to the Protagonist and experimental group (i.e. users of the Protagonists) can be used to more rigorously measure the app's effectiveness. The EPCD-SF (Gati et al., 2011) and PERMA-Profiler (Butler & Kern, 2016) can be administered to all study participants in the control and experimental groups (pre-test) and once again after the study period concludes (post-test). The pre- and post-test outcome measures can be compared to determine whether the app leads to any statistically significant decrease in career decision-making difficulties and improvement in well-being. The outcome measures can also be compared to the control group. To monitor app usage during the study by the experimental group, I suggest the following process measures: number and length of time using the app, sharing of values report with others, sharing of app with others.

In addition to the quantitative measurements mentioned above, qualitative research such as focus groups can be organized to get feedback from app users. All the research results can

contribute to the continued improvement of the app before it is fully launched to more post-secondary institutions.

### *Non-empirical setting*

In a non-empirical setting, simple in-app feedback can be collected to measure the app's effectiveness and its "likability" by its user. At the first time a user uses the app, a pop-up window would ask the user to rate their clarity of career direction on a seven-point Likert scale (e.g. "Rate how much you agree with the following statement from a scale of one to seven: 'I have a clear idea of what career option(s) to pursue.'"). After reaching a certain milestone of app usage (e.g. finishing the value discovery component, reaching a few goals), the app would generate a pop-up window again asking the user to rate the app on a seven-point Likert scale on the following items: 1. Current level of clarity on their career direction, 2. How useful they found the app so far, 3. How much they would recommend the app to other students.

The process measures suggested above for the empirical setting can also be generated by the institutional user to evaluate app usage and engagement in the non-empirical setting.

### *Limitations & Caveats*

The Protagonist is intended to be used by a culturally diverse population. For example, its qualitative and narrative nature can favourably cater to a more diverse user population over typical quantitative tools. In addition, the core tenet of the intervention is to help its user uncover and articulate their individual uniqueness and discover their identity in relation to their family, society, and culture. The definition and theories related to values referenced also come from decades of cross-cultural values research (Schwartz, 2012). That said, it is important to acknowledge that the theories and empirical evidence on topics such as meaning and purpose can be heavily influenced by ideologies, psychology, experiences and behavioural tendencies of

individuals from Western, educated, industrialized, rich and democratic (WEIRD; Henrich et al., 2010) societies. This may mean that the construct used for value discovery (meaning and purpose, interests, strengths, role model, and suppressed values) may not resonate with some users from a non-WEIRD culture.

For example, non-action and acceptance in the face of suffering are considered to be the key to a meaningful life by the Chinese due to the influence of Taoist and Buddhist philosophies (Wong, 1998). For Chinese students, the question, “What is something in the world that you wish to change?” may not resonate with these students or elicit useful insights about their values. Although the proposed app is English-based and therefore is more likely to be used by students in English-speaking countries, the increasingly culturally diverse student bodies of college campuses mean that for the app to serve students from “non-WEIRD” populations as effectively, more support and discussions with career practitioners are needed to help these students resolve potential values conflicts with the cultures they are from.

Another caveat that underscores the importance of social support for the usage of the app, be it from a career practitioner, a role model or friends and family, is the potential confusion or distress that may arise when the user experiences difficulties in their search for meaning or reconciles value conflicts. In a study that found that the *presence* of meaning mediated the relationships between career indecision and anxiety among a sample of 229 university students, researchers found a positive correlation between the *search* for meaning in life and anxiety (Miller & Rottinghaus, 2014). Despite such correlation’s divergence from previous research, it is not unusual for the process of meaning searching to provoke anxiety as it may remind an individual of dissatisfaction with certain areas of their life, such as their career (Miller & Rottinghaus, 2014). Therefore, to alleviate any potential distress caused by using the Protagonist,

the app could send daily notifications asking the user to assess their mood and encourage those in distress to seek support from their network such as career practitioners, or if more severe, mental health professionals. Many universities and colleges also provide free mental health support over the phone. Such resources can be linked within the app for easy access for the user.

The tremendous potential, rapid advancement, and application of AI do not mean that AI is without limitations. For example, in the space of language processing, AI still has trouble detecting irony and humour (Popenici & Kerr, 2017). In the case of the Protagonist, complicated algorithms need to be developed to infer values from a user's input, which may not produce perfect results. However, just like the potentially inaccurate search results one could expect from a Google search, or Netflix recommendation, both of which enabled by AI, a margin of error is something users could tolerate. In addition, the process of writing is expected to help users generate a reasonable amount of insights that they do not need to fully rely on AI's input.

### *Future Directions*

To empower career practitioners to support students in a more proactive and customized manner, the Protagonist can evolve to become a powerful Intelligent Learning Environment (ILE) that is learner-centric and continuously tracks students' knowledge and performance (Ciolacu et al., 2018).

It can include a career diagnostic tool to be used at the beginning of a user's career decision-making process and later on as a progress tracking tool. Results from the initial diagnosis can be shared with the career practitioner ahead of time to locate the sources of career decision-making difficulties and develop customized intervention strategies. As Hou and colleagues' (2016) recommended, the aforementioned assessment tools, Career Decision Difficulties Questionnaire (CDDQ; Gati et al., 1996; Osipow & Gati, 1998) and Emotional and

Personality-Related Career Decision-Making Difficulties Scale (EPCD; Saka et al., 2008) can be combined as a diagnostic tool during a student's intake session to drive the focus of the coaching or counselling experience. For example, if a student is high in decision-making difficulties in the self-concept and identity cluster, the career practitioner can help the student explore potential conflicts in that area. Students who score high due to their pessimistic views may need help with their negative beliefs, which brings us to the next potential functionality for the future.

When we are able to develop a more sophisticated machine learning algorithm for The Protagonist, it could have more intelligent features that offer customized suggestions based on the user's daily encounter with life. It could support the user's growth, such as in the area of resilience, after their career decision-making and pursuits become successful (e.g. getting a dream job after graduation).

For example, one of the prominent resilience cultivating strategies starts with helping individuals learn how some of their underlying beliefs and *thinking traps* (counterproductive thought patterns) negatively impact their emotions, behaviors, and learn to change their thoughts by finding evidence, alternatives and implications that are more productive (Reivich & Shatte, 2002). Awareness of one's emotions and thoughts can aid value discovery while reminding people of their values can facilitate the process of shifting thoughts or perspectives. For example, learning that one is angry could reveal that something they hold dear has been violated (Reivich & Shatte, 2002). According to a value discovery practice in professional coaching, staying curious in this process can offer insights on one's values (Kimsey-House et al., 2011). If the app's regular "mood check-in" detects anger, it could tell the user that anger may mean that one's right has been violated and invite the user to ponder what kind of value their negative experience may have revealed about them. This meaning-making exercise can neutralize the

initial negative emotion, which can calm down the individual and help them focus on *real-time resilience* (shifting to more productive thoughts; Reivich & Shatte, 2002). When the app detects other negative moods its user is experiencing, reminding the user to tap into their values can also contribute to real-time resilience by helping them come up with alternatives, evidence, and implications that are more productive. In fact, value is a tool frequently used in professional coaching to help clients change perspectives and get “unstuck” (Kimsey-House et al., 2011). The Protagonist’s potential to be integrated with other well-being applications as part of a large and comprehensive ecosystem is also infinite. For example, as part of the app’s suggestion for a user to try out mindfulness practices such as a way to cultivate their resilience, it can link to meditation apps suitable for college students.

Furthermore, upon the user’s consent, the Protagonist can be linked to the user’s social media profile to analyze their language usage pattern and provide mental health support when appropriate. Advancements in big data have allowed scientists to perform automated analysis of language used over social media as a way to detect symptoms associated with depression and other mental illnesses (Guntuku et al., 2017). If the Protagonist detects any risks of mental illness from a user’s social media language, it can share its “observation” with the user, educate them on the rationale for such observation and ask if the user would like further support (e.g. connecting to a counsellor or learning skills that can reduce depression symptoms). Given the large rates of mental illnesses among North American college students (American College Health Association, 2019a, 2019b) and the fact that mental illnesses remain underdiagnosed, such a functionality is a large step towards early detection and prevention of mental illnesses of college students. In this regard, we also need to take into consideration the ethical application of such functionalities and address risks of privacy violations, and as Guntuku et al. (2017) suggested, minimize the risks of



misclassification.

### **Conclusion**

The Latin roots of the word "education" include "educare," meaning to train, and "educere," to draw out (Craft, 2017). I believe strongly that higher education should not stop at imparting job search skills and labor market information. The constantly changing and uncertain nature of the future of work, not to mention the mental health crisis plaguing the younger generations, calls for our educational institutions to teach young people who know not only how to survive, but how to thrive; who know how to continuously reinvent themselves, grounded by deep knowledge of their identity and aspirations.

There has never been a better and more pressing time for higher education to teach well-being to young people. Colleges and universities can help their students adopt a tool like the Protagonist to reinvent their current career support practices as a way to address students' career needs and overall well-being needs.

Based on a narrative career counselling approach which is more relevant, holistic and collaborative than the dominant and traditional positivist-objective approach, the Protagonist possesses a unique advantage of helping its users make meaning of their lives and construct their sense of self through storytelling. Although the app's focus is on helping its users discover their values, the comprehensive discovery process also gives rise to knowledge of their meaning and purpose, strengths, and interests, all of which crucial identity insights that support its users' value-based career decision-making.

The Protagonist is also action-focused, dynamic, and relationship-oriented. By prompting its users to seek inspiration and support from their role models, career support professionals, and other individuals in their communities, by teaching its users how to set and accomplish goals

strategically, it is also designed to cultivate in them life-long life and career management skills.

Looking through the lens of Seligman's (2011) PERMA model, the Protagonist's well-being benefits are evident. It empowers its users to live an engaged life with more frequent positive emotions and less anxiety thanks to the clarity of their identity and priorities. It guides them to build stronger relationships with people and organizations aligned with their values. It teaches them how to become confident and purposeful agents of their lives with values being their guideposts, and the intrinsic motivation and resilience to achieve their goals.

The Protagonist is a prime example of AI technologies' integration in higher education and is designed to augment students' development in the career and well-being domains by enabling customized and dynamic self-regulated learning. It can also alleviate resourcing pressure on educational institutions by making counselling more accessible, effective, and efficient. It is my hope that by leveraging technology to fight the disruption from technology, the Protagonist can play a preventative role in helping post-secondary institutions address the mental health crisis that deprives countless young people of the agency to act as protagonists of their lives.

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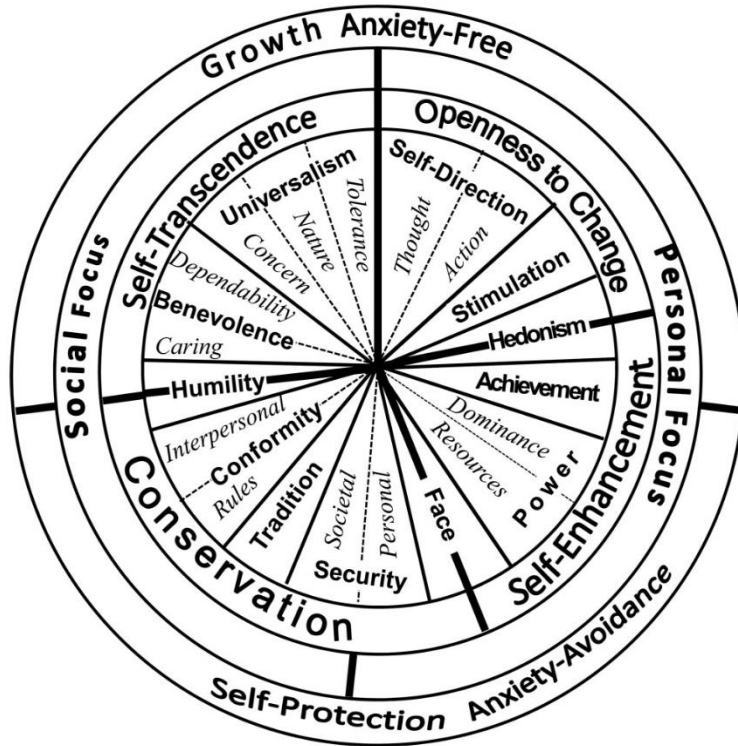
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**Appendix A: Refined Schwartz Theory of Basic Values**

**Figure 2**

*Theoretical Model of the Circular Motivational Continuum of 19 Values*



Reprinted from “Refining the Theory of Basic Individual Values” by S. H. Schwartz, J. Cieciuch, M. Vecchione, E. Davidov, R. Fischer, C. Beierlein, A. Ramos, M. Verkasalo, J. Lönnqvist, K. Demirutku, O. Dirilen-Gumus and M. Konty, 2012. *Journal of Personality and Social Psychology*, 103(4), p. 669. Copyright 2012 by American Psychological Association

**Table 1**

*The 19 Values in the Refined Theory, Each Defined in Terms of Its Motivational Goal*

Value	Conceptual definitions in terms of motivational goals
Self-direction–thought	Freedom to cultivate one’s own ideas and abilities
Self-direction–action	Freedom to determine one’s own actions
Stimulation	Excitement, novelty, and change
Hedonism	Pleasure and sensuous gratification
Achievement	Success according to social standards
Power–dominance	Power through exercising control over people
Power–resources	Power through control of material and social resources
Face	Security and power through maintaining one’s public image and avoiding humiliation
Security–personal	Safety in one’s immediate environment
Security–societal	Safety and stability in the wider society
Tradition	Maintaining and preserving cultural, family, or religious traditions
Conformity–rules	Compliance with rules, laws, and formal obligations
Conformity–interpersonal	Avoidance of upsetting or harming other people
Humility	Recognizing one’s insignificance in the larger scheme of things
Benevolence–dependability	Being a reliable and trustworthy member of the ingroup
Benevolence–caring	Devotion to the welfare of ingroup members
Universalism–concern	Commitment to equality, justice, and protection for all people
Universalism–nature	Preservation of the natural environment
Universalism–tolerance	Acceptance and understanding of those who are different from oneself

Reprinted from “Refining the Theory of Basic Individual Values” by S. H. Schwartz, J. Cieciuch, M. Vecchione, E. Davidov, R. Fischer, C. Beierlein, A. Ramos, M. Verkasalo, J. Lönnqvist, K. Demirutku, O. Dirilen-Gumus and M. Konty, 2012. *Journal of Personality and Social Psychology*, 103(4), p. 669. Copyright 2012 by American Psychological Association

**Appendix B: Value Discovery Questions & Writing Prompts**

<b>Question Category</b>	<b>Question/Writing Prompt</b>	<b>Probing Question</b>
Meaning & Purpose – Significance <sup>1</sup>	What accomplishments do you think must occur during your lifetime so that you will consider your life to have been satisfying and well lived—a life of few or no regrets?	What do they say about what is important to you? Name a few.
Meaning & Purpose - Significance <sup>1</sup>	Look forward 20 years. You are attending a function where someone is giving a speech about you! What would you want them to say?	
Meaning & Purpose – Purpose <sup>2</sup>	If time and resources were not a concern, what is a problem in the world that you really want to help solve?	What does this say about what is important to you?
Meaning & Purpose – Purpose <sup>2</sup>	If you had to give a speech about one topic, what would it be?	What does this say about what is important to you?
Meaning & Purpose - Coherence <sup>3</sup>	Reflect on your life starting from childhood and adolescence and write a story about two areas where growth has occurred (e.g. having gained more adaptive self-awareness, insight, or transformation).	What are some themes that arise from these stories? What do they reveal about what is important to you?
Meaning & Purpose - Coherence <sup>3</sup>	Upload five photos that represent what are meaningful to you.	What do these photos say about what are important to you?
Interests <sup>4</sup>	What makes you smile, laugh, or experience joy?	
Interests <sup>4</sup>	Write about a time where you experienced immense joy? What were you up to?	What about this event make you feel such joy?
Interests <sup>4</sup>	What is one thing or a few things that have attracted your interest?	What qualities do they have that attracted you?
Strengths	What is one thing you are really good at doing?	What enabled you to be so good at it?
Strengths	What is one of your proudest moments in life?	What qualities of yours would have led to these proud moments?
Role Models <sup>4</sup>	Who has inspired you in your life journey so far?	What qualities do/did they have that inspire you?
Role Models <sup>6</sup>	Name at least one person who you admire.	What traits do you admire in them?
Suppressed values <sup>7</sup>	What qualities in others can't you stand?	
Suppressed values <sup>7</sup>	What situations tend to upset you or make you angry?	What characterizes that?
Other	What is your favourite movie or movie character? What makes it your favourite?	What does it say about what is important to you?

<sup>1</sup> Martela, F., & Steger, M. F. (2016). The three meanings of meaning in life: Distinguishing coherence, purpose, and significance. *The Journal of Positive Psychology, 11*(5), 531-545.

<sup>2</sup> Bronk, K. C. (2011). The role of purpose in life in healthy identity formation: A grounded model. *New Directions for Youth Development, 2011*(132), 31-44. doi:10.1002/yd.426

<sup>3</sup> Steger, M. F., Sheline, K., Merriman, L., & Kashdan, T. B. (2013). Using the science of meaning to invigorate values-congruent, purpose-driven action. In T. B. Kashdan & J. Ciarrochi (Eds.), *Mindfulness, acceptance, and positive psychology: The seven foundations of well-being* (pp. 240-266). Context Press.

<sup>4</sup> Duckworth, A. (2016). *Grit: The power of passion and perseverance*. Scribner.

<sup>6</sup> Peterson, C. (2006). *A primer in positive psychology*. Oxford University Press.

<sup>7</sup> Co-Active Training Institute. (n.d.). *Values clarification exercise*. Retrieved from <https://learn.coactive.com/hubfs/2019%20Toolkit/Co-Active-Coaching-Toolkit-VALUES-CLARIFICATION-EXERCISE.pdf>

### Appendix C: Value Mobilization Questions & Writing Prompts

Question Category	Question/Writing Prompt	Probing Question
Using strengths to put values in action <sup>1</sup>	What would it be like to use your strengths to "act out" your values for the world to see?	
Using purpose to guide action <sup>1</sup>	Name one or two things you would like to change about the world.	Prompts/inspirations: Consider news stories you have read that have moved you, or something you have observed or experienced that you'd like most to spare those you care about.
Goal-setting - Signs of progress <sup>1</sup>	What are some things that you could accomplish over the next 5 years that would show your movement toward your purpose	To achieve these goals, what are some specific milestones?  What activities need to be done in order to accomplish the first of these goals?  How can these activities be implemented this month? This week? Today?
Goal-setting - Potential obstacles <sup>2</sup>	What obstacles do you anticipate in this process?	What can you do to overcome them?
Goal-setting - Growth narrative <sup>1, 3, 4</sup>	Close your eyes for a moment and imagine what it'd be like when you reach those goals. Write down some notes of what you saw.	
Goal-setting - Vision board <sup>3</sup>	Create a vision board by uploaded 2-5 photos that represent your vision of your future when you have reached your goals	
Goal-setting - Role model <sup>3</sup>	Who can support you in your journey of reaching your goals? Example: career counsellor, role model, parent, friends, teacher.	

<sup>1</sup> Steger, M. F., Sheline, K., Merriman, L., & Kashdan, T. B. (2013). Using the science of meaning to invigorate values-congruent, purpose-driven action. In T. B. Kashdan & J. Ciarrochi (Eds.), *Mindfulness, acceptance, and positive psychology: The seven foundations of well-being* (pp. 240-266). Context Press.

<sup>2</sup> Duckworth, A. L., Grant, H., Loew, B., Oettingen, G., & Gollwitzer, P. M. (2011). Self-regulation strategies improve self-discipline in adolescents: Benefits of mental contrasting and implementation intentions. *Educational Psychology, 31*(1), 17-26.

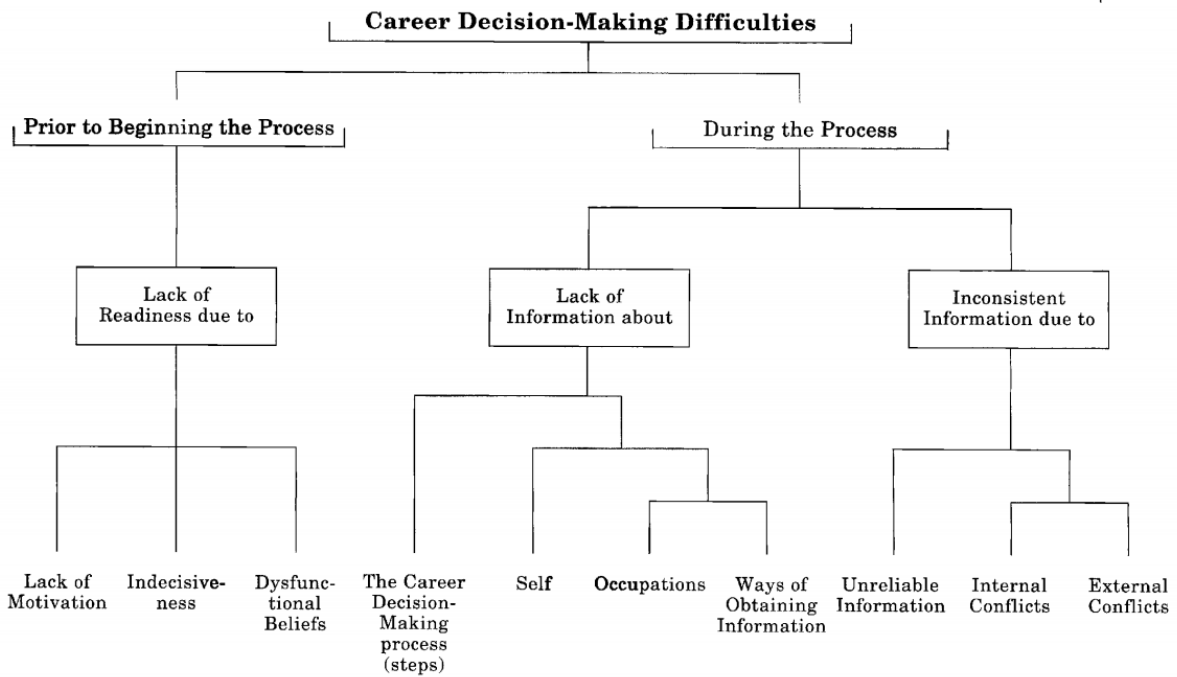
<sup>3</sup> Maddux, J. E. (2009). Self-efficacy: The power of believing you can. In S. J. Lopez & C. R. Snyder (Eds.), *The Oxford handbook of positive psychology* (2nd ed., pp. 335–343). Oxford University Press.

<sup>4</sup> Adler, J. M. (2012). Living into the story: Agency and coherence in a longitudinal study of narrative identity development and mental health over the course of psychotherapy. *Journal of Personality and Social Psychology*, *102*(2), 367.

**Appendix D: Career Decision-making Difficulty Questionnaire (CDDQ)**

**Figure 4**

*Updated Taxonomy of the Career Decision-making Difficulties*



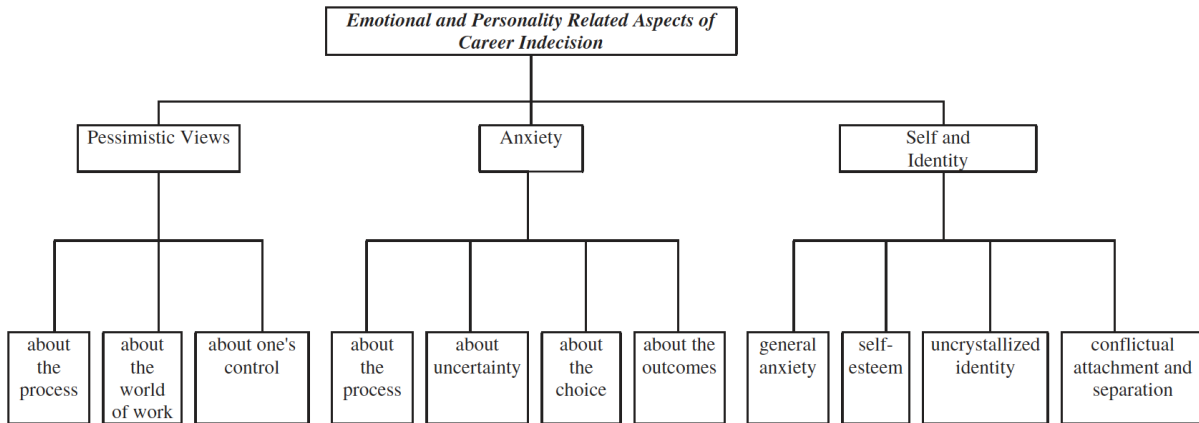
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**Appendix E:**

**Emotional and Personality-Related Career Decision-Making Difficulties (EPCD)**

**Figure 5**

*Taxonomy of the Emotional and Personality-Related Career Decision-Making Difficulties*



Reprinted from “Emotional and Personality-Related Aspects of Career Decision-Making Difficulties” by N. Saka, I. Gati and K. R. Kelly, 2008, *Journal of Career Assessment*, 16, p. 408. Copyright 2008 by Sage Publications.