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CHOOSING BETWEEN PATHWAYS TOWARDS THE LIFE WELL-LIVED

A Dissertation
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy
Industrial-Organizational Psychology

by
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May 2021

Accepted by:
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ABSTRACT

The present study aimed to see whether a person's score across specific well-being domains would correspond to their choice in trade-off situations. Specific well-being domains were measured using the Pathways to Happiness measure (Vanelli, 2019), and vignettes were designed to represent everyday situations. Each vignette contained a binary option representing the domains measured by the Pathway to Happiness measure. Overall, the results are promising and support the notion that the relative importance a person places on specific pathways to happiness will be reflected in their choices when faced with a trade-off situation. Logistic regression results indicate the Pathways to Happiness (Vanelli, 2019) measure demonstrated some ecological validity between scores on the measure and participant's preferred outcome on the vignettes included in the study. Although the Pathways to Happiness (Vanelli, 2019) measure demonstrated some ecological validity between Pathways scores and participants' preferred outcome, it would still be difficult to generalize this study's results to other samples. Based on the results, the relationship between trade-off situation outcomes and how we value specific paths towards happiness is dynamic. More than two pathways could be weighed against in trade-off situations, or on the flip side, the outcome of one decision could represent more than one pathway.

Additionally, the results of the two-step cluster analyses, and hierarchical cluster analysis also supported H1. The high scores on specific Pathways to Happiness (Vanelli, 2019) subscales corresponded to the outcome that represented that pathway in the vignettes. Pairwise comparisons introduced an additional layer of preferential judgments

between the four pathways of interest: Contact with Nature, Relationships, Outlook: Positivity (Positive Outlook), and Autonomy. The ranks assigned to pathways by participants typically coincided with the choices they made on the vignettes. For example, those who ranked Positive Outlook the most important were choosing the outcome representing that pathway across the vignettes. A person's ranking of the Pathways to Happiness also corresponded with average scores on the Pathway to Happiness measure (i.e., higher rank corresponds to higher average, etc.). However, some instances occurred where a pathways' ranking did not align with the participants' choice across the vignettes. Despite this misalignment between a participant's pathways rankings and their choice on the vignette, it appears their average scores from the Pathways to Happiness (Vanelli, 2019) continued to correspond with their outcome preference across the vignettes. One possible interpretation of these results is to compare the pairwise comparisons and vignettes to the state-level measurement of the Pathways to Happiness. By contrast, the Pathways to Happiness measure could be considered a trait-level measurement approach to these happiness sources' relative importance.

DEDICATION

Para mis raíces, que cruzan los mares. Para mi familia cercana y lejana, del pasado y del futuro. Para mi familia nueva que he construido sobre muchos años. Todos me han impactado de una manera o otra. De mi corazón, de mis lágrimas, de mi esfuerzo, de su apoyo – la meta esta cumplida. Gracias.

I would also like to extend my sincerest gratitude to my advisor, Dr. Cynthia Pury for her mentorship these past four years. I wouldn't be the researcher I am without her. I am also thankful to my committee for their support and guidance to help me better my research.

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CHAPTER ONE

INTRODUCTION

Previous research has found that multiple pathways, or courses of action, influence well-being and lead individuals towards a life well-lived. While this is likely true, not all courses of action towards well-being have the same outcome. Besides, the courses of action individuals take in the pursuit of happiness can encompass various domains, including skilled and meaningful work, autonomy, engaging activity, and momentary pleasures, to name a few (Adler, 2012; Haybron, 2013; Seligman, 2011). Using the outline provided by Haybron (2013), this proposal focuses on multiple pathways to a life well-lived, including Security, Outlook, Autonomy, Relationships, Skilled and Meaningful Activity, and Contact with Nature. Furthermore, these pathways inherently presume that individual differences affect which pathways, or sources of happiness, are more personally relevant to an individual across various situations.

While there is ample data for the impact of most of these pathways on happiness over time (Adler, 2012; Haybron, 2013; Seligman, 2011), I propose that daily life circumstances often preclude every pathway from being pursued at once. People must make choices between the courses of actions they take every day across a multitude of situations. Despite an individual's best efforts to "have it all," humans are limited and confined or restricted to specific parameters. In other words, people must choose which course of action to pursue; which pathway is more important to them than the other(s) (Haybron, 2013). Indeed, many times a choice needs to be made between one pathway for another. Affect acts as an internal guide that indicates when things go well and when things go wrong. It is linked to an individual's ability to adapt to different situations (Fredrickson, 2004). This point of view underscores that affect also plays a role in a person's decision-making process. For example, while on the job, a person may need to

choose between assisting a co-worker or completing their work. Later, they may need to decide between staying to complete a task or leaving on time for a planned dinner date. Due to time restrictions, we frequently need to decide which pathway will best lead to happiness and pursue it rather than less valued pathways. The choice is made with the expectation that it will alter our happiness somehow, and therefore, happiness is presumed to play a role in our decision-making. Other decisions between pathways may occur more rarely yet still feature similar trade-offs: for example, do you take the higher-paying and more prestigious job in a distant city or remain geographically to family and friends?

This paper follows the following structure. First, the theoretical background of the study is introduced. This information includes background on happiness and well-being, expanding upon Haybron's (2013) Pathways to Happiness. Next, background information on vignettes is provided, which is how the study sought to analyze how individuals make choices between two pathways and whether their choices reflect the relative personal importance to the individual across various situations. The study presumes that different valuations of pathways may influence people's choices when those pathways conflict. The vignettes developed for this project will accomplish this by examining the choices participants make when faced with situations in which, for example, they are faced with a choice between Autonomy and Relationships. A brief discussion on Exemplarist Moral Theory (Zagzebski, 2017) and Conceptual Referent Theory (Rojas, 2005) will follow to explain their connection to how people judge pathways to be worthwhile. Afterward, the Pathways to Happiness measure is described in more detail. The Pathways to Happiness measure is used to uncover how influential an individual believes a specific pathway is for their pursuit of happiness; in other words, how much does an individual think it is important for them to have high pathway X to be happy?

Review of Happiness and Well-being

As discussed in psychological research, happiness typically refers to subjective well-being, which comprises two parts: life satisfaction and emotional cognition. However, the nature and pursuit of happiness are also rooted in two philosophical traditions: hedonia and eudaimonia (Grinde, 2012; Henderson & Knight, 2012). A hedonic perspective assumes that happiness relates to maximizing pleasurable experiences. Positive emotional states, like pleasure, carefreeness, and enjoyment, are considered reflective of well-being (Diener, 2009). Since affect has been viewed as an internal red or green light, indicating what is bad and good, maximizing pleasurable experiences is seen as also maximizing the good in one's life (Henderson & Knight, 2012).

Meanwhile, a eudaimonic perspective believes that fulfilling one's full potential and living a life filled with virtue is the primary path towards well-being (Lent, 2004; Delle Fave, Massimini, & Bassi, 2011; Henderson & Knight, 2012). Notably, eudaimonic models are typically considered philosophically opposed to hedonic models of happiness as they focus on how well an individual is thriving across life domains (Deci & Ryan, 2008). Often, fulfilling one's full potential is also characterized by living virtuously or in a worthwhile way for its own sake, which emphasizes virtues such as kindness, courage, and honesty (Henderson & Knight, 2012). Although eudaimonia's original conceptualization did not include positive affect, Aristotle acknowledged that eudaimonic behavior could result in hedonic pleasure (Kashdan et al., 2008).

Previous research has examined these approaches, and their inherent differences have influenced researchers to take one stance over the other. For example, Kahneman (1999) argued that well-being consists primarily of the pleasantness one feels, and directly related to the hedonic approach. However, Ryff (1989), Waterman (1993), and others believe in the

eudaimonic approach, and that well-being is also encompassed by applying oneself and developing their fullest potential (Ryan & Huta, 2009). Despite these contrasting views, recent research using a combined approach examining hedonia and eudaimonia in tandem shows that a life comprised of both approaches is associated with a higher degree of well-being than just pursuing one over the other alone (Huta & Ryan, 2010).

Subjective Well-Being

Subjective well-being (SWB) is considered the most prominent hedonic approach to measuring happiness. The three-part model consists of the absence of negative affect, the presence of positive affect, and life satisfaction. The first two components refer to the construct's affective and emotional aspects, while the latter component refers to an individual's cognitive-judgmental assessment (Diener, Emmons, Larsen, & Griffin, 1985). Although each component of subjective well-being can stand on its own, they are highly correlated with each other (Diener, 2009). The high degree of intercorrelation between these components suggests there may need to be a higher-order factor (Stones & Kozma, 1985).

Previous research suggests positive and negative affect should be treated as independent factors, and although their independence is debated, studies have shown that pleasant and unpleasant emotions become increasingly independent over more extended periods (Bradburn and Caplovitz, 1965; Diener & Emmons, 1984). Cognitive appraisals are also an essential aspect of an individual's evaluation of life satisfaction; how satisfied an individual is with their life is a judgment based upon a comparison with a standard that each person sets for themselves. For example, although physical health and material wealth may be desirable, individuals may place different values of importance on them (Diener, 1984).

This project will utilize the Satisfaction with Life Scale (SWL-S) developed by Diener et al. (1985). The primary reason for its use is that it is an overall evaluation of satisfaction in a person's life, rather than summing across various domains to obtain a measure of life satisfaction. Scales examining life satisfaction were developed before the creation of the SWL-S. However, most of these measures consist of a single item and do not perform as well (Diener et al., 1985). For example, single-item measures perform poorly with test-retest reliability coefficients between 0.30 and 0.50 (Larsen et al., 1985).

Psychological Well-Being (PWB)

Like the association between SWB and hedonia, psychological well-being (PWB) is one of the most prominent models of eudaimonia (Ryff, 1989; Ryff & Keyes, 1995). Six elements characterize the PWB model, including self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth (Cooke et al., 2016; Ryff, 1989). These various elements aim at defining positive psychological functioning and merge perspectives from researchers including Maslow (1968), Rogers (1961), Jung (1933), and Allport (1961), which examine topics such as self-actualization, fully functioning persons, the formation of individuation, and the conception of maturity. Although these various perspectives historically had little empirical impact, Ryff (1989a) argued that they could integrate into a parsimonious summary (Ryff, 1989).

Self-acceptance. Self-acceptance is the most recurring element of well-being that is evident across all the previously mentioned perspectives. It is defined as a central feature of mental health and characterization of self-actualization, optimal functioning, and maturity. A person's ability to perceive their actions, motivations, and feelings is not enough; they must have

a positive self-regard. Self-acceptance is richer than self-esteem because it is self-acceptance of the strengths and weaknesses within a person. Therefore, having a positive attitude towards oneself is a central theme of positive psychological well-being (Ryff, 1989; Ryff and Singer, 2008).

Positive Relations with Others. The element of positive relations with others underscores the importance of having warm, trusting interpersonal relationships and a central component of mental health. Moreover, it is a sign of maturity and is emphasized by adult developmental stage theorists as a sign of intimacy and generativity. Multiple philosophical accounts underscore the importance of love, empathy, and affection as a critical component of a life well-lived. There seems to be a nearly universal endorsement of the relationship domain as a component of living life. Therefore, the importance of having good relationships with others is stressed in the conceptualizations of psychological well-being (Ryff, 1989; Ryff and Singer, 2008).

Autonomy. Prior literature on self-determination, independence, and internal behavioral regulation has emphasized autonomy considerably. A fully functioning person can be described as someone with an internal locus of evaluation and does not look to others for approval; they evaluate themselves using personal standards. The process of looking inwards to evaluate one's behavior later in a person's lifespan can give a sense of freedom from norms that govern everyday life (Ryff, 1989).

Environmental Mastery. Another critical characteristic of mental health is being able to control or choose environments that are suitable for a person's mental conditions. Life span development theories, for example, emphasize an individual's ability to advance through the world and manipulate the complex environments around them through physical or mental capabilities. To that end, aging successfully involves the extent to which a person can take

advantage of environmental opportunities. Therefore, mastering the environment is an essential component of positive psychological functioning (Ryff, 1989).

Purpose in Life. Definitions of mental health include inherent beliefs that give people the feeling that there is purpose and meaning in their lives. To that extent, the characterization of maturity includes a comprehension of life's purpose, a sense of direction, and intentionality (Ryff, 1989). Although life span development theories refer to a variety of changing purposes (e.g., being productive and creative or achieving emotional integration), the main takeaway is that a person who functions positively has goals, intentions, and a sense of direction, which contribute to feeling as though life is meaningful (Ryff, 1989).

Personal Growth. The continuation of developing, or growing and expanding, one's potential is also vital in optimal psychological functioning. Life span theories emphasize continued growth and confronting challenges at different stages of life; individuals are continually developing rather than staying in a fixed state. As a result, personal growth and self-realization is an important component in the previously mentioned theories. Moreover, it may be the component within PWB that comes closest to Aristotle's eudaimonia concept as it relates to the self-realization of an individual (Ryff, 1989; Ryff and Singer, 2008).

Ryff's (1989) contribution is not the only model of eudaimonic well-being. Ryan and Deci (1996) also proposed an alternative model that focuses on fulfilling three basic needs: autonomy, competence, and relatedness. The fulfillment of these needs is required for optimal psychological growth and well-being, and are said to be universal across people, cultures, and an individual's lifespan (Milyavskaya & Koestner, 2011). Autonomy still refers to a person's experience of choice and authentic personal endorsement of the actions they engage in. Competence is characterized as the ability to manipulate situations into desirable outcomes and

having mastery over one's environment, which is very similar to the element of environmental mastery in Ryff's (1989) PWB model. Lastly, relatedness relates to closeness and the connections people have in everyday interactions with one another, which from an operationalization standpoint is also like PWB's positive relations with others.

As with PWB, self-realization is a central aspect of Ryan and Deci's (2000) self-determination theory (SDT). However, unlike the PWB model, SDT outlines only three domains that promote well-being. Also, Ryan and Deci's (2000) SDT attempts to specify how an individual can accomplish self-realization. By contrast, PWB outlines which aspects of life can increase an individual's well-being but does not specify how to do so. Ryan and Deci's (2000) specification of basic needs within SDT defines the minimum requirements needed to reach a level of satisfaction and shows how individuals can allocate resources appropriately depending on their contextual environment (Ryan & Deci, 2001).

Although PWB is an overall evaluation of satisfaction in a person's life, it also examines different domains (e.g., autonomy, positive relations with others, etc.), which are summed to obtain a measure of PWB. This approach is like the Pathways to Happiness measure in that it examines various domains said to comprise well-being. However, the stark contrast between these two measures is that Ryff's (1985) PWB-S still quantifies how much or how little PWB is present in an individual.

PERMA

One of the aims of positive psychology is to understand and support human flourishing. Although different definitions and theories describe the concept of flourishing, it is generally operationalized as feeling good and functioning well in one's life (Butler & Kern, 2014).

Seligman's (2011) multi-dimensional PERMA model establishes that human 'flourishing' emanates from five pillars of wellbeing (positive emotion, engagement, relationships, meaning, and accomplishment). Seligman (2011) goes on to argue that each element of well-being must contain the following properties:

1. The element contributes to well-being.
2. People pursue the element for its own sake, not merely to attain any other elements.
3. Exclusivity, meaning that each element is measure independently from the others.

Positive Emotion. Positive emotion is also described as a grouping of hedonic feelings, including happiness, pleasure, and comfort (Khaw & Kern, 2014). Human emotions are comprised of valence (negative to positive) and activation (low to high) dimensions (Butler & Kern, 2014). Although these dimensions may seem mutually exclusive, it is possible for a person to simultaneously experience positive and negative emotions (Butler & Kern, Watson & Tellegen, 1985). However, positive emotions are both a marker and a flourishing producer (Frederickson, 2001; Khaw & Kern, 2014).

Engagement. The term engagement in positive psychology has been examined from the perspective of flow, or the feeling of an extreme level of psychological engagement characterized by absorption, concentration, and focus (Khaw & Kern, 2014). Reaching high levels of engagement has also been operationalized as flow. Flow occurs when individuals enter a single-minded state of immersion or optimal concentration when focusing on an intrinsically motivating task (Csikszentmihalyi, 1990). During this optimal state, awareness of time fades, and any positive thoughts or feelings may also be absent.

Relationships. The concept of relationships includes a sense of integration with society or a community, feelings of being cared for by people, and being satisfied with one's social

network (Khaw & Kern, 2014). Much of human experience revolves around being around others, and research has shown that social relationships are linked to less depression, better physical health, and other positive outcomes (Khaw & Kern, 2014; Cohen, 2004; Perissinotto et al., 2012).

Meaning. Leading a life with meaning refers to the feeling of a sense of purpose and connection to something larger than one's self. Those who claim to have a meaningful life often report having a higher degree of happiness and satisfaction with their life overall. However, this does not mean that meaning and happiness are always concurrent as a meaningful life is not always a happy one (Baumeister, Vohs, Aaker, & Garbinsky, 2013).

Accomplishment. Although a definition for accomplishment can be derived using objective measures, subjective dimensions like personal ambition, drive, and personality differences comprise a sense of personal accomplishment (Khaw & Kern, 2014). For example, a homemaker may derive a great sense of accomplishment in knowing that they have raised their family well, whereas someone who devotes their efforts to work may define success as achieving a sought after promotion (Butler & Kern, 2014). Accomplishment is also pursued for its own sake. Research has shown that expert bridge players are driven to play to the best of their ability. Although they may lose, these players still feel a sense of accomplishment merely knowing they played well (Seligman, 2011).

PERMA Measurement. Butler and Kern (2014) developed and validated the PERMA-Profiler, which utilizes a multidimensional approach to pinpoint the five domains outlined by Seligman (2011). The measure includes 15 items (three items per domain) and eight additional items that examine physical health, negative emotion, loneliness, and overall happiness. Previous studies have shown that the PERMA-Profiler has successfully measured PERMA as separate yet

correlated constructs while maintaining acceptable internal reliability and a good overall fit (Khaw & Kern, 2014). Despite the PERMA-Profiler's functionality, researchers like Kashdan (2012) have raised important questions, including what criteria can be used to evaluate a theory of well-being elements. In response to this question, Seligman (2018) outlined 6 criterion that could be used to evaluate such a theory, including that each element can be defined and measured independently of the other elements. Although each element of the PERMA-Profiler can be measured independently, they are not remotely orthogonal. Each element correlates strongly with each other, which underscores whether non-orthogonality disqualifies the PERMA elements from being elements at all. As discussed in a future section, the Pathways to Happiness measure also deals with a similar issue in that the elements that comprise also correlate moderately highly. These results prompted a model refitting where the Pathways to Happiness model was structured into a bi-factor model.

Although there is a fair amount of diversity in the conceptualization of the terms used to identify individual constructs that comprise both SWB, PWB, SDT, and PERMA, it is important to note that there is no unified conceptualization of well-being or how it should be measured (Cooke et al., 2016). Moreover, even though the models above attempt to capture an individual's amount of well-being, none attempt to differentiate how individuals make choices between their values and the courses of actions they take on the path towards happiness and a life well-lived. See Table 1 for a comparison of the approaches to measuring well-being mentioned above.

Psychological Well-Being	Six-part model of eudaimonic well-being. The elements included in the model define positive psychological functioning.	<ul style="list-style-type: none"> • Autonomy • Self-Acceptance • positive relations with others • Elemental Mastery • Purpose in Life • Personal Growth
Subjective Well-Being	Three-part model of hedonic well-being. The most prominent hedonic approach to measuring happiness uses emotional, affective, and cognitive-judgmental assessment.	<ul style="list-style-type: none"> • Presence of Positive Affect • Absence of Negative Affect • Life Satisfaction
PERMA*	Seligman's (2011) five-part model of human flourishing, containing the following properties: the element contributes to well-being, people pursue it for its own sake, and each element is measured independently.	<ul style="list-style-type: none"> • Positive Emotion • Engagement • relationships • Meaning • Accomplishment
Pathways	11-part model outlining the relative importance of various paths towards happiness based on Haybron's (2013) sources of happiness. Much like PERMA, each domain is measured independently.	<ul style="list-style-type: none"> • Autonomy • Acceptance • Positivity • Relationships • Skilled & Meaningful Activity • Physical Security • Material Security • Caring for Others • Goal Orientation • Contact with Nature • Task Efficacy

**Note.* The PERMA profiler used to measure Seligman's (2011) five domains also include items examining physical health, negative emotion, loneliness, and overall happiness.

This study explores if the relative importance of happiness domains influences the choices people make towards happiness. This includes whether the pathway's significance is subject to change depending on the situation and which pathways a person must choose between. Rather than focus on where an individual lies on the well-being spectrum or how much well-

being a person has, this study is interested in the pathways that influence people's choices in the pursuit of happiness and a life well-lived. In other words, this study is not concerned with how much or how little well-being an individual has but instead focuses on the importance people place on specific ways of seeking happiness.

Sources of Happiness

Haybron's Pathways to Happiness

Although only briefly discussed, it is apparent that researchers have different approaches to measuring happiness and well-being. As a result, there is no 'right' set of concepts to describe happiness and its components (Vanelli, 2019). However, a person's society remains one of the most influential sources for evaluating what is most beneficial and useful. Previous research identified that individualistic cultures are driven toward personal achievement and more motivated to pursue personal happiness. By contrast, collectivistic cultures concerned with social harmony are not driven to pursue personal happiness out of fear that this individual pursuit would harm social harmony (Uchida & Norasakkunkit, 2004; Diener, Suh, Smith, & Shao, 1995). These findings underscore that societal values promote sources of happiness and influence the courses of action that are important to obtain it.

As previously mentioned, different domains or sources of happiness have been examined. Although there are stark differences between the domains, there is still convergence as to what has the most impact on an individual's happiness. Furthermore, this level of agreement still exists despite contextual differences affecting the relative value of these domains. Haybron (2013) suggests the following happiness sources: Security, Outlook, Autonomy, Relationships, and Skilled & Meaningful Activity. The domains extend Ryan & Deci's (2001) SDT, a list of universal needs (Autonomy, Relatedness, and Competence), by adding sources like Outlook and

Security. Each of the five sources will be reviewed below with an added source, Contact with The Natural World. Previous research has shown that contact with nature can affect an individual's happiness. Therefore, it is included in this body of research to provide more information on this relationship.

Security. One of the necessities for happiness is feeling secure or feeling like one is not threatened; that there is stability. However, different kinds of security can play a role in how happy an individual is, which causes this source to be more complicated than simply feeling a lack of threat. The most salient type of security is physical security. Physical security is felt when an individual believes their body will not undergo any physical harm. Although, an individual may encounter risk that does not always cause anxiety regardless of our awareness of the physical risk. For example, rock climbers often scale cliff faces and encounter insurmountable physical risk, yet describe it as a *calming* activity (Haybron, 2013).

Although physical security is likely the most prominent security source, four other significant security types influence a person's happiness: material, social, project, and time. Simply put, material security encompasses feeling secure with the possessions and resources a person has at their disposal. It is common to think of money when material security comes to mind and that having wealth breeds material security. However, while some level of affluence and wealth can buffer individuals from negative consequences and allow particular needs to be satiated, it can increase wants, influencing individuals to perceive less security (Haybron, 2013).

Social security is described as feeling secure within the relationships individuals have and their standing within the community. An excellent example of how this source of security can manifest is the feeling that one will not lose favor with their close friends and family due to their actions. For example, individuals may opt not to openly disagree with the people closest to them

out of fear of harming their relationships. The third important security source derives from projects one is involved in or the prospect of success in major projects. Major projects are defined as commitments or goals that an individual identifies with. In this sense, it is a form of identity or sense of self (Haybron, 2013). Lastly, the least obvious form of security is time. Time security stems from the feeling or perception that a person has enough time to complete necessary tasks or even lack time. For example, an individual with a hectic and busy schedule may feel a severe lack of time security. Having a sense of security is good for happiness; however, having more security within any of these security domains does not always result in a better outcome. Too much security can lead individuals to a state where they are unwilling to persevere through hard times, which can leave a person unequipped to handle ambiguity and setbacks (Haybron, 2013).

It has been shown that individuals update their beliefs under perceived threat. The faster an individual can take in and process information that is typically hard to accept, the faster the individual can respond. The acceleration of this processing time may be critical in preserving happiness, as it reduces the mental anguish involved in coming to terms with potential threats when people need to act more immediately than time would allow (Garett, Foulkes, Levita, & Sharot, 2018). However, Harber, Yeung, & Iacovelli (2011) also found evidence that there may be a cyclical relationship between threat perception and happiness. Participants in their study who experienced higher self-worth levels perceived threatening objects as further away and potentially threatening heights as less high. These results show an interesting potential relationship between domains that improve self-worth and reduced perception of threat, thereby underscoring a bi-directional relationship between perceived threat and happiness sources. Conversely, research has found that perceived threat can negatively impact well-being and may

even cause perceived physical health issues and symptoms, underscoring the rationale why individuals would place importance on security pathways (Deschepper, Six, Gidron, Depoorter, Vandekerckhove, Gheysens, Bilsen, 2018).

Outlook. A remarkably commonly said piece of advice regarding happiness and its pursuit is that it is all about attitude; happiness is simply a choice. However, happiness is not just a choice, and outlook plays a role in determining how happy we are as individuals. Individuals have control over their attitudes, which can change their outlooks in ways that leave them happier. A core tenant of this source of happiness is that what matters in life is how we respond to the things that happen to us rather than the events themselves (Haybron, 2013). This core tenant also underscores an important theme related to this research, which is focusing on actions.

Based on Haybron's (2013) writings, outlook is characterized by four different types: positivity, acceptance, caring for others, and intrinsic motivation. Each facet of outlook has positive and negative aspects; therefore, there is no clear frontrunner for the best one. Furthermore, the term 'outlook' encompasses one's values and how one responds to, interprets, and perceives the things around us. A positive outlook is defined by focusing on the positives in life or savoring life's pleasures. An outlook that practices acceptance does not get easily bent out of shape and can easily shrug things off. The expression "water off a duck's back" provides good imagery of how this type of outlook is applied in daily life. An individual's importance on doing things for other people or looking for opportunities to help others defines an outlook that cares for others. For example, an employee that values this type of outlook may look for opportunities to help co-workers that are struggling with deadlines, need help completing tasks, or are new to the role. Lastly, an outlook preoccupied with intrinsic motivation describes viewing things as intrinsically worthwhile. Employees who see their job as a means to an end (e.g., money or

promotions) typically have less satisfying work lives than individuals who find their work intrinsically meaningful and valuable (Haybron, 2013).

Outlook relevant constructs like hope and optimism have been found to display unique relationships with mental health outcomes such as life satisfaction, psychological well-being, and hedonic well-being. These positive expectancies help emphasize healthy coping mechanisms and act as protective factors for life stressors (Gallagher, Long, Phillips, 2019). For example, research has found that optimism can change an individual's work experience, like feelings of job insecurity, which can decrease over time and, in turn, increase optimism (Li, Li, Fay, & Frese, 2019). These findings also relate to studies conducted by Aspinwall and Taylor (1990) that showed high levels of optimism are related to lesser amounts of distress during difficult times and can act as a buffer to psychological distress even after three months. Moreover, in a sample of 1807 adolescents, Ho, Cheung, and Cheung (2010) found that optimism is significantly associated with life satisfaction and serves as a mediator in the relationship between positive and negative aspects of well-being.

Autonomy. Multiple research efforts have shown that having a sense of control over one's life is necessary and an essential happiness source (Haybron, 2013; Ryan & Deci, 2001). As previously mentioned, autonomy is also a component of self-determination and the extent to which individuals oversee their affairs. Within SDT, autonomous behavior is defined as a willingly enacted endorsement of actions that a person engages in and/or their values. As a result, people are the most autonomous when they act per their genuine interests or values and desires (Chirkov, Ryan, Kim, & Kaplan, 2003). Therefore, it is not surprising that individuals who can make decisions without being beholden to anyone else tend to be happier. While this source of happiness describes the degree to which a person has control over their life and affairs,

autonomy should not be confused with option freedom or independence. Option freedom is defined as the freedom of having a range of options to choose from. Although option freedom can make it easier for individuals to have a greater sense of autonomy and obtain things that increase happiness, they are not the same conceptually (Gilbert, 2009; Haybron, 2013).

Similarly, independence refers to the concept of not relying on others for help or support. A person can be autonomously dependent on someone, willingly relying on their help or support. However, people can also be forced into a position of dependence on others. Although autonomy and independence are orthogonal, these considerations suggest the importance of differentiating between the two (Chirkov et al., 2003; La Guardia, Ryan, Couchman, & Deci, 2000; Ryan & Solky, 1996).

Relationships. Humans are social creatures; therefore, relationships are one of the most important sources of happiness. Having relationships allow individuals to reap many benefits, and the simple act of enjoying the company of others can result in experiencing more positive emotions (Haybron, 2013). As a result, happiness and social behavior are said to enhance one another via their reciprocal relationship (Quoidback, Taquet, Deseilles, & Montjoye, 2019; Cai et al., 2017; Diener et al., 2015; Fredrickson et al., 2008; Ramsey & Gentzler, 2015). Research at the trait level shows a positive correlation between an individual's level of happiness and the time spent with close friends and family (Quoidback et al., 2019; Diener & Seligman, 2002; Mehlz et al., 2010).

Additionally, research conducted at the state level through diary experience sampling shows that people report feeling happier when they spend time with close friends, family members, and acquaintances compared to when they were alone (Quoidback et al., 2019; Larson et al., 1986; Reis et al., 2000; Sandstrom & Dunn, 2014). Research indicates specific

characteristics that a relationship needs to have for the individuals involved to reap the most benefits. The characteristics found in the relationship that produces the most happiness include mutual understanding, caring, validation of worth, and trust (Diener & Biswas-Diener, 2011; Helliwell & Putnam, 2004). However, ensuring that one is around people that can provide us with the crucial benefits of good relationships can be difficult across different situations. For example, individuals spend most of their time in the workplace, and a person's interest in another individual may be self-directed (Haybron, 2013).

Skilled & Meaningful Activity. There are two critical facets of human nature. As described above, humans are social creatures. However, humans are also agents that take an active role within their environment to produce desired effects. A vital component of producing happiness from the things we do is that the activity itself matters and must have two features to be effective: they must require skill and be meaningful to one's life. Research shows that people can increase their happiness levels by pursuing meaningful activities (Martinez & Scott, 2014; Lyubomirsky et al., 2005). Being actively engaged in activity helps engender a feeling of flourishing and flow within individuals that helps draw out the fullest happiness achievable (Haybron, 2013). As briefly described in a previous section, flow is a psychological state that occurs when a person is immersed in an activity, resulting in increased happiness and well-being (Martinez & Scott, 2014).

Using a sample of older adolescents, Maton (1990) found that meaningful instrumental activity was positively related to life satisfaction, independent of social support. An example of an activity that fulfills these requirements is painting a portrait. When individuals paint, they engage in a challenging task that can push their skills to the limit. However, aside from providing individuals happiness, the activity is simply worth doing (Haybron, 2013; Waterman, 2013;

White & Dolan, 2009). Research using high school and college student samples has indicated that a lack of balance between challenge and skill in activities can lead to a decrease in flow, which is positively related to well-being (Martinez & Scott, 2014; Csíkszentmihályi, 1996).

Contact with Nature. Previous research has found that contact with the natural world can offer a wide range of benefits for individuals despite increasing the degree to which people are disconnected from nature (Haybron, 2011). Although individuals believe that connecting with nature is beneficial to their well-being, this relationship's strength is often underestimated (McMahan & Estes, 2015). However, immersing oneself in nature, even if for a brief period, is a calming experience and has been shown to significantly correlate with well-being (Nisbet & Zelenski, 2011; Zhang, 2019). For example, merely walking around in nature or viewing trees may help people recover faster if they have been ill. Moreover, the benefits of contact with nature are not limited to adults. Harvey, Montgomery, Harvey, Hall, Gange & Watling (2020) found that interventions aimed at engaging children with nature during class time showed improvements in the children's mood and well-being.

Haybron (2013) based his decision not to include contact with nature in his sources of happiness due to lack of data and will not officially include it until more data is collected confirming that contact with the natural world has a distinct and significant effect on happiness gained. Research indicates that engaging in a wide variety of activities such as practicing optimistic thinking, socializing, or practicing gratitude produces increases in SWB. Therefore, preliminary results are promising in showing that contact with nature is an additional route through which individuals can increase SWB (McMahan & Estes, 2015). This construct in this research attempts to continue this line of thinking and explore if contact with nature is deemed an

essential source in the pursuit of happiness and whether this pathway would be chosen over others across various situational contexts.

Vignettes: Evaluating Decision-Making and Worthwhile Actions

Vignettes have a long history within the social sciences, and their popularity stems from the limitations of questionnaires when examining attitudes, perceptions, beliefs, and norms (Huges & Huby, 2002). To a certain extent, vignettes simulate elements of the research topic in question. Despite their attempts to capture real life, they are static as they cannot capture the dynamic nature of people's lives (Faia, 1980; Parkinson & Manstead, 1993; Kinicki et al., 1995; Huges & Huby, 2002). Vignettes are also selective and have a harnessed approach depending on the research topic they examine. However, although they can have a focused approach, various information can still be included depending on the research question or topic. As such, they can detangle the complexity found in everyday conflicts (Rossi, 1979; Rossi & Alves, 1980; Huges & Huby, 2002).

The use of vignettes as a research method affords a variety of advantages. Vignettes are less expensive and can be conducted at a faster pace than observational studies. Next, they can generate considerable amounts of data from larger samples relatively quickly. Moreover, they can be standardized to allow research participants to respond to the same stimulus, which results in more consistent data. Additionally, this approach does not necessarily require in-depth knowledge of the topic (Liker, 1982).

However, there are also pitfalls associated with the use of vignettes. Participants may feel a disconnect with the characters portrayed in vignettes, which can cause problems. For example, in a study conducted by Swartzman and McDermid (1993), students may have found it challenging to respond to vignettes when asked to respond from the perspective of a 70-year-old

character dealing with an illness. As a result, it is essential to match vignette characters to the sample in question. Additionally, it is possible for participants to feel information overload depending on the vignette's characteristics (e.g., length, reading level, etc.). Therefore, it is useful to restrict vignettes to short sentences. The following section will review specific issues that are important to the development and construction of vignettes.

Development and Construction

Internal Validity. When using vignettes, internal validity refers to the extent to which the content captures the research topics under review. Trading between two pathways to happiness can happen across a multitude of situations in a person's life. As a result, it may be challenging to ascertain the vignettes' internal validity in the study without using the pathways to happiness measure described in a subsequent section. Using the pathways to happiness measure in conjunction with the vignettes developed for this study allows researchers to see how related the vignettes are to the construct in question. When developing vignettes, researchers should ask themselves several questions, such as whether a case study has been conducted to develop the scenarios and if a panel has vetted the scenarios to judge their suitability. SMEs can be used to assess whether vignettes are representative of situations related to the research question.

Influence of Research Topic. As described above, the research topic at hand influences the development and construction of the type of vignette used. Vignettes consist of text, but images and other forms of stimuli like video have been used. Textual vignettes can take many forms and range from short prompts to extended stories. Short, staged vignettes will be used for the study to impose a lower cognitive demand on participants, unlike other methods (e.g., video) that can elicit selective attention requirements (Kinicki et al., 1995). When using video format, it

is essential to remember that participants likely draw their interpretations from observations to a greater extent.

Additionally, short vignettes are useful for maximizing response rates and time (Lawrie et al., 1998). However, participants can lose interest and experience fatigue when responding repetitively to several short vignettes, resulting in carry-over effects (Sniderman & Grob, 1996). Therefore, vignettes' effectiveness can also depend on whether they are of interest to the participant and simulate realism accurately. In a study conducted by Finch (1987), mundane occurrences were depicted in vignettes to reflect the reality of people's lives. The same can be said for the vignettes developed for the study – they are occurrences that reflect the reality of people's lives and do not cover extreme events.

Open and Closed Responding. The use of closed or open response options can affect participants' reactions and come with advantages and disadvantages. Closed questioning, for example, allows researchers to apply quantitative approaches to vignettes. Additionally, it allows for a broader range of variables to be included in the research design. By contrast, open response options allow researchers to estimate more realistic reactions to the situations depicted within vignettes. As a result, open response options capture more information than closed questioning. However, using a combination of the two captures the advantages of both open and closed approaches (Perkins et al., 1998; Rahman, 1996; Finch, 1987). For example, the combination approach allows participants to vary their responses, keeping them engaged for more extended periods (Rahman, 1996). Although little is known about the effects of using a combination of the two approaches, the questioning approach is informed by the research and will shape the type of data obtained. The study uses a combination of the two approaches. Participants are given an option between two choices for the closed response portion and asked to select which trade-off

they most identify with. Afterward, the participants are presented with an open response option where they are asked to detail their decision-making process when choosing between pathway A and pathway B.

Perspectives. Vignettes typically tell a story using the point of view of characters, peers, and people or personal perspectives. Therefore, participants may be asked to respond from any of the points of view mentioned above. Each of these approaches has benefits and disadvantages. When using vignette characters, it can be difficult for the participants to adopt the perspectives depending on the character's characteristics (e.g., asking college students to answer from a 70-year-old's perspective). However, the advantage of this approach is that it avoids the issue of socially desirable answers. Asking a participant to assume a personal point of view can result in socially desirable answers depending on the research topic. However, researchers can mitigate this result by using vignette characters and asking participants to respond to subsequent questions as if they were that person rather than focusing on their own lives. The study's vignettes may be prone to socially desirable answers since the emphasis within the scenario is on the individual taking the survey. However, panel members constructed vignettes that did not cover sensitive topics. Therefore, using mundane topics in the scenarios mitigates the likelihood of having a high incidence of socially desirable answers. The following outlines a proposed mechanism influencing how individuals identify, agree, and assign accolades to the individuals depicted within vignettes.

The Use of Moral Exemplars as Referents for Accolades

Using a previous example, there may come a time when a person may need to decide between assisting a co-worker or completing their job-related tasks. Later, they may end up at another crossroads where they may need to decide between staying at work late or leaving on

time to spend time with loved ones. Various theoretical explanations can account for how individuals decide whether others' behaviors or decisions are worthy of accolades. The research in this paper focuses on moral exemplarist theory and conceptual referent theory to explain how people decide whether the trade-off between pathways is worthy of an accolade.

Moving away from psychology, Zagzebski's (2017) philosophical moralist exemplarist theory begins by explaining the concept of moral goodness as it pertains to the theory itself. Moral goodness can be characterized as a virtuous attribute, which is treated like natural terms. Linguistically, natural terms such as *human, water, or gold* (Zagzebski, 2017) are understood implicitly. When an individual uses a term like human, the meaning is immediately understood. Using this framework, an action that represents a given pathway to happiness can take many forms. Sometimes actions have elements that can be agreed upon collectively. For example, courageous actions are like *that*, much like water is like *that*. Using natural terms could extend beyond courage to other virtuous actions like self-discipline and kindness.

While natural terms are understood implicitly, one may not always know what characterizes a natural term before it is defined and used collectively as a referent. People have not always known the atomic structure of gold. However, this lack of knowledge did not impede previous generations' ability to establish a definition that attached a referent to a term. The direct reference theory also enforces the concept of having a definition for *gold* before its atomic structure was known (Zagzebski, 2017). Natural terms may also translate to how behavior is perceived. A person's true nature is not necessary knowledge to judge whether their actions are considered virtuous or worthwhile. When a person acts courageously or kindly, there is seldom a focus on the individual's nature. Instead, the focus lies on the action or behavior of the actor.

Another essential feature of moral exemplarist theory is that people do not need to associate natural terms with the correct object they represent. In this way, moral exemplarist theory allows individuals to use terms like water and gold to refer to something, even if their descriptions are incorrect. For example, one may refer to the color of something as gold even if the object itself is not gold. This phenomenon is due to communal ties and the ability of a community to identify gold correctly. An individual's ability to pick out exemplars is also due to communal ties. Narratives (fictional and non-fictional) are among the most used moral practices used to pick out exemplars. Whether through word of mouth, written story, or modern cinema, narratives show us that some people, and most importantly their actions, are worth emulating. Emulating behavior is how moral learning is done, and exemplars are *most imitable* because their actions are considered worthwhile by observers. Therefore, the actions of a moral exemplar represent values worth imitating (Zagzebski, 2017).

As a result, one could consider admiration as one of the means to identify those worth emulation. Zagzebski (2017) explains that admiration can be learned by observing how people react to an exemplar's actions. This relates to the proposed research by explaining a mechanism through which exemplars influence our values and whether the actions of a given pathway towards happiness are worthwhile. It is important to reiterate that knowledge of a person's true nature is not a priority when seeking exemplars worth emulation. Instead, individuals focus on an exemplar's actions and whether their actions symbolize values that are worthwhile and of value to the observer. The action, not the nature of the actor, is used as a conceptual referent. Moreover, the relative value of the options an exemplar has is considered, as their actions in the face of a trade-off decision represent values an observer deems essential and wishes to emulate.

As a result, exemplars, or referents, play a role in how individuals judge their lives and happiness. This ties into how cognitive appraisals are characterized in subjective well-being (SWB). As previously mentioned, cognitive appraisals are an essential aspect of how individuals use comparisons with a standard to judge how satisfied they are with life. Conceptual Referent Theory (CRT) also helps demystify what the notion of a happy life is (Rojas, 2005). CRT also helps explain aspects of this research as it clears up how a person establishes and appraises values. CRT's core concept is defined by using a conceptual referent, or exemplar, before appraising one's happiness in life. This is very similar to how cognitive appraisals are defined and used within SWB. The conceptual plays a pivotal role in how an individual assesses and judges their life and well-being. This is combined with a person's understanding of happiness as they use it to compare themselves to a referent to assess whether their life is happy.

CRT's two important components underscore how individuals choose one pathway over another in trade-off situations: their current level or understanding of happiness and the exemplar used as a comparison for appraisal. As described above, CRT is a type of cognitive appraisal related to the actions and goals individuals consider worthwhile or strive for (Rojas, 2005; Diener, 1999, p. 24; Emmons, 1986; Little, 1989). Furthermore, it ties into cognitive appraisals by examining what a person thinks, rather than what they feel, at the time of their appraisal. The exemplar is merely a guide that allows individuals to answer questions about their appraisal of happiness and well-being (Rojas, 2005). Moods are transient and yielding. Conceptual referents, on the other, provide a stable, unyielding factor that contributes to a person's happiness.

As happiness is a subjective topic open to personal interpretation, so are exemplars. Exemplars can vary from person to person, and heterogeneity between exemplars explains how individuals appraise worthwhile actions to pursue happiness. Furthermore, this underlines how

the set of variables contributing to a person's happiness is also contingent on their exemplars (Rojas, 2004a). Therefore, whether another person's actions are admirable or worthwhile is based on the pathways to happiness that are most relatively important to an individual. As a result, finding another person's actions admirable should correspond with pathways one deems worth pursuing. This is very similar to a concept defined as *accolade courage*, where observers assess whether a goal was worthwhile, whether the means to reach that goal were worthwhile, and if there was a significant risk (Pury & Starkey, 2010). For example, a person saving a child's beloved teddy bear from a burning building may be defined as courageous by some but foolish by others.

Whether an action is worthy of accolade is an external appraisal made by an observer's subjective judgment. Like how there is heterogeneity in whom people use as conceptual referents, there may be discrepancies between what observers deem to be worthwhile and what an actor deems as worthwhile. A person may find it worthwhile to go skydiving or parachute off a tall building; however, a third-party observer may not find these choices to be worthwhile depending on their values. Again, these differences may be attributed to the idea that people can have different exemplars, and exemplars can behave differently. These ideas on how people engage in cognitive appraisals to judge actions worth emulating can extend to contexts like the workplace.

CHAPTER TWO

THE PRESENT RESEARCH

As previously described, the purpose of the Pathways to Happiness measure (Vanelli, 2019) is to uncover how influential individuals believe a pathway is for their pursuit of

happiness. In other words, how *important* is it to a person to have high levels of Autonomy to be happy? This is the most prominent contrast between this measure and other existing measures of happiness and well-being. It is not interested in measuring the level at which someone experiences a source or pathway. Instead, it is meant to uncover the relative importance of these pathways. The measure accomplishes this by utilizing valuation items such as *I feel happy when I complete a task* rather than *I am able to complete my tasks*.

A person cannot pursue each pathway at one time because individuals are limited and constrained. As a result, choices must be made in different situations. Furthermore, heterogeneity between individuals is likely, meaning some pathways are preferred by some over others. While this relative importance may remain stable over time, it may also change depending on situational affordances within the context of varying situations. As a result, the present work aims to answer the following question: Does an individual's scores on the Pathways to Happiness (Vanelli, 2019) measure correspond to the choices made in trade-off situations? Does the importance placed on these pathways correspond to those choices?

These research questions generated the following hypotheses: *H1: A participant's Pathways to Happiness subscale score will correspond to the choice that represents that subscale in situations where the individual must choose between two pathways*, and *H2: A participant's ranking of the four pathways of interest to the study should correspond to the choice that represents that pathway in the vignette scenarios*. Investigating a topic of this nature cannot be fully accomplished with the use of a scale alone. Therefore, using vignettes in conjunction with binomial logistic regression will help assess whether a person's score across the Pathways to Happiness domains corresponds with the pathways described in various scenarios.

Participants and Procedures

Three hundred forty-two ($N = 342$) participants from Amazon's Mechanical Turk (MTurk) participated in the study by completing a 131-item survey in exchange for USD 3.00. A pilot study was used to identify how long the survey took to complete, in addition to finding typographical errors, etc. The results of the pilot study indicated that the survey took approximately 30 minutes to complete. The first round of data cleaning included Mahalanobis Distance (Mahalanobis D^2) to detect outliers and Longstring index to detect careless responding. The Longstring index is the most extended consecutive sequence of identical responses given by one individual. For example, if a person answers "1 – Strongly Disagree" for 10 items, their Lonstring value would be 10. Giving the same response repeatedly over a long stretch of items could indicate careless responding (Meade & Craig, 2012). Previous research on careless responding has also suggested Mahalanobis D^2 use to identify inattentive or careless participants. Mahalanobis D^2 can measure the distance of response to the distribution of responses for all participants in a dataset. Therefore, if a person responds carelessly, a reasonable assumption is that their responses will deviate significantly from the mean of that deviation. A final round of data cleaning was conducted using the 'time to complete' variable generated by Qualtrics. Due to the estimated time to completion, respondents that completed the survey in 15 minutes or less were removed from the sample, resulting in a final sample of $N = 110$ (49 females; mean age = 34.5). Binary logistic regressions were conducted for both the sample of $N = 280$ and $N = 110$. Both samples generated statistically significant models. However, the models from the smaller sample had better classification between the binary outcome variables. Therefore, the results section will report the results from the smaller sample ($N = 110$). Sample issues are discussed in the limitations section.

Measures

Satisfaction with Life Scale. Diener et al.'s (1985) Satisfaction with Life Scale (SWLS) examines the cognitive judgmental process that individuals engage in when assessing their quality of life. The quality of life assessment is done according to an individual's criteria and depends on comparison points (Diener, 1985; Diener, 1984). The measure contains five items rated on a 1- to 7-point scale (1 = strongly disagree, 7 = strongly agree). See Appendix B.

Psychological Well-Being. Ryff's (1985) multidimensional psychological well-being scale examines the following six dimensions: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. The 44-item scale is rated on a 1- to 7-point scale (1 = strongly disagree, 7 = strongly agree). See Appendix B.

Pathways to Happiness Scale. Based upon Haybron's (2013) sources of happiness, the 53-item Pathways to Happiness will be used by participants to rate how important each value or pathway statement is to them using a 5-point scale (1 = not at all important, 5 = extremely important). See Appendix B.

Pairwise Comparisons. Pairwise comparisons were used as a ranking tool to have participants assign priorities to multiple options. This process allows participants to compare alternatives in pairs to judge which option is preferred over others. The following four pathways (Contact with Nature, Relationships, Autonomy, and Outlook: Positivity) were placed into 6 unique pairs for the present research. All options are directly compared to all the other options, which results in a list of most-preferred to least-preferred options. A description of each pathway was included before presenting these items.

Vignettes. For this study, a team of undergraduate students in psychology, a graduate student, and a psychology department faculty member were tasked with developing and reviewing the scenarios after a careful literature review on the topics related to the pathways to

happiness measure. As previously mentioned, the study's primary purpose is to ascertain whether the trade-offs people make in everyday situations correspond to the pathways they value most. Therefore, the panel drafted several iterations of scenarios that covered situations that can occur in everyday life. Furthermore, the vignettes developed for the study will be piloted before the proposed study is conducted. Participants will be presented with a vignette like the example below and asked which choice they identify with the most, with each choice corresponding to a specific pathway. An additional question will be asked after each vignette asking participants to describe how they decided between choice one and choice two. The qualitative data obtained from there may be used in additional analyses to see how the open-ended text corresponds to the Pathways to Happiness measure and decision trees. See Appendix B.

You have been conducting a job search for quite some time and have been offered two equally exciting job opportunities. One is in Denver, and although this is far from your family, you are very excited about all the outdoor opportunities you will be able to take part in. The other job is in Chicago. Although it is close to your family and you would love to see them more often, there is not much opportunity there to experience nature.

Choice 1: You choose to take the job in Denver. Although you will be further from family, you will have the opportunity to take part in more outdoor activities.

Choice 2: You choose to take the job in Chicago. Although there are not many opportunities to enjoy nature, you will have the opportunity to be closer to family.

CHAPTER THREE

RESULTS

This section will present the analyses conducted in SPSS Statistics (version 27.0.0) and R (version 4.0). First, some descriptive information about the sample and the variables of interest is

provided below. The descriptive information was analyzed and interpreted using a combination of cluster analysis and frequency counts.

Descriptive Information – Overall Sample

The following information was gathered using frequency counts and covers demographic information and how the overall sample ranked the four Pathways of Happiness factors of interest (Contact with Nature, Autonomy, Positive Outlook, and Relationships). When looking at the full sample (N = 350), 62.7% of participants were male (N = 212), with most of participants falling in either the 25 to 34 (45%) or 35 to 44 (26%) age brackets. Using the pairwise comparison method described in the section above, participants in the full sample ranked the Pathways factors from most important to least important in the following order: Outlook: Positivity (Positive Outlook), Relationships, Autonomy, and Contact with Nature. The pathway with the highest average was Outlook: Positivity (M = 4.30), followed by Autonomy (M = 4.22), Contact with Nature (M = 4.20), and Relationships (M = 4.14).

After two rounds of data cleaning, the final sample for analysis consisted of 110 participants (N = 110). 55% of MTurk participants in the final sample were male (N = 61), and most participants were in the 25 to 34 (44%) and 35 to 44 (25%) age brackets. Using the pairwise comparison method described above, participants ranked the Pathways factors from most important to least important in the following order: Outlook: Positivity (Positive Outlook), Relationships, Autonomy, and Contact with Nature. The pathway with the highest average was Outlook: Positivity (M = 4.31), followed by Autonomy (M = 4.20), Relationships (M = 4.16), and lastly, Contact with Nature (M = 4.14).

Comparatively speaking, the demographics of the full sample and final sample are similar with one exception, the Pathways subscale averages. A higher average on a Pathways subscale

indicates that it has a higher relative importance. When looking across the averages of the full sample (N = 350), the pathways can be ranked in the following order: Positive Outlook, Autonomy, Contact with Nature, and Relationships. This order does not repeat itself in the final sample for analysis (N = 110). The smaller sample indicated that Relationships was more important than Contact with Nature, which reverses the order of the last two pathways in the full sample.

Convergent Validity

The Pathways to Happiness measure's validity is reassessed using a new sample and the introduction of Ryff's (1985) PWB measure. Using previous studies as a basis, the Pathways to Happiness measure should be positively related to the Satisfaction with Life (SWL) Scale (Diener, Emmons, Larsen, & Griffin, 1985) and Ryff's (1985) Psychological Well-Being (PWB) Measure. For this analysis, the present study only used the subscales of interest for the rest of the study. From the Pathways to Happiness measure, the Autonomy, Relationships, Contact with Nature, and Outlook: Positivity subscales were tested. Due to the length of the SWL scale, the entire measure was utilized. Much like the Pathways to Happiness measure, Ryff's (1985) psychological well-being scale measures distinct domains pertaining to PWB, including Autonomy, Positive Relations with Others, and Environmental Mastery. These subscales were chosen to demonstrate convergent validity with the Pathways to Happiness measure because they overlap in content. The correlations between the latent variable constructs are shown in Table 2.

Results indicate that the latent factor for SWL and the latent factors for Ryff's (1985) PWB measure is positively related to the Pathways of Happiness subscales included in the overall study. It should be noted that although the correlations between the subscales and the SWL scale were significant, coefficients of 0.20 are not enough to establish strong convergent

validity. However, as previously mentioned, unlike the SWL scale, which is directly interested in how much satisfaction a person feels towards their life, the Pathways measure is interested in the importance we place on our sources of happiness. The difference between measuring how much vs. how important something is could cause the weak correlations between the two. By contrast, when looking at the correlations across the Pathways subscales and the PWB subscales, there are much stronger correlations likely because both measures assess specific domains as they pertain to PWB, rather than an aggregate judgment of happiness or satisfaction with life. For example, Ryff's (1985) Positive Relations with Others subscale has a significant positive correlation of 0.95 with the Pathways Relationship subscale. A correlation of this magnitude suggests that they measure the same thing.

Table 2. Correlations for Convergent Validity

Observed Variable	1	2	3	4	5	6	7	8
1. Autonomy	0.56							
2. Contact w/ Nature	0.59*	0.75						
3. Positivity	0.87*	0.61*	0.79					
4. Relationships	0.42*	0.40*	0.50*	0.87				
5. SWL	0.20	0.22	0.30*	0.55*	0.91			
6. PWB_Autonomy	0.81*	0.43*	0.57*	0.40*	0.30	0.63		
7. PWB_Positive Relations w/ Others	0.62*	0.55*	0.61*	0.95*	0.55	0.61	0.62	
8. PWB_Environmental Mastery	0.67*	0.45*	0.64*	0.73*	0.62	0.61	0.88	0.62

Note. Factor alpha reliabilities are found on the diagonal. The variables were standardized to have a mean of 0 and a standard deviation of 1. Significant correlations are denoted as follows: $p < .001$ are in bold and include an asterisk (*), $p < .005$ are in bold, $p < .05$ have an asterisk (*). N = 280; M = 0; SD = 1.

The results discussed in the following sections will focus on three variables: The averages on the Pathways to Happiness measure, the rankings produced from the pairwise comparisons, and the binary outcome of the vignettes. Each of the variables has been labeled differently in the upcoming discussion to help distinguish between them. First, the variables from the Pathways to Happiness measure are referred to as a value. For example, the Positive Outlook subscale is now referred to as Positive Outlook Value. The term value was selected for these variables because a participant's rating of a pathway indicates its relative importance or *value* to that person. Next, the rankings produced from the pairwise comparisons are referred to as a choice. Continuing to use Positive Outlook as an example, the outcomes of the pairwise comparisons related to this pathway are referred to as Positive Outlook Choice. The use of the term choice in this context refers to the participants' act of *choosing* between two pathways. It is essential to keep in mind that unlike the vignettes, the pairwise comparisons provided to participants in the study only included a definition of the term; there was no additional context provided. Lastly, participants' selection on the vignettes included in the study is referred to as outcome preference. Using Positive Outlook as an example, the Positive Outlook response in the vignettes is referred to as the Positive Outlook Outcome Preference.

Binary Logistic Regression

A series of binary logistic regression models were conducted to test the Pathways to Happiness measure's ecological validity. It is important to note that although binary logistic regression is used to predict the odds of a particular outcome, the primary aim of this research is to continue to validate the Pathways to Happiness measure. Binary logistic regression was chosen as the analysis method due to the dichotomous nature of the trade-off situations outlined in the vignettes created for the study (outcome preference). The series of vignettes created for

this study doubled the number of unique pathway pairings, resulting in a total of 12 vignettes and 12 binary logistic regression models. Each model's goodness of fit was assessed using both the *Hosmer and Lemeshow* and *Likelihood ratio* test. Full results are found in Appendix C. Of the 12 logistic regression models, only 5 were significant. The following results review the statistically significant models.

Contact with Nature v. Positive Outlook Vignettes

Q113. You have a very tight schedule. Every morning you meditate for 30 min to make sure you start your day with a positive outlook and then take a 30-minute walk on a nearby hiking trail to get in some time with nature. However, your manager at work has moved your shift 30 minutes earlier. You don't want to get up earlier because you like to get 8 hours of sleep a day, so you must cut part of your morning routine.

*You choose to stop meditating each morning because spending time in nature is more important to you. (**Contact with Nature**)*

*You choose to stop walking the hiking trail each morning because creating a positive outlook is more important to you. (**Positive Outlook**)*

A significant Likelihood ratio and non-significant *Hosmer & Lemeshow* suggest that the model was a good fit to the data. The logistic regression model for the vignette above was statistically significant, $\chi^2(8) = 17.806, p < .05$. The model explained 20.5% (Nagelkerke R^2) of the variance in picking between the Contact with Nature Outcome Preference and the Positive Outlook Outcome Preference. Additionally, the model correctly classified 74.5% of cases between the two preferences. Cross-validation of these results using the leave-out method indicate that the sensitivity was 51.3% indicating a 51.3% probability of correctly classifying a true-positive. The specificity was 87.3% indicating an 87.3% probability of correctly classifying a true-negative. Participants that ranked the Contact with Nature Choice the lowest in the pairwise comparisons were 5.43 times more likely to select the Positive Outlook Outcome Preference.

Q124. Every morning you take a walk in a nearby park. Since you live in a big city, walking through the park lets you experience nature, and has been a calming activity for you. Recently, a group of construction workers has been working nearby in the mornings. The amount of loud noise from their machinery coupled with construction debris has made it difficult to relax and leaves you feeling a little negatively.

*You choose to keep going to the park despite the issues caused by construction because it's the only opportunity you get to experience nature. (**Contact with Nature**)*

*You choose to find an indoor morning routine that brings positivity to your day due to the impact construction has on your morning routine. (**Positive Outlook**)*

A significant Likelihood ratio and non-significant *Hosmer & Lemeshow* suggest that the model was a good fit to the data. The logistic regression model for the vignette above was statistically significant, $\chi^2(8) = 21.374$, $p = .006$, and explained 23.9% (Nagelkerke R^2) of the variance between picking the Contact with Nature Outcome Preference and the Positive Outlook Outcome Preference. Additionally, the model correctly classified 73.6% of cases. Cross-validation of these results using the leave-out method indicate that the sensitivity was 51.2% indicating a 51.2% probability of correctly classifying a true-positive. Meanwhile, the specificity was 88.1% indicating an 88.1% probability of correctly classifying a true-negative. Results indicate when participants ranked Contact with Nature Choice the lowest in the pairwise comparisons, the odds were 9.7 times higher they selected the Positive Outlook Outcome Preference. Odds were 6.21 times higher a participant would select the Positive Outlook Outcome Preference even when the Contact with Nature Choice was ranked as only slightly unimportant compared to unimportant.

Relationships v. Positive Outlook Vignettes

Q114. You are looking for an exercise group to keep you accountable. You found two groups that meet at good times for you - one with a group of friends and one with people you don't know. Your group of friends jogged through the nature

preserve together. You loved hearing the birds chirping and jogging through the winding pathways. However, you noticed that your friends seemed to only complain about work, school, or family. You are concerned that the negativity could rub off on you. The second group made up of strangers jogged around a track and although they are still outside, you felt fenced in and far from nature. However, you noticed that the individuals in the group were very encouraging and tend to appreciate small things throughout their day.

*You choose to join your group of friends despite their negative outlooks because you do not want to be shunned by anyone. (**Relationships**)*

*You choose to join the group of strangers to be around more positive attitudes despite how your friends may feel. (**Positive Outlook**)*

A significant Likelihood ratio and non-significant *Hosmer & Lemeshow* suggest that the model was a good fit for the data. The logistic regression model was statistically significant, $\chi^2(8) = 29.958, p < .000$. The model explained 32.2% (Nagelkerke R^2) of the variance in picking between the Relationships Outcome Preference and Positive Outlook Outcome Preference in the vignette above. The regression model also correctly classified 75% of cases. Cross-validation of these results using the leave-out method indicate that the sensitivity was 81.8% indicating an 81.8% probability of correctly classifying a true-positive. The specificity was 63.6% indicating a 63.6% probability of correctly classifying a true-negative. High sensitivity means there are few false- negatives, and high specificity means there are few false-positives. Participants with a higher Positive Outlook Value score on the Pathways to Happiness measure were 7.4 times more likely to select the Positive Outlook Outcome Preference over the Relationships Outcome Preference. In other words, people with a higher scale Positive Outlook score were more likely to choose the option that represents that pathway. When participants ranked Positive Outlook Choice as slightly unimportant in the pairwise comparisons, they were 75% more likely to pick the Relationships Outcome Preference. The odds ratio was converted to a percentage by subtracting 1 from $Exp(B)$ and multiplying by 100 (Peng & Ingersoll, 2002)

Contact with Nature v. Relationships Vignettes

Q118. You are going on a trip to Costa Rica for a week with your partner. You would love to go zip lining through the trees and see the nature from a new perspective. However, your partner is afraid of heights. They know how much you'd love to go on this adventure and are okay with spending a day doing their own thing while you zip line.

*You decide to go zip lining on your own to spend some time in nature and let your partner do their own thing. (**Contact with Nature**)*

*You decide to spend the day with your partner instead of spending time in nature. (**Relationships**)*

A significant Likelihood ratio and non-significant *Hosmer & Lemeshow* suggest that the model was a good fit for the data. The logistic regression model was statistically significant, $\chi^2(8) = 24.719, p = .002$. The model explained 26.9% (Nagelkerke R^2) of the variance in picking between the Contact with Nature Outcome Preference and the Relationships Outcome Preference in the vignette above. The model also correctly classified 71.8% of cases. Cross-validation of these results using the leave-out method indicate that the sensitivity was 70.7% indicating a 70.7% probability of classifying a true-positive, while the specificity was 73.1% indicating a 73.1% probability of classifying a true-negative. High sensitivity means there are few false-negatives, and high specificity means there are few false-positives. Participants that ranked Contact with Nature Choice the lowest in the pairwise comparisons were 11.67 times more likely to select the Relationships Outcome Preference. In other words, if you ranked Contact with Nature Choice last, it is more likely you would select the Relationships Outcome Preference. Participants that still consider the Contact with Nature Choice to be slightly important in the pairwise comparisons were still 7.37 more likely to select the Relationships Outcome Preference. In other words, even when Contact with Nature Choice is considered slightly important

(compared to the most important, slightly unimportant, or unimportant), participants had 7.37 times higher odds of selecting the Relationship Outcome Preference. Picking an outcome preference that represents anything outside of Contact with Nature seems counterintuitive. However, when the sample is examined as one big cluster, the pairwise comparisons indicate that the Relationships Choice was judged to be more important than Contact with Nature Choice. Although certain participants judged Contact with Nature Choice to be important, Relationships Outcome Preferences were still more important overall in the vignettes. Another possible explanation is that despite participants' rankings of the pathways being tested, situational affordances depicted in the vignette influenced the participant's decision to pick the Relationships Outcome Preference.

Autonomy v. Contact with Nature Vignettes

Q116. You are on the planning team for a big event. Everyone is splitting into committees and there are two that are interesting to you. The sponsor committee oversees asking local businesses to sponsor your event. You can make these inquiries on your own timeline and choose the businesses you ask. The set-up committee gets to spend time at the beautiful outdoor venue, getting everything ready for the event. However, you must be there at specific times and follow the set-up instructions given to you.

*You choose to be a part of the set-up committee so you can spend some time outside. (**Contact with Nature**)*

*You choose to be a part of the sponsor committee so you can oversee your own schedule and methods. (**Autonomy**)*

A significant Likelihood ratio and non-significant *Hosmer & Lemeshow* suggest that the model was a good fit for the data. The logistic regression model was statistically significant, $\chi^2(8) = 20.589, p = .008$. The model explained 22.8% (Nagelkerke R^2) of the variance in picking between the Autonomy Outcome Preference and the Contact with Nature Outcome Preference in the vignette above. The model also correctly classified 67.3% of cases. Cross-validation of these

results using the leave-out method indicate that the sensitivity was 64.7% indicating a 64.7% probability of classifying a true-positive. The specificity was 69.5% indicating a 69.5% probability of classifying a true-negative. High sensitivity means there are few false-negatives, and high specificity means there are few false-positives. Participants with higher Contact with Nature Value scores on the Pathways to Happiness measure were 2.23 times more likely to select the Contact with Nature Outcome Preference in the vignette above. Additionally, for each unit decrease in participants' Autonomy Value score, the odds of choosing the Contact with Nature Outcome Preference in the vignette increased by 76%. The odds ratio was converted to a percentage by subtracting 1 from $Exp(B)$ and multiplying by 100 (Peng & Ingersoll, 2002).

Cluster Analyses

Hierarchical clustering and two-step clustering were also conducted to look at the sample in two different ways; hierarchical clustering was used to examine how the overall sample clustered, while two-step clustering was utilized to inspect clusters for each vignette. These model-based clustering approaches can tackle continuous and categorical variables while utilizing the silhouette coefficient described in the following section to find the optimal number of clusters. This analysis was conducted to identify what kind of homogeneity existed within groups of participants that chose one pathway over another (e.g., choosing Contact with Nature over Positive Outlook).

Hierarchical Cluster Analysis

A hierarchical cluster analysis was conducted in R using various packages including, cluster, dplyr, ggplot2, Rtsne, readr, and fpc (Henning, 2020; Maechler et al., 2021; Wickham et al., 2020; Wickham & Hester, 2020; Wickham, 2016; Van der Maaten & Hinton, 2008;) on the entire dataset. Clustering is a type of methodology used to measure individuals' similarity (and

dissimilarity) using mathematical distance. The present research utilizes the PAM clustering algorithm (partitioning around medoids) to select the optimal number of clusters. In clustering, distance refers to how far apart individuals are. In other words, it is a metric used to see how similar or dissimilar individuals are to one another. In ideal cases, data is entirely numeric, and k-means can be used to determine the distance between participants. However, since the present research deals with mixed-type data, Gower distance is used instead. Gower distance is the average of partial dissimilarities across individuals, where each partial dissimilarity (Gower distance) ranges from 0 to 1.

Unless researchers have a priori knowledge of how many clusters exist in the data, good practice dictates using silhouette coefficients or visualizations to ascertain the right number of clusters. The present research relied on the silhouette coefficient, which contrasts the average distance to elements in one cluster with the average distance to elements in other clusters. A high silhouette value denotes that objects are well clustered, with low values signaling potential outliers. The silhouette coefficient was analyzed using two different methods: summary of each cluster using the `summary()` function in R and visualization, and it was determined that the best fit for the data was 2 clusters (see figure 1 below).

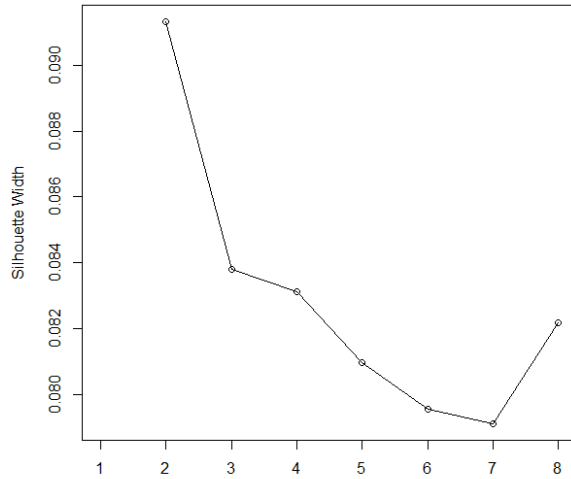


Figure 1. Visualization of the silhouette coefficient

Cluster One. The results of the pairwise comparisons for the first cluster resulted in the following rank order for the four pathways (1 = most important, 4 = least important): (1) Positive Outlook, (2) Relationships, (3) Autonomy, and finally (4) Contact with Nature. The overall outcome of the vignettes fit with the rankings above. When looking across the 12 vignettes, the Positive Outlook Outcome Preference was selected by most of this cluster over other pathways 6 out of 6 times. Similarly, the Contact with Nature Outcome Preference was only chosen by this cluster once over another pathway, which corresponds to Contact with Nature Choice ranking the lowest in the pairwise comparisons.

The majority of this cluster's participants were in the 25 to 34 and 45 to 54 age brackets, and over half of them are female (27 vs. 20). When taking a closer look at the cluster's averages across the Pathways to Happiness measure, the averages for Contact with Nature Value were the lowest ($M = 4.0$) compared to Positive Outlook Value ($M = 4.41$), which was ranked the most important by the cluster. Means were also calculated for the well-being measures included in the study. The SWL average score for cluster 1 was 4.36. Lastly, their scores on Ryff's (1985) PWB

subscales were 4.42 for Autonomy, 4.83 for Positive Relation with Others, 4.53 for Environmental Mastery, 3.76 for Personal Growth, 3.70 for Purpose in Life, and 4.34 for Self-Acceptance.

Cluster Two. The results of the pairwise comparisons for the second cluster resulted in the following rank order for the four pathways (1 = most important, 4 = least important): (1) Positive Outlook, (2) Contact with Nature, (3) Relationships, (4) Autonomy. As shown by the rankings, the cluster indicated that the Positive Outlook Choice was the most important pathway. However, unlike the previous cluster, the pathways' rankings did not always correspond to how most people responded to the vignettes. For example, Positive Outlook Choice was ranked the highest out of the four pathways; however, the majority of the cluster selected the Positive Outlook Outcome Preference in the vignettes 2 out of 6 times. Furthermore, the Autonomy Choice was ranked last by this cluster in the pairwise comparisons, but the Autonomy Outcome Preference was chosen 3 out of 6 times across the vignettes. The differences between participants' rankings from the pairwise comparisons and their choices on the vignettes may underscore how situational affordances could affect how people decide between two options in the pursuit of happiness.

Unlike cluster one, most participants in this cluster were male (40 v. 22) and belonged to three age brackets: 25 to 34, 35 to 44, and 45 to 54. The Pathway to Happiness measure averages somewhat correspond with how participants ranked the pathways in the pairwise comparisons. The means for the Contact with Nature Value ($M = 4.26$) and the Positive Outlook Value ($M = 4.24$) were the highest out of the four factors. However, the means for Autonomy Value and Relationships Value are similar ($M = 4.15$; $M = 4.13$). Much like above, it should be noted that Positive Outlook Value ($M = 4.24$) has one of the highest averages, was ranked most important

in the pairwise comparisons, but was only chosen 2 out of 6 times across the vignettes. Cluster Two's SWL average score was 4.94. Lastly, their scores on Ryff's (1985) PWB subscales were 4.70 for Autonomy, 4.90 for Positive Relation with Others, 4.57 for Environmental Mastery, 4.34 for Personal Growth, 4.29 for Purpose in Life, and 4.74 for Self-Acceptance. Overall, Cluster Two's averages on the SWB and PWB measures were higher than Cluster One's averages.

Two-Step Cluster Analysis

A two-step cluster analysis was conducted in SPSS for each significant binary logistic regression model. A two-step cluster analysis was chosen because of its ability to analyze binary variables like the outcomes in the present study's vignettes. Results are divided between the choices made for each vignette.

Q113 – Contact with Nature v. Positive Outlook.

You have a very tight schedule. Every morning you meditate for 30 min to make sure you start your day with a positive outlook and then take a 30-minute walk on a nearby hiking trail to get in some time with nature. However, your manager at work has moved your shift 30 minutes earlier. You don't want to get up earlier because you like to get 8 hours of sleep a day, so you must cut part of your morning routine.

*You choose to stop meditating each morning because spending time in nature is more important to you. (**Contact with Nature**)*

*You choose to stop walking the hiking trail each morning because creating a positive outlook is more important to you. (**Positive Outlook**)*

Positive Outlook. A two-step cluster analysis was conducted in SPSS to examine the similarities and dissimilarities of participants. Results indicate that 57% of individuals who chose the Positive Outlook Outcome Preference for the vignette above are female. 28% of participants in this group are also between the ages of 45 and 54. Their average score for Positive Outlook Value on the Pathways to Happiness measure was 4.46, which is higher than the average for the

Contact with Nature Value ($M = 4.07$). Additionally, the ranking between these two pathways from the pairwise comparisons mirrors the subscale averages; Positive Outlook Choice was given the pairwise comparisons' highest possible ranking. Conversely, Contact with Nature Choice was ranked the least important in the pairwise comparisons.

Contact with Nature. The two-step cluster analysis results indicate that 69% of participants who chose the Contact with Nature Outcome Preference in the vignette are male. Additionally, 62% of this group falls between the ages of 25 and 34. Much like the group described above, the subscale averages on the Contact with Nature and Positive Outlook Values for the Pathways to Happiness measure mirrors their choice. The average for Contact with Nature is 4.23 compared to 4.15 for Positive Outlook. However, the way these pathways were ranked in the pairwise comparisons appears to counter the group's selection on the vignette. Much like the previous group, the results of the pairwise comparisons indicated that Positive Outlook Choice was ranked higher and deemed more critical than Contact with Nature Choice.

Q124 – Contact with Nature v. Positive Outlook

Every morning you take a walk in a nearby park. Since you live in a big city, walking through the park lets you experience nature, and has been a calming activity for you. Recently, a group of construction workers has been working nearby in the mornings. The amount of loud noise from their machinery coupled with construction debris has made it difficult to relax and leaves you feeling a little negatively.

*You choose to keep going to the park despite the issues caused by construction because it's the only opportunity you get to experience nature. (**Contact with Nature**)*

*You choose to find an indoor morning routine that brings positivity to your day due to the impact construction has on your morning routine. (**Positive Outlook**)*

Positive Outlook. A two-step cluster analysis was conducted to examine participant demographics. Of the participants that selected the Positive Outlook Outcome Preference, 53%

were male, and 45% were aged 25 to 34. Furthermore, the analysis results revealed that this group of participants ranked Positive Outlook Choice higher than Contact with Nature Choice in the pairwise comparisons. Furthermore, the average for the Positive Outlook Value ($M = 4.49$) from the Pathways to Happiness measure was higher than the average for the Contact with Nature Value ($M = 4.06$).

Contact with Nature. The two-step cluster analysis shows that 58% of the group that selected the Contact with Nature Outcome Preference identifies as male, with 43% falling between the ages of 25 and 34. Furthermore, the analysis indicated that this group's participants had a higher average for the Contact with Nature Value ($M = 4.26$) than the Positive Outlook Value ($M = 4.09$) on the Pathways to Happiness measure. The results of the pairwise comparisons and how the pathways were ranked mirrors the subscale averages. Participants gave more importance to Contact with Nature Choice than Positive Outlook.

Q114 – Relationships v. Positive Outlook

You are looking for an exercise group to keep you accountable. You found two groups that meet at good times for you - one with a group of friends and one with people you don't know. Your group of friends jogged through the nature preserve together. You loved hearing the birds chirping and jogging through the winding pathways. However, you noticed that your friends seemed to only complain about work, school, or family. You are concerned that the negativity could rub off on you. The second group made up of strangers jogged around a track and although they are still outside, you felt fenced in and far from nature. However, you noticed that the individuals in the group were very encouraging and tend to appreciate small things throughout their day.

*You choose to join your group of friends despite their negative outlooks because you do not want to be shunned by anyone. (**Relationships**)*

*You choose to join the group of strangers to be around more positive attitudes despite how your friends may feel. (**Positive Outlook**)*

Positive Outlook. A two-step cluster analysis in SPSS shows that participants who chose the Positive Outlook Outcome Preference in the vignette above can be broken down further into

three sub-groups. Group 1 was 70% male, with 55% of participants falling between the ages of 25 and 34. The pairwise comparisons show that Group 1 ranked Relationships Choice lower than Positive Outlook Choice, which indicates that the group believes Positive Outlook is more important. These rankings also correspond with the averages for the Relationships Value ($M = 3.94$) and Positive Outlook Value ($M = 4.30$) on the Pathways to Happiness measure.

Group 2 was 57% female, with 42% of them falling between the ages of 35 to 44. Much like Group 1, Group 2's Positive Outlook Value average ($M = 4.62$) was higher than their Relationship Value average ($M = 4.33$). Additionally, the pairwise comparison results show that Group 2 ranked Relationships Choice and Positive Outlook Choice similarly to Group 1; Positive Outlook Choice was ranked higher and seen as more important. However, unlike Group 1, the averages for the Relationships Value and Positive Outlook Value are more similar. The difference between the average Relationship Value and Positive Outlook Value scores could underscore gender differences between Relationships being considered a vital pathway towards happiness.

Lastly, the participants in Group 3 are 66% female. 38% of participants fall between the ages of 25 to 34, while an additional 38% are 55 years or older. Like all previous groups, Group 3's participants' average Positive Outlook Value score ($M = 4.69$) was higher than their average Relationship Value score ($M = 4.49$) on the Pathways to Happiness measure. Moreover, like Group 2, which is mostly female, the averages for the Relationship Value and Positive Outlook Value were more similar than Group 1, which is 70% male, again underscoring potential gender differences. However, the most significant difference between Group 3 and the other two groups are the results from the pairwise comparisons. Between Relationships Choice and Positive Outlook Choice, Group 3 ranked Relationships Choice higher, and therefore, more important.

Unlike the other groups, Group 3 has a percentage of older participants. Therefore, the fact that Relationships were more critical to this group of participants could be due to age effects. It is possible that women in both earlier and later stages of life could find relationships to be more critical to their happiness and well-being. However, research in this space would need to be conducted to examine if this could be the case.

Relationships. A two-step cluster analysis revealed that participants who chose the Relationships Outcome Preference for the vignette above can be clustered into two smaller subgroups. Group 1 is evenly split between male and female. Additionally, 50% of participants fall between the ages of 35 and 44. Furthermore, the analysis indicated that the outcome of the pairwise comparisons and averages for the Relationship Value and Positive Outlook Value on the Pathways to Happiness measure correspond with the Relationship Outcome Preference they selected. Group 1 ranked Relationships Choice higher than Positive Outlook Choice, indicating that it is more important. Additionally, Group 1's average Relationship Value score was 4.33, compared to 4.16 for the Positive Outlook Value.

By contrast, Group 2 is 75% male, with 85% of participants falling between 25 and 34. Group 2's pairwise comparison results indicate that Positive Outlook was more important than Relationships. However, Group 2's average scores for the Positive Outlook and Relationships Values on the Pathways to Happiness measure were very similar (Relationships = 3.76; Outlook: Positivity = 3.86). This is a case where the situation's context could have played a more prominent role in which pathway was chosen more than any preconceived preferences or values the participant has.

Q118 – Contact with Nature v. Relationships

You are going on a trip to Costa Rica for a week with your partner. You would love to go zip lining through the trees and see the nature from a new perspective. However, your partner is afraid of heights. They know how much you'd love to go on this adventure and are okay with spending a day doing their own thing while you zip line.

*You decide to go zip lining on your own to spend some time in nature and let your partner do their own thing. (**Contact with Nature**)*

*You decide to spend the day with your partner instead of spending time in nature. (**Relationships**)*

Contact with Nature. A two-step cluster analysis conducted in SPSS indicates that the cluster that selected the Contact with Nature Outcome Preference is 59% male. Additionally, 40% of the participants were between the ages of 25 and 34. Despite selecting the Contact with Nature Outcome Preference for the vignette above, the results of the pairwise comparisons for this cluster indicate that Relationships Choice was ranked higher, indicating that it is more important. Furthermore, the averages for the Contact with Nature Value ($M = 4.20$) and Relationship Value ($M = 4.11$) subscales on the Pathways to Happiness measure are not drastically different. However, despite the similarity between the two averages, Contact with Nature Value's average is higher, indicating that it is considered relatively more important. When the pairwise comparisons and subscale averages contradict, there could be contextual factors or situational affordances affecting how participants choose between options.

Relationships. A two-step cluster analysis revealed that participants that selected the Relationships Outcome Preference is evenly split between males and females. Additionally, 49% of these participants were in the 25 to 34 age brackets. Results show that the Pathways to Happiness subscale averages and pairwise comparison rankings correspond with the choice selected by this group. The Relationships Value average ($M = 4.20$) was higher than the Contact

with Nature Value average ($M = 4.09$) on the Pathways to Happiness measure. Furthermore, the pairwise comparisons indicated that Relationships Choice was ranked higher than Contact with Nature Choice, indicating that Relationships was more important.

Q116 – Autonomy v. Contact with Nature

You are on the planning team for a big event. Everyone is splitting into committees and there are two that are interesting to you. The sponsor committee oversees asking local businesses to sponsor your event. You can make these inquiries on your own timeline and choose the businesses you ask. The set-up committee gets to spend time at the beautiful outdoor venue, getting everything ready for the event. However, you must be there at specific times and follow the set-up instructions given to you.

*You choose to be a part of the set-up committee so you can spend some time outside. (**Contact with Nature**)*

*You choose to be a part of the sponsor committee so you can oversee your own schedule and methods. (**Autonomy**)*

Autonomy. A two-step cluster analysis reveals that participants who selected the Autonomy Outcome Preference in the vignette above can be clustered into two small subgroups. Group 1 is evenly split between males and females. 36% of participants in Group 1 are also between the ages of 25 and 34. The averages for the Contact with Nature Value ($M = 4.21$) and Autonomy Value ($M = 4.22$) on the Pathways to Happiness measure for this group were almost identical. However, the results of the pairwise comparisons for Group 1 run counter to the choice they made; 66% of this group ranked Autonomy Choice as the least important pathway. Furthermore, no participants in this group indicated that Contact with Nature Choice was the least important pathway.

Group 2 has some similarities to the previous group. First, most participants in Group 2 fall between the ages of 25 to 34. The Autonomy Value average ($M = 4.38$) was higher than the Contact with Nature Value average ($M = 3.88$). However, unlike Group 1, 65% of Group 2 is

male. Furthermore, the Contact with Nature Value and Autonomy Value average scores are more distinct, indicating a more apparent relative importance between the two pathways. Lastly, the pairwise comparisons for Group 2 show that these participants ranked Autonomy Choice higher than Contact with Nature Choice.

Contact with Nature. A two-step cluster analysis conducted in SPSS revealed that participants who selected the Contact with Nature Outcome Preference in the vignette above can be clustered into two subgroups. Group 1 is 57% male. Additionally, 35% of Group 1 falls between the ages of 25 and 34. The average for the Contact with Nature Value ($M = 4.21$) on the Pathways to Happiness measure was higher than the Autonomy Value average ($M = 4.06$). However, results of the pairwise comparisons for Group 1 show they ranked Autonomy Choice higher than Contact with Nature Choice, indicating that Autonomy is more important. Group 2 was 52% female, with 65% of participants falling between the ages of 25 and 34. Much like Group 1, the average for the Contact with Nature Value ($M = 4.32$) on the Pathways to Happiness measure was higher than the Autonomy Value average ($M = 4.08$). However, unlike Group 1, the pairwise comparisons for Group 2 show they ranked Contact with Nature Choice higher, indicating it is more critical than Autonomy.

Conclusions

Overall, the results are promising and support the notion that the relative importance a person places on specific pathways to happiness will be reflected in their choices when faced with a trade-off situation. Although the Pathways to Happiness (Vanelli, 2019) measure demonstrated some ecological validity between Pathways scores and which outcome would be preferred, it would still be difficult to generalize the results of this study to other samples. Based on the results, the relationship between trade-off situation outcomes and how we value specific

paths towards happiness is dynamic. In reality, more than two pathways could be weighed against in trade-off situations, or on the flip side, the outcome of one decision could represent more than one pathway. Therefore, assuming that the importance a person places on a pathway towards happiness will always be expressed in the choices they make may be unlikely. Similar topics related to dynamic decision making and preferences has been explored in the judgement & decision-making space. There are situations in which it is impossible to specify all possible alternatives and their consequences in advance. Furthermore, the order in which people structure their preferences can be influenced by many factors that may have little to do with the choice itself (Hastie, Dawes, 2009). For example, the strategy we use in one situation may lead to a trade-off decision, while using a different strategy may lead to another trade-off decision. This underlies the concept that there is a probabilistic element between trade-offs, consequences (outcomes; happiness and well-being), and human decision-making. These are all factors that make these types of questions difficult to answer accurately. A brief review of the present study's hypotheses and their results can be found in Table 3 below.

Table 3
Review of the hypotheses, analyses, and results for the present study

Hypothesis	Variable(s)	Binary Logistic Regression	Two-Step Cluster Analysis	Hierarchical Cluster Analysis
<i>H1: Pathways to Happiness subscale scores will correspond to the choice that represents that subscale in situations where the individual must choose between two pathways.</i>	<ul style="list-style-type: none"> Pathway Value; The subscale scores from the Pathways to Happiness (Vanelli, 2019) measure Outcome preferences; the binary outcome across the vignettes 	<p>Supported:</p> <ul style="list-style-type: none"> Contact with Nature Autonomy Positive Outlook <p>Not Supported</p> <ul style="list-style-type: none"> Relationships 	<p>Supported:</p> <ul style="list-style-type: none"> Contact with Nature Autonomy Positive Outlook Relationships <p>Not Supported:</p> <ul style="list-style-type: none"> Autonomy 	<p>Supported:</p> <ul style="list-style-type: none"> Contact with Nature Autonomy Positive Outlook Relationships <p>High Pathway subscale scores corresponded for 1 out of 2 clusters.</p>
<i>H2: Rankings of the four pathways of interest to the study should correspond to the choice that represents that pathway in the vignette scenarios.</i>	<ul style="list-style-type: none"> Pathway Choice; The pairwise comparison outcome for Contact with Nature, Autonomy, Relationships, and Positive Outlook. Outcome preferences; the binary outcome across the vignettes 	<p>Supported:</p> <ul style="list-style-type: none"> Contact with Nature Positive Outlook <p>Not Supported:</p> <ul style="list-style-type: none"> Autonomy Relationships 	<p>Supported:</p> <ul style="list-style-type: none"> Contact with Nature Positive Outlook Relationships <p>Not Supported:</p> <ul style="list-style-type: none"> Autonomy 	<p>Supported:</p> <ul style="list-style-type: none"> Contact with Nature Autonomy Positive Outlook Relationships <p>Pathway rankings corresponded for 1 out of 2 clusters.</p>

CHAPTER FOUR

DISCUSSION & LIMITATIONS

This research aimed to use a series of vignettes alongside the Pathways to Happiness measure (Vanelli, 2019) to see whether a person's score corresponds to the choice they make between two pathways. Overall, results are promising and somewhat support H1. Individual scores across the Pathways to Happiness subscale were typically parallel with the choices people make across vignettes. The binary logistic regressions showed that the Pathways measure demonstrates some ecological validity by correctly classifying individuals between categories (i.e., vignette choice options) based upon the importance placed upon the pathways of interest. Additionally, the results of the two-step cluster analyses, and hierarchical cluster analysis also supported H1.

The high scores on specific Pathways to Happiness (Vanelli, 2019) subscales corresponded to the outcome that represented that pathway in the vignettes. The introduction of pairwise comparisons was an additional layer that introduced preferential judgments between the four pathways of interest: Contact with Nature, Relationships, Outlook: Positivity (Positive Outlook), and Autonomy. Both the binary logistic regression and cluster analysis results indicate some support for H2. The ranks assigned to pathways by participants typically coincided with the choices they made on the vignettes. For example, those who ranked Positive Outlook the most important were choosing the outcome representing that pathway across the vignettes. A person's ranking of the Pathways to Happiness also corresponded with average scores on the Pathway to Happiness measure (i.e., higher rank corresponds to higher average, etc.).

However, some instances occurred where a pathways' ranking did not align with the participants' choice across the vignettes. Despite this misalignment between a participant's

pathways rankings and their choice on the vignette, it appears their average scores from the Pathways to Happiness (Vanelli, 2019) continued to correspond with their outcome preference across the vignettes. One possible interpretation of these results is to compare the pairwise comparisons and vignettes to the state-level measurement of the Pathways to Happiness. By contrast, the Pathways to Happiness measure could be considered a trait-level measurement approach to these happiness sources' relative importance.

Previous research has asked whether happiness is a trait, state, or has elements of both (Kluemper, Little, DeGroot, 2009). Here, traits refer to a lasting, durable condition that contributes to consistency across situations over time. States, on the other hand, are more fleeting and reactive to situations. Another way of looking at the difference is to say that traits are causes, while states are results (Veenhoven, 1994). The primary purpose of a trait is to explain covariation among individual measures, despite any situational influences. States describe the reactivity in situations, despite durable individual differences (traits). When participants were asked to answer the pairwise comparison questions, their responses may have come from an 'in the moment' judgment rather than a stable preference. Likewise, vignettes place participants in a moment where they had to compare their preferences to the situation at hand. On the other hand, the Pathways to Happiness measure is intended to capture a level of importance that is more enduring than momentary.

When looking for consistency across situations, traits must be stable despite any situational variation. Therefore, to be cross-situationally consistent, someone that does not value Contact with Nature is expected to shun all opportunities endorsing that pathway. However, due to the dynamic relationship between the paths someone values towards happiness and the trade-offs present in everyday situations, it should be reasonable to expect that although an individual

may not see rock climbing as a meaningful hobby, they may choose to sit near a window overlooking a tree instead of sitting by noisy tables. In other words, being cross-situationally consistent does not mean that traits must be comparable under adverse and favorable conditions (Stones, Kadjistravropulos, Tuuko, & Kozma, 1995). Furthermore, this reasoning can be further expanded to include the idea that situationally-consistent patterns exist and that a person can have situation-value profiles. The idea that there are patterns of consistency outlined by situational parameters has been explored in other topics, including personality. For example, Mischel's (1995) situation-behavior approach to personality outlines that personality consistency could also be found in situations and situation-behavior patterns (e.g., they do A when Y but B when Z), which end up comprising situation-behavior profiles. This line of reasoning could be extended to the present study, where individuals could have different situation-behavior patterns in trade-off situations. The tendency to have specific situation-behavior patterns underlines the probabilistic elements between these factors; the situation, our preferences, and the outcome.

The overall sample's hierarchical cluster analysis results show that the two most highly ranked pathways were Positive Outlook and Relationships. Autonomy was ranked as lowly as Contact with Nature. This result was surprising given that autonomy is one of the building blocks of self-determination theory, a basic need, and component to different happiness and well-being theories. One potential cause for autonomy's low ranking is the current societal impact of the COVID-19 pandemic. People may be placing more value on the Relationships and Positive Outlook pathways due to the pandemic's social restrictions. One might also reasonably expect that Contact with Nature could be vitally important for the same reasons, too. However, the time data collection took place could be why specific pathways were ranked higher than others. Participants were surveyed in November, which is closer to the holiday season and the time of

year when it is noticeably colder in the United States. An additional explanation for how Autonomy and Contact with Nature were ranked may be due to some of the solitary aspects of how the pathways were ranked focuses on the relationship between Autonomy and Contact with Nature and how they were described in the vignettes used in the present study.

Results of the hierarchical cluster analysis indicated that Cluster 1 ranked the pathways in the following order: (1) Positive Outlook, (2) Relationships, (3) Autonomy, (4) Contact with Nature. Meanwhile, Cluster 2 had the following order: (1) Positive Outlook, (2) Contact with Nature, (3) Relationships, (4) Autonomy. The vignettes utilizing Contact with Nature as an outcome preference typically discussed that pathway as a solitary activity with no indication of experiencing nature as a group (e.g., ziplining alone vs. camping with others). Rankings may be further exacerbated by the idea that autonomy is a type of relationship in and of itself; it is a special kind of relationship with oneself. Therefore, the trade-off becomes one of Contact with Nature vs. Relationships instead of Contact with Nature vs. Relationships vs. Autonomy, because autonomy essentially becomes subsumed within the Relationships pathway.

Other additional factors to consider when interpreting the study results are age and gender differences amongst the sample and how these things relate to the pathways people value and the trade-offs they make across situations. For example, the two-step cluster analysis for *Q114* examining a trade-off between Positive Outlook and Relationships uncovered possible gender differences in these subscales' averages. The majority-female clusters had higher scores for both Positive Outlook and Relationships than the cluster made up of 70% males. The same cluster analysis also suggested age differences could be influencing the results. In this instance, one of the majority-female clusters ranked Relationships higher than Positive Outlook, despite selecting Positive Outlook as their outcome preference for this vignette. However, what is of

interest here is that this cluster also had a subset of older participants, indicating that aging or being older could be the cause behind Relationships' elevated ranking. This interpretation is in line with previous research in Asian nations that show ties with friends and neighbors have a more substantial effect on health and well-being than their male counterparts (Murata, Saito, Tsuji, Saito, & Kondo, 2017). Other research conducted by Lyons, Duxbury, and Higgins (2005) has also demonstrated a significant gender-by-generation interaction when looking at The Schwartz Value Survey (SVS), indicating a pattern of differences between men and women for Baby Boomers and Generation Xers. These interpretations could be extended to the present study, suggesting that age and gender may influence the importance placed on specific pathways to happiness.

Limitations

Due to the number of factors in the Pathways to Happiness measure, only a specific subset was analyzed in the present study. Including all the factors from the Pathways to Happiness measure, in addition to vignettes covering all possible pairings, would result in a questionnaire too cognitively taxing for participants. Therefore, the present study only examined the following factors: Positive Outlook, Contact with Nature, Autonomy, and Relationships. These factors were selected based upon their use in a previous study (Vanelli, 2019). Additionally, because the vignettes are intended to reflect real-life scenarios, it is difficult to include all possible situations a person could encounter. Likewise, it is also possible that participants in our study may not have encountered situations like the vignettes' scenarios, making it potentially challenging to take on the subject's perspective in the vignette. Furthermore, pilot studies for future studies should assess the validity of the vignettes by having participants rate whether outcomes truly represent the pathways they intend to represent.

Despite best efforts to limit the number of survey items and balance the amount of reading done by participants, the present study still used an extensive questionnaire with multiple measures and vignettes that required effort to read and comprehend. As a result, variations in responses could be caused by the study's measures or the questionnaire design. First, the results of the binary logistic regressions or cluster analyses could be contaminated by extensive use of Likert-scale items resulting in common method variance (CMV). CMV occurs when the results' variance is attributable to the study's measures rather than any actual differences between or within participants. Second, specific questionnaire design decisions (e.g., survey length, types of questions, reading requirements.) increased the probability that the task was cognitively taxing, resulting in survey fatigue that leads to careless responding. Before analyzing the study's data, specific careless responding indices were selected to ensure maximum data quality. Among these indices were LongStringIndex, Mahalanobis Distance, and time-to-complete. After two waves of data cleaning, the final sample size was smaller than anticipated. Although the sample size is below 200, due to the nature of the analysis and the variables included, the final sample size does provide adequate power at 0.80 (Demidenko, 2007; Zhang & Yuan, 2018). However, despite having adequate power, two-thirds of the sample was removed due to careless responding. Therefore, future studies examining this topic utilizing a combination of vignettes and survey items should approach questionnaire design differently by either including fewer survey items and/or vignettes or shortening the length of the vignettes.

Conclusions

Despite the limitations briefly described above, the presented study begins to scratch the surface of how individuals structure the importance of what they value in pursuit of happiness by examining how people endorse those behaviors. This type of research could also extend to how

individuals assign accolades to others' behaviors, a judgment that is dependent on an observer's perspective and what they value. For example, individuals who endorse similar behaviors in the pursuit of happiness should understand a trade-off value. Moreover, agreeing on which trade-offs are worthwhile may indicate covariance between which actions are considered exemplary and admirable. Behavioral representations of values may influence participants to identify with trade-offs congruent with domains they find important. For example, a person that scores highly on Relationships would likely believe that giving up or potentially harming their relationships for anything else would not be worthwhile. Because individuals encounter situations across different environments or contexts in their lives, this research may extend into areas like the workplace where individuals are faced with trade-offs daily (e.g., Do sacrifice time to help your co-worker or focus on your work instead?).

An additional area where the Pathways to Happiness measure could be applied is in the realm of vocational interests. Previous meta-analytical research demonstrates that a person's interests are related to their performance and persistence in work contexts (Nye, Su, Rounds, and Drasgow, 2012). Furthermore, research from Iddekinge, Roth, Putka, and Lanivich (2011) also highlights that the type of interest scale used moderates the relationship between vocational interests and performance, such that validities are larger for scales used to assess multiple interests relevant to a job than for scales used to assess a single interest. Therefore, when assessing interests, it is better to use measures that examine multiple interests. Additionally, the use of a measure like the Pathways to Happiness measure could help highlight which interests or pathways are most relevant and least relevant to a job, which could have implications for job analysis methods that may only focus on what a job requires.

APPENDICES

Appendix A

Pathways to Happiness Vignettes

Every morning you take a walk in a nearby nature preserve. This has been a peaceful and calming activity for you. Recently, a group of teenagers has been there in the mornings disrespecting nature by breaking branches and being loud. This makes you angry and adds some negativity into your morning.

Which choice do you identify with the most?

You choose to keep going to the preserve and get your daily dose of nature. (Contact with Nature)

You choose to find an indoor morning routine that brings positivity to your day. (Positivity)

You have a very tight schedule. Every morning you meditate for 30 min to make sure you start your day with a positive outlook and then take a 30-minute walk on a nearby hiking trail to get in some time with nature. However, your manager at work has moved your shift 30 minutes earlier. You do not want to get up earlier because you like to get 8 hours of sleep a day, so you must cut part of your morning routine.

Which choice do you identify with the most?

You choose to stop meditating each morning because spending time in nature is more important to you. (Contact with Nature)

You choose to stop walking the hiking trail each morning because creating a positive outlook is more important to you. (Positivity)

You are looking for an exercise group to keep you accountable. You found two groups that meet at good times for you and went to try each of them out. The first group jogs through the nature preserve together and you loved hearing the birds chirping and jogging through the winding pathways. However, they seem to only be complaining about work or school or family. The second group jogs around a track and though they are still outside, you feel fenced in and far from nature. However, you notice that the individuals in the group are very encouraging and tend to appreciate small things throughout their day.

Which choice do you identify with the most?

You choose to join the first group to be in nature despite their negative outlooks. (Contact with Nature)

You choose to join the second group to be around so much positivity despite the lack of natural settings. (Positivity)

You have been planning a solo camping trip this weekend in order to spend some alone time in nature on the one weekend you can go out of town. However, your friends just decided to have a party this weekend and you'd love to see everyone from that friend group.

Which choice do you identify with the most?

You choose to go on the camping trip anyway, even though your friends have decided to have a party. (Contact with Nature)

You choose to go to the party to spend time with your friends, despite the time you spent planning your camping trip. (Relationships)

You have been conducting a job search for quite some time and have been offered two equally exciting job opportunities. One is in Denver and although this is far from your family, you are very excited about all of the outdoor opportunities you'll be able to take part in. The other job is in Chicago. Although it's close to your family and you would love to see them more often, there is not much opportunity there to experience nature.

Which choice do you identify with the most?

You choose to take the job in Denver. Although you will be further from family, you will have the opportunity to take part in more outdoor activities. (Contact with Nature)

You choose to take the job in Chicago. Although there are not many opportunities to enjoy nature, you will have the opportunity to be closer to family. (Relationships)

You are on the planning team for a big event. Everyone is splitting into committees and there are two that are interesting to you. The sponsor committee is in charge of asking local businesses to sponsor your event. You can make these inquiries on your own timeline and choose the businesses you ask. The set-up committee gets to spend time at the beautiful outdoor venue, getting everything ready for the event. However, you have to be there at specific times and follow the set-up instructions given to you.

Which choice do you identify with the most?

You choose to be a part of the set-up committee so you can spend some time outside. (Contact with Nature)

You choose to be a part of the sponsor committee so you can oversee your own schedule and methods. (Autonomy)

You are searching for an hourly job on the weekends. You've been accepted to two that you've applied for. One is a guide through the nearby nature preserve. You're excited by the opportunity to spend time in nature but know that you must stay on the trail and memorize the facts you should tell your guests about. The other job is at reception for a small business. Though you would be inside, you like the idea that you will get to choose how and when you complete tasks throughout the day as long as they get done.

Which choice do you identify with the most?

You choose the job as a walking guide for the nature preserve because you will be able to spend more time in nature. (Contact with Nature)

You choose the job as the receptionist for the small business because you have the opportunity to choose how and when you complete tasks. (Autonomy)

You are going on a trip to Costa Rica for a week with your partner. You would love to go zip lining through the trees and see the nature from a new perspective. However, your

partner is afraid of heights. They know how much you'd love to go on this adventure and are okay with spending a day doing their own thing while you zip line.

Which choice do you identify with the most?

You decide to go zip lining on your own to spend some time in nature and let your partner do their own thing. (Contact with Nature)

You decide to spend the day with your partner instead of spending time in nature. (Relationship)

You live in the city and your job is offering an optional employee retreat in the mountains this weekend. If you go on the retreat, you'll have to follow a set schedule and the instructions of your group leaders. If you decide not to go on the retreat, you will be able to spend the weekend however you'd like in the city.

Which choice do you identify with the most?

Even though you enjoy the freedom of making your own schedule on the weekend, you choose to go on the retreat so that you can enjoy the natural beauty of the mountains.

(Contact with Nature)

Even though you would like to spend the weekend in nature, you choose not to go on the retreat because you want to follow your own schedule this weekend. (Autonomy)

Appendix B

Measures

Pathways to Happiness (Vanelli, 2019)

Autonomy

It is important to have a strong sense of control over one's life.

I will always be myself.

I feel happy when I can do what I really want to do.

I often think about how to be in control of my own life.

Contact with Nature

Going outside in nature is better than staying indoors.

Being outside in nature is important.

People need to spend more time outdoors.

Nature calms me down.

Positivity

It's important to have a positive outlook every day.

Having a positive outlook on life makes me feel calm.

Having a positive outlook helps me make better decisions.

I feel that I am going in the right direction when I think positively.

I like to think positively.

Physical Security

Physical safety is very important to me.

Being physically safe is important for being happy in life.

I feel happiest when I'm physically safe from harm.

I try to pick physically safe activities.

My physical safety is one of my top priorities.

Relationship

I know I can trust the people I am in close relationships with.

I feel happy with my relationships.

Socializing with my close friends immediately brings me joy.

I am certain that I am important to those I have relationships with.

I know that my friends and family will always be there.

The people in my social circles make me happy.

Goal Orientation

I am capable of motivating myself.

I am motivated by the possibility of what I can achieve.

I think about ways to motivate myself all the time.
I feel happy when I have a goal to pursue.
My future goals determine my present actions and current life.
I think about my future goals all the time.

Caring for Others

I make my decisions based on how I can help other people.
I like to devote big chunks of my time to helping other people.
I am constantly looking for opportunities throughout the day to help others.
I like to spend most of my time helping others.
I constantly think of ways to help others.

Material Security

I believe money will solve my problems.
I am happy when I have money.
I take into account my material possessions when I make decisions.
I constantly think about acquiring material possessions.

Task Efficacy

I feel proud when I can motivate myself to complete a task.
I feel happy when I complete a task.
I feel happy when I feel as if I have used my time wisely.
I feel happy when I have enough time to do things.

Acceptance

Accepting what happens to me is an important skill in life.
I feel happy when I accept things as they are.
When things are going badly, I work on accepting my situation to make myself feel better.
I base my decisions on accepting what is.
I think about ways to be at peace with the way things are.

Skilled & Meaningful Activity

I will always make time for hobbies that make me happy
I make decisions based around the activities I find most meaningful.
I feel happy when I participate in meaningful activities.
It is important to me to have activities I find meaningful.

Psychological Well-being Scale Ryff (1985)

Autonomy

I am not afraid to voice my opinions even when they are in opposition to the opinions of most people
My decisions are not usually influenced by what everyone else is doing

I have confidence in my opinions even if they are contrary to the general consensus
Being happy with myself is more important than having others approve of me
I tend to worry what other people think of me
I often change my mind about decisions if my friends and family disagree
It is difficult for me to voice my own opinions on controversial matters

Positive relations with others

Most people see me as loving and affectionate
I enjoy personal and mutual conversations with family members or friends
People would describe me as a giving person, willing to share my time with others
I know that I can trust my friends and they know that they can trust me
I often feel lonely because I have few close friends with whom to share my concerns
I don't have many people who want to listen when I need to talk
It seems to me that most other people have more friends than I do

Environmental mastery

I am quite good at managing the many responsibilities of my daily life
I generally do a good job of taking care of my personal finances and affairs
I am good at juggling my time so that I can fit everything in that needs to be done
I have been able to build a home and a lifestyle for myself that is much to my liking
I do not fit very well with the people and the community around me
I often feel overwhelmed by my responsibilities
I have difficulty arranging my life in a way that is satisfying to me

Personal growth

I think it is important to have new experiences that challenge how you think about the world
I have the sense that I have developed a lot as a person over time
I am not interested in activities that will expand my horizons
I don't want to try new ways of doing things — my life is fine the way it is
When I think about it, I haven't really improved much as a person over the years
I do not enjoy being in new situations that require me to change my old familiar ways of doing things
There is a truth in the saying that you can't teach an old dog new tricks

Purpose in life

I am an active person in carrying out the plans I set for myself
I enjoy making plans for the future and working to make them a reality
I tend to focus on the present, because the future nearly always brings me problems
My daily activities often seem trivial and unimportant to me
I don't have a good sense of what it is I am trying to accomplish in life
I used to set goals for myself, but that now seems a waste of time
I sometime feel I have done all there is to do in life

Self-acceptance

I have made some mistakes in the past, but feel that all in all everything has worked out for the best

The past had its ups and downs, but in general I wouldn't want to change it

When I compare myself with friends and acquaintances, it makes me feel good about who I am

In general, I feel confident and positive about myself

I feel that many of the people I know have got more out of life than I have

In many ways, I feel disappointed about my achievements in life

My attitude about myself is probably not as positive as most people feel about themselves

Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin 1985)

Instructions for administering the scale are: Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

The 7-point scale is: 1 =strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = neither agree nor disagree, 5 =slightly agree, 6 =agree, 7 =strongly agree.

In most ways my life is close to ideal.

The conditions of my life are excellent.

I am satisfied with my life.

So far, I have gotten the important things I want in life.

If I could live my life over, I would change almost nothing.

Appendix C

Logistic Regression Results

Table 4

Logistic Regression Predicting Likelihood of Choosing Between Contact with Nature and Positive Outlook

	<i>B</i>	<i>S.E.</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Odds Ratio</i>
Path Nat	-.552	.389	2.020	1	.155	.576
Path_Pos	.734	.465	2.498	1	.114	2.084
CWN_rank			6.158	3	.104	
CWN_rank (1)	1.691	.813	4.329	1	.037	5.425
CWN_rank (2)	.670	.810	.684	1	.408	1.954
CWN_rank (3)	.680	.861	.625	1	.429	1.975
Pos_rank			1.231	3	.746	
Pos_rank (1)	-.107	.961	.012	1	.911	.898
Pos_rank (2)	.330	.620	.284	1	.594	1.392
Pos_rank (3)	-.360	.550	.428	1	.513	.698
Constant	-2.402	2.332	1.061	1	.303	.091

Note: When 0 = least important, 4 = most important, Rank (1) corresponds to 0, Rank (2) corresponds to 1, and Rank (3) corresponds to 2. Path_Nat = Average Contact with Nature score. Path_Pos = Average Outlook: Positivity score.

Table 5

Logistic Regression Predicting Likelihood of Choosing Between Contact with Nature and Positive Outlook

	<i>B</i>	S.E.	Wald	<i>df</i>	<i>p</i>	Odds Ratio
Path_Nat	-.149	.401	.138	1	.710	.862
Path_Pos	-.533	.443	1.449	1	.229	.587
CWN_rank			9.930	3	.019	
CWN_rank (1)	-2.273	.777	8.566	1	.003	.103
CWN_rank (2)	-1.826	.730	6.257	1	.012	.161
CWN_rank (3)	-1.108	.774	2.048	1	.152	.330
Pos_rank			.791	3	.852	
Pos_rank (1)	.650	.863	.567	1	.451	1.915
Pos_rank (2)	.168	.638	.069	1	.792	1.183
Pos_rank (3)	-.055	.569	.009	1	.924	.947
Constant	3.864	2.229	3.006	1	.083	47.675

Note: When 0 = least important, 4 = most important, Rank (1) corresponds to 0, Rank (2) corresponds to 1, and Rank (3) corresponds to 2. Path_Nat = Average Contact with Nature score. Path_Pos = Average Outlook: Positivity score.

Table 6

Logistic Regression Predicting Likelihood of Choosing Between Relationships and Positive Outlook

	<i>B</i>	S.E.	Wald	<i>df</i>	<i>p</i>	Odds Ratio
Path_Pos	2.002	.545	13.509	1	.000	7.400
Path_Relat	-.582	.499	1.362	1	.243	.559
Pos_rank			5.505	3	.138	
Pos_rank (1)	-1.429	.822	3.017	1	.082	.240
Pos_rank (2)	-1.398	.669	4.365	1	.037	.247
Pos_rank (3)	-.687	.639	1.156	1	.282	.503
Relat_rank			.864	3	.834	
Relat_rank (1)	-.622	.916	.461	1	.497	.537
Relat_rank (2)	.035	.691	.003	1	.960	1.035
Relat_rank (3)	.170	.661	.066	1	.798	1.185
Constant	-4.997	2.404	4.321	1	.038	.007

Note: When 0 = least important, 4 = most important, Rank (1) corresponds to 0, Rank (2) corresponds to 1, and Rank (3) corresponds to 2. Path_Relat = Average Relationships score. Path_Pos = Average Outlook: Positivity score.

Table 7

Logistic Regression Predicting Likelihood of Choosing Between Relationships and Positive Outlook

	<i>B</i>	S.E.	Wald	<i>df</i>	<i>p</i>	Odds Ratio
Path_Pos	-.135	.426	.101	1	.751	.873
Path_Relat	.400	.401	.998	1	.318	1.492
Pos_rank			1.401	3	.705	
Pos_rank (1)	-.133	.713	.035	1	.852	.876
Pos_rank (2)	.549	.580	.897	1	.344	1.732
Pos_rank (3)	-.033	.545	.004	1	.951	.967
Relat_rank			2.395	3	.494	
Relat_rank (1)	1.422	.961	2.190	1	.139	4.146
Relat_rank (2)	.127	.611	.043	1	.836	1.135
Relat_rank (3)	.214	.603	.125	1	.723	1.238
Constant	-1.083	2.080	.271	1	.603	.339

Note: When 0 = least important, 4 = most important, Rank (1) corresponds to 0, Rank (2) corresponds to 1, and Rank (3) corresponds to 2. Path_Relat = Average Relationships score. Path_Pos = Average Outlook: Positivity score.

Table 8

Logistic Regression Predicting Likelihood of Choosing Between Relationships and Contact with Nature

	<i>B</i>	S.E.	Wald	<i>df</i>	<i>p</i>	Odds Ratio
Path_Relat	-.623	.377	2.738	1	.098	.536
Path_Nat	.221	.350	.401	1	.527	1.248
Relat_rank			1.939	3	.585	
Relat_rank (1)	-1.065	.918	1.345	1	.246	.345
Relat_rank (2)	-.055	.617	.008	1	.929	.947
Relat_rank (3)	-.432	.551	.614	1	.433	.649
CWN_rank			2.954	3	.399	
CWN_rank (1)	-1.211	.718	2.841	1	.092	.298
CWN_rank (2)	-.880	.691	1.619	1	.203	.415
CWN_rank (3)	-1.001	.728	1.888	1	.169	.368
Constant	2.918	2.221	1.726	1	.189	18.503

Note: When 0 = least important, 4 = most important, Rank (1) corresponds to 0, Rank (2) corresponds to 1, and Rank (3) corresponds to 2. Path_Relat = Average Relationships score. Path_Nat = Average Contact with Nature score.

Table 9

Logistic Regression Predicting Likelihood of Choosing Between Relationships and Contact with Nature

	<i>B</i>	S.E.	Wald	<i>df</i>	<i>p</i>	Odds Ratio
Path_Relat	.716	.409	3.068	1	.080	2.046
Path_Nat	-.071	.378	.035	1	.851	.932
Relat_rank			3.602	3	.308	
Relat_rank (1)	.372	.980	.144	1	.704	1.451
Relat_rank (2)	-.724	.682	1.129	1	.288	.485
Relat_rank (3)	.382	.613	.388	1	.534	1.465
CWN_rank			15.878	3	.001	
CWN_rank (1)	2.458	.803	9.363	1	.002	11.676
CWN_rank (2)	.407	.734	.307	1	.580	1.502
CWN_rank (3)	1.998	.803	6.181	1	.013	7.371
Constant	-3.835	2.432	2.487	1	.115	.022

Note: When 0 = least important, 4 = most important, Rank (1) corresponds to 0, Rank (2) corresponds to 1, and Rank (3) corresponds to 2. Path_Relat = Average Relationships score. Path_Nat = Average Contact with Nature score.

Table 10

Logistic Regression Predicting Likelihood of Choosing Between Autonomy and Contact with Nature

	<i>B</i>	S.E.	Wald	<i>df</i>	<i>p</i>	Odds Ratio
Path_Nat	.805	.398	4.083	1	.043	2.237
Path_Aut	-1.441	.487	8.733	1	.003	.237
CWN_rank			2.003	3	.572	
CWN_rank (1)	-.346	.697	.247	1	.619	.707
CWN_rank (2)	-.833	.664	1.575	1	.209	.435
CWN_rank (3)	-.190	.710	.072	1	.789	.827
Aut_rank			7.333	3	.062	
Aut_rank (1)	-.074	.688	.011	1	.915	.929
Aut_rank (2)	-1.179	.717	2.701	1	.100	.308
Aut_rank (3)	.542	.711	.580	1	.446	1.719
Constant	3.169	2.413	1.724	1	.189	23.775

Note: When 0 = least important, 4 = most important, Rank (1) corresponds to 0, Rank (2) corresponds to 1, and Rank (3) corresponds to 2. Path_Aut = Average Autonomy score. Path_Nat = Average Contact with Nature score.

Table 11

Logistic Regression Predicting Likelihood of Choosing Between Autonomy and Contact with Nature

	<i>B</i>	S.E.	Wald	<i>df</i>	<i>p</i>	Odds Ratio
Path_Nat	-.091	.335	.074	1	.785	.913
Path_Aut	.659	.433	2.315	1	.128	1.932
CWN_rank			1.740	3	.628	
CWN_rank (1)	-.104	.651	.026	1	.873	.901
CWN_rank (2)	-.647	.635	1.038	1	.308	.524
CWN_rank (3)	-.666	.675	.973	1	.324	.514
Aut_rank			1.664	3	.645	
Aut_rank (1)	-.025	.648	.002	1	.969	.975
Aut_rank (2)	-.197	.654	.091	1	.763	.821
Aut_rank (3)	-.713	.669	1.137	1	.286	.490
Constant	-1.902	2.246	.717	1	.397	.149

Note: When 0 = least important, 4 = most important, Rank (1) corresponds to 0, Rank (2) corresponds to 1, and Rank (3) corresponds to 2. Path_Aut = Average Autonomy score. Path_Nat = Average Contact with Nature score.

Table 12

Logistic Regression Predicting Likelihood of Choosing Between Autonomy and Relationships

	<i>B</i>	S.E.	Wald	<i>df</i>	<i>p</i>	Odds Ratio
Path_Aut	.089	.445	.040	1	.841	1.093
Path_Relat	-.319	.390	.668	1	.414	.727
Aut_rank			.657	3	.883	
Aut_rank (1)	.197	.653	.091	1	.763	1.218
Aut_rank (2)	.035	.697	.002	1	.960	1.035
Aut_rank (3)	-.307	.723	.180	1	.671	.736
Relat_rank			8.463	3	.037	
Relat_rank(1)	.554	.861	.414	1	.520	1.740
Relat_rank(2)	-.692	.669	1.069	1	.301	.501
Relat_rank(3)	.857	.562	2.330	1	.127	2.357
Constant	.354	2.424	.021	1	.884	1.425

Note: When 0 = least important, 4 = most important, Rank (1) corresponds to 0, Rank (2) corresponds to 1, and Rank (3) corresponds to 2. Path_Aut = Average Autonomy score. Path_Relat = Average Relationships score.

Table 13

Logistic Regression Predicting Likelihood of Choosing Between Autonomy and Relationships

	<i>B</i>	S.E.	Wald	<i>df</i>	<i>p</i>	Odds Ratio
Path_Aut	.380	.438	.751	1	.386	1.462
Path_Relat	.125	.380	.108	1	.742	1.133
Aut_rank			4.878	3	.181	
Aut_rank (1)	-1.173	.658	3.174	1	.075	.309
Aut_rank (2)	-1.300	.704	3.409	1	.065	.272
Aut_rank (3)	-.424	.695	.373	1	.541	.654
Relat_rank			.561	3	.905	
Relat_rank (1)	-.060	.872	.005	1	.945	.942
Relat_rank (2)	-.098	.612	.026	1	.873	.907
Relat_rank (3)	.260	.552	.222	1	.638	1.297
Constant	-1.243	2.364	.276	1	.599	.289

Note: When 0 = least important, 4 = most important, Rank (1) corresponds to 0, Rank (2) corresponds to 1, and Rank (3) corresponds to 2. Path_Aut = Average Autonomy score. Path_Relat = Average Relationships score.

Table 14

Logistic Regression Predicting Likelihood of Choosing Between Autonomy and Positive Outlook

	<i>B</i>	S.E.	Wald	<i>df</i>	<i>p</i>	Odds Ratio
Path_Aut	.736	.509	2.088	1	.148	2.087
Path_Pos	-.772	.471	2.687	1	.101	.462
Aut_rank			2.072	3	.558	
Aut_rank (1)	-.368	.645	.325	1	.569	.692
Aut_rank (2)	-.909	.678	1.795	1	.180	.403
Aut_rank (3)	-.290	.679	.183	1	.669	.748
Pos_rank			.510	3	.917	
Pos_rank (1)	-.213	.785	.073	1	.787	.809
Pos_rank (2)	-.397	.570	.487	1	.485	.672
Pos_rank (3)	-.239	.516	.214	1	.644	.787
Constant	.651	2.088	.097	1	.755	1.917

Note: When 0 = least important, 4 = most important, Rank (1) corresponds to 0, Rank (2) corresponds to 1, and Rank (3) corresponds to 2. Path_Aut = Average Autonomy score. Path_Pos = Average Outlook: Positivity score.

Table 15

Logistic Regression Predicting Likelihood of Choosing Between Autonomy and Positive Outlook

	B	S.E.	Wald	df	Sig.	Exp(B)
Path_Aut	.656	.519	1.601	1	.206	1.927
Path_Pos	-.735	.474	2.408	1	.121	.479
Aut_rank			2.517	3	.472	
Aut_rank (1)	-.732	.662	1.219	1	.269	.481
Aut_rank (2)	-.161	.675	.057	1	.812	.852
Aut_rank (3)	.107	.689	.024	1	.876	1.113
Pos_rank			1.371	3	.712	
Pos_rank (1)	.645	.795	.658	1	.417	1.906
Pos_rank (2)	-.242	.590	.168	1	.682	.785
Pos_rank (3)	.204	.521	.153	1	.696	1.226
Constant	.351	2.107	.028	1	.868	1.420

Note: When 0 = least important, 4 = most important, Rank (1) corresponds to 0, Rank (2) corresponds to 1, and Rank (3) corresponds to 2. Path_Aut = Average Autonomy score. Path_Pos = Average Outlook: Positivity score.

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