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A Multi-Dimensional Model of Enjoyment: Development and Validation of an Enjoyment Scale (Enjoy)

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A MULTI-DIMENSIONAL MODEL OF ENJOYMENT: DEVELOPMENT AND VALIDATION OF AN ENJOYMENT SCALE (ENJOY)

by

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A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Human Factors Psychology
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Shayn S. Davidson

This dissertation was prepared under the direction of the candidate's Dissertation Committee Chair, Dr. Christina M. Frederick and has been approved by the members of the Dissertation Committee. It was submitted to the College of Arts and Sciences and was accepted in partial fulfillment of the requirements for the

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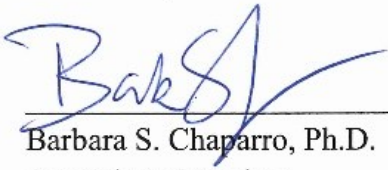
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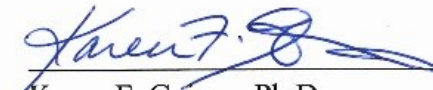
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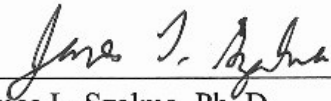
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DEDICATION

To my wife and son, for all the enjoyment and motivation you provide me.

Believe you can and you're halfway there.

– Theodore Roosevelt

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This dissertation would not have been possible without the help and guidance of many important people. Completing this journey was not a solo endeavor; the reality is that the work was a collaboration between myself, my colleagues, family, and mentors.

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Next, I need to thank my outstanding committee members (Drs. Joseph Keebler, Barbara Chaparro, and James Szalma), thank 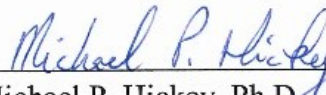you for all your time, support, and amazing thoughts and suggestions you provided me. I must thank Dr. Joseph Keebler for all of your help in not only statistics, but in your patience with my questions, your words of encouragement, and advice. I always felt like I knew what to do next after talking with you. Dr. James Szalma, I have known you since my time as an undergraduate. I like to think the seeds you planted in me when I was an undergraduate in your motivation course helped push me towards the path I eventually took. Your enthusiasm in teaching and pointed suggestions for my work have helped immensely in my growth in psychology. Finally, Dr. Barbara Chaparro, your expertise and advice helped me grow in how I present myself and my work. I am pleased you were always ready to critique and improve the ideas presented. I am honored and grateful to be blessed with this committee to learn and grow from.

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ABSTRACT

Enjoyment of an activity is central to positive experiences and can determine future behavior toward the activity or object of interest. In the literature there has been no consensus on the definition and dimensionality of enjoyment. In this dissertation, to provide clarity to the construct, a new multi-dimensional model and definition of enjoyment is proposed. To investigate enjoyment, a new measure of enjoyment applicable to any activity was developed using current best practices of scale development and validation.

The new instrument measures enjoyment of any activity, called the ENJOY scale. The ENJOY scale has 5 subscales and demonstrated good content validity, internal consistency, convergent validity, and discriminant validity. The ENJOY scale was developed based on the evaluation of over 600 unique activities including entertainment- and work-based activities. Therefore, the scale can be applied to evaluating enjoyment across activities. The 25-item version of the ENJOY scale proved to have the best model fit and was composed of the factors of pleasure, relatedness, competence, challenge/improvement, and engagement.

The empirical results obtained from the scale development process, identified new factors to the model of enjoyment theorized. The new factors were found using two independent factor analyses. To account for these differences a new model of enjoyment is offered, and a complete and simplified definition of enjoyment are provided based on the results of the structural equation modeling analysis. Implications for measuring enjoyment across domains in various populations were provided. Following, conclusions are discussed alongside suggestions for future research.

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CHAPTER 1

INTRODUCTION

1.1 Problem Statement

Enjoyment is a construct used in measuring quality of life, happiness, positive experiences, or future behavior toward an object or activity of interest. The term enjoyment is historically often used interchangeably with pleasure. Views on human nature placed enjoyment as pleasure within the philosophy of hedonism, referred to as hedonic enjoyment, and often competing with eudaimonic views. Recently, following the positive psychology movement, a resurgence in literature focusing on the positive subjective experience appeared.

Journals in Philosophy, Sport and Exercise Psychology, Information Systems, Entertainment Media, Communication, Positive Psychology, Business Management, Medicine, and Occupational and Organizational Psychology, to name a few, have all published articles underscoring the importance of enjoyment to their respective fields of study. Alongside the broad reach of enjoyment, how we define it as a construct has become unclear. There exist varied definitions of enjoyment, differing across domains, and few attempts have been made to universally define enjoyment. The definitions provided for enjoyment are often too narrow in scope or too like other constructs to provide a clear understanding and distinction for reliable and valid measurement.

It is not difficult to see why division exists on the definition of enjoyment as you trace the construct back to its origins. The roots of enjoyment derive from the hedonic and eudaimonic views on happiness and well-being within philosophy. Hedonism reflects the view that well-being

consists of pleasure or happiness (Kahneman, 1999). Eudaimonism sees well-being as fulfilling or realizing one's daimon or true self (Waterman, 1993). The origins of hedonism as a theory was advanced by Aristippus of Cyrene in the third century BC; he held "that pleasure is the *sole* good, but also that only one's own physical, positive, momentary pleasure is a good, and is so regardless of its cause" (Tatarkiewicz, 1976, p. 317). In contrast, Aristotle proposed the view of eudaimonism, in the *Nicomachean Ethics.* He rejected Aristippus' view of happiness and offered that eudaimonia (happiness) is instead "activity expressing virtue" (Aristotle, 1985, p. 284). In result of the discussion between eudaimonism and hedonism, Waterman (1993) used the term 'hedonic enjoyment' to describe an experience of happiness, "expected to be felt whenever pleasant affect accompanies the satisfaction of needs, whether physically, intellectually, or socially based" (pp. 679). This indicated a synonymous meaning for enjoyment and an experience of happiness. There is no surprise then, enjoyment is considered a key construct in many areas of research and a universal definition is necessitated to help bridge the work done in various areas (Kapsner, 2009).

Recently, much of the literature involving enjoyment has coincided with a movement called positive psychology. Positive psychology serves as a reminder of the missions of psychology: curing mental illness, making the lives of all people more productive and fulfilling, and identifying and nurturing high talent (Seligman, 2015, p. 4). Following WWII, psychology's empirical focus shifted to assessing and curing individual suffering, to curing mental illness, as a subfield of the health profession. In Seligman's Presidential Address to the 107th Annual Convention of the American Psychological Association in Boston, Massachusetts, on August 21, 1999, he proposed to his audience that psychology had largely neglected the latter two of its three missions, of positive psychology (Linley, 2009). Following his address, positive psychology has

burgeoned in the past two decades. With the surge of literature published in positive psychology, enjoyment is often mentioned and used, but not well distinguished from similar constructs.

There are currently many differing definitions of enjoyment within the literature. Enjoyment is a key construct within Csikszentmihalyi's concept of flow. When individuals experience flow they are said to be in flow state, a subjective experience characterized by increased focus, intrinsic motivation, a lack of concern for the self, an altered sense of time, and effortless involvement (Csikszentmihalyi, 1990). Kimiecik and Harris, in sports and exercise psychology, thus defined enjoyment as "an optimal psychological state (i.e., flow) that leads to performing an activity primarily for its own sake and is associated with positive feeling states" (1996, p. 256). Similarly, in communication, enjoyment is defined as a gratification that results from a flow experience realized when media message content balances with individual ability to interpret that message (Sherry, 2004). In the encyclopedia of positive psychology enjoyment is said to be thought of as engagement in a challenging experience that either includes or results in a positive affective state (Kaspner, 2009).

Other authors take a motivational and need satisfaction approach to defining enjoyment. In communication research, enjoyment has been defined as the satisfaction of both hedonic and nonhedonic needs (Tamborini et al, 2011) where hedonic needs were arousal and affect, and nonhedonic needs included competence and autonomy. Their approach was based on the Self-Determination Theory (SDT) of human motivation (Ryan & Deci, 2000). Combining flow and intrinsic need satisfaction, Wankel (1993, pp. 153) defines enjoyment as "A positive emotion/positive affective state. It may be homeostatic in nature, resulting from the satisfaction of biological needs (e.g., need to be active), or growth oriented, involving a cognitive dimension focused on the perception of successfully applying one's skills to meet environmental challenges."

Often, enjoyment is defined with specific domains in mind. Within sports and exercise psychology, enjoyment is defined as the positive affective response to a sport experience that reflects generalized feelings of joy (Scanlan et al., 2016). In management, enjoyment of work is the degree to which individuals work because they find the work itself intrinsically interesting or pleasurable (Graves, Ruderman, Ohlott, & Weber, 2012). For information systems, enjoyment refers to the extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated (Davis, Bagozzi, & Warshaw, 1992). In education, enjoyment is defined as the extent to which the learning activity is perceived to be pleasant and satisfactory to the learners (Gomez, & Passerini, 2010). Generally, it seems enjoyment is often seen as a positive outcome, a good feeling, following an activity or interaction with an object. The definitional problem becomes clearer when attempting to distinguish enjoyment from other positive outcomes, emotions, affects, or states.

A universal definition withholding, science has used measures of enjoyment to investigate human attitudes and behaviors. Specifically, in Human Factors Psychology, enjoyment has a positive effect on important constructs central to the scientific field. Enjoyment has a positive effect on vigor and energy, and is positively related to increases in positive affect (Raedeke, 2007). In relation to computer program use, enjoyment has a positive effect on attitudes toward technology, usage intentions, and actual usage behavior (Davis, Bagozzi, & Warshaw, 1992; Lee & Tsai, 2010). At work, enjoyment is positively related to career satisfaction, performance, and negatively related to psychological strain (Graves et al., 2012). This means human factors psychologists should design for also increasing enjoyment, to reduce strain and improve performance. Enjoyment could be an important indicator of "good design", when enjoyment occurs you can be more certain of the quality of your design. Market research also reveals

enjoyment is positively related to intentions to return to a shopping website and intentions to recommend an entertainment venue (Aykol, Aksatan, & Ipek, 2017; Koufairs, 2002). In sum, enjoyment is an important construct for understanding human behavior, especially for Human Factors Psychology. However, research related to enjoyment encompasses more than just Human Factors.

Scientific studies across domains have recently used measures of enjoyment to discover important correlates and effects. Though, some findings related to enjoyment are not new, when people forgo just 48 hours in activities they enjoy, they reported functioning significantly less well afterward (Csikszentmihalyi, 1975). In medicine, after measuring enjoyment of life on three separate occasions over four years, mortality was found to be inversely associated with the number of occasions on which participants reported high enjoyment of life (Zaninotto, Wardle, & Steptoe, 2016). In cognition, expected enjoyment plays a significant role in decision making across cultures, where participants placed more weight on enjoyable activities than useful ones when making hypothetical choices (Falk, Dunn, & Norenzayan, 2010). In exercise, enjoyment was found to be positively related to increases in a positive affective response to exercise, reduced dropout rate of an exercise program, facilitated continued involvement in activity, and the higher the enjoyment experienced, the more athletes felt the desire to exert greater effort (Raedeke, 2007; Scanlan, Chow, & Scanlan, 2014; Wankel, 1985; Wankel, 1993). In video games, perceived enjoyment significantly influences the intention to play and the actual behavior of playing the game, players change their view on their own performance to increase enjoyment, and in-game success predicts enjoyment of a video game (Chen, Lu, & Wang, 2016; Klimmt et al, 2009; Reiger et al, 2014). In education, enjoyment of science mediated the relation between personal value of science and in learning science, and those who enjoyed learning online, compared to traditional

classrooms, had lower barriers to learning online (Ainley, & Ainley, 2011; Mulenburg & Berge, 2005). In summary, enjoyment plays an important role in continued interest, happiness, and positive future behavior toward activities or objects. However, often the scales used and definitions of enjoyment are left to be intuitively defined by the reader.

Given the current state of enjoyment literature, the problem is evident: there is no mutual understanding or definition of enjoyment across domains; consequently, no validated measures of a universal enjoyment exist. While enjoyment seems to be intuitively defined and easily measured, science requires a more empirical explanation. To advance our understanding of the effects of enjoyment, crucial investigations into the impact of enjoyment on our behavior and happiness must be conducted. This dissertation seeks to advance our understanding of enjoyment by focusing on a universal definition and creating a measure of enjoyment to support critical studies on enjoyment.

1.2 Purpose of Study

The purpose of this dissertation, then, is to provide evidence for a measure of enjoyment applicable across domains. Through the formulation and testing of this measure, this dissertation works to provide empirical evidence toward a new model and universal definition of enjoyment. While numerous definitions of enjoyment exist, and at least as numerous measures, these efforts are fragmented and lacking the clarity of empirical validation.

Toward this end, a thorough review of the literature is provided. The origins of enjoyment as a construct and varied definitions of enjoyment are investigated to establish the current state of the field. After this review of the literature is complete, dimensions of enjoyment are examined based on a synthesis of the work on enjoyment and a new model and definition of enjoyment are proposed.

After the theoretical basis of enjoyment is established, it is used as the guiding structure for four efforts for establishing a validated measure of enjoyment. The first effort involves the creation of an initial item pool of questions related to enjoyment in an iterative multi-stage procedure. Second, the truncation of those items and establishment of content validity using an expert review. The third effort utilizes an exploratory factor analysis (EFA) to identify the factor structure and further reduce the number of items on the scale. The fourth effort gathers another independent sample using the revised scale from the EFA to further validate the scale and investigate model fit in a confirmatory factor analysis (CFA). Finally, implications for practice and guidance for further research is presented.

CHAPTER 2
LITERATURE REVIEW

Before a new model of enjoyment can be presented, it is necessary to examine the extant literature base and investigate the history of enjoyment, what insights related psychological theories can provide, and how enjoyment has been defined. This section examines the history of enjoyment as a construct, then further explores select theories in-depth. The definitions of enjoyment from across domains are reviewed, including their theoretical foundations, and related constructs are differentiated from enjoyment. For each conceptualization of enjoyment, the definition is presented, theoretical foundations reviewed, validity of the measure used investigated, and relations to similar constructs discussed. Following this review, the gathered information is synthesized into a new multi-dimensional model of enjoyment.

2.1 History of Enjoyment

Enjoyment is a part of a larger body of research on well-being and happiness. In the past, enjoyment was construed as synonymous with pleasure, as part of the hedonic approach to well-being (Waterman, 1993). Recently, enjoyment has been demonstrated to have unique variance associated with the eudaimonic approach to well-being (Tamborini et al, 2011). The concept of well-being refers to optimal psychological functioning and experience, and has been the focus of considerable debate about what defines optimal experience (Ryan & Deci, 2001). With definitional debate centering on how we define "the good life," enjoyment has been placed on both sides of the argument. Within the last two decades, a surge of literature has been published on positive psychology, and research on enjoyment has also increased substantially. In this section, I will

review the historical underpinnings of enjoyment and provide a possible reason behind the surge in literature.

2.1.1 Hedonism

The hedonic view equates well-being with hedonic pleasure or happiness. This view goes back to Aristippus, a Greek philosopher from the fourth century B.C. who taught that the purpose of life is to experience the maximum amount of pleasure, and that happiness is the totality of one's hedonic moments. For the philosophers, Hobbes and Desade, happiness lies in the successful pursuit of our human appetites, and the pursuit of sensation and pleasure is the ultimate goal in life, respectively. For Bentham, the founder of modern utilitarianism, maximizing pleasure and self-interest is how the 'good' society is built (Ryan & Deci, 2001).

Recently, psychologists who have adopted the hedonic view focus on a broad conception of hedonism that includes the preferences and pleasures of the mind as well as the body (Kubovy, 1999). Thus, happiness is not reducible to physical hedonism, for it can be derived from attainment of goals or valued outcomes in varied realms (Diener et al., 1998). Kahneman et al (1999) defined hedonic psychology as the study of "what makes experiences and life pleasant and unpleasant" (p. ix). In this view, well-being and hedonism are essentially equivalent, and well-being is defined in terms of pleasure versus pain. This simple definition allows researchers to have a clear and unambiguous target of research and intervention for maximizing human happiness (Ryan & Deci, 2001).

For psychologists investigating the hedonic view on happiness, the term pleasure is used interchangeably with enjoyment. In Waterman's (1993) article, contrasting personal expressiveness and hedonic enjoyment, he uses the term enjoyment to describe the pleasurable

experiences one feels whether physical, intellectual, or socially based. With the roots of philosophical hedonism in the maximization of pleasurable sensations, enjoyment presents itself as the updated view on hedonic pleasure, as encompassing more than the physical, but the cognitive and social pleasurable feelings as well. Maximizing pleasurable experiences (i.e. enjoyment) and minimizing painful experiences represent the hedonic view on human well-being and happiness.

The conception of well-being as hedonism is not yet been widely accepted, while happiness is generally considered to refer to hedonic happiness (Waterman, 1993). To assess this hedonistic view on human happiness, the most frequently used measure is subjective well-being (SWB). SWB assesses the pleasure/pain continuum in human experience, consisting of life satisfaction, presence of positive mood, and the absence of negative mood, together summarized as happiness (Deiner & Lucas, 1999). The debate centers around the degree to which measures of SWB adequately define psychological wellness. Concern is placed on the operational definitions of hedonism and well-being and the types of activities theorized to promote well-being (Ryan & Deci, 2001). The arguments against hedonism often coincide with the eudaimonic view.

2.1.2 Eudaimonism

Aristotle proposed the view of eudaimonism, in the *Nicomachean Ethics.* He rejected Aristippus' view of happiness, considering the hedonic view to be a vulgar ideal, making humans slavish followers of desires equal to the life of a "grazing animal." Instead, Aristotle offered that eudaimonia (happiness) is instead "activity expressing virtue" (Aristotle, 1985, p. 284). True happiness is not found in seeking pleasure, but from the expression of virtue, from doing what is worth doing. Per eudaimonism, not all desires or outcomes a person might value, even though they produce pleasure, lead to well-being when achieved. The eudaimonic perspective maintains:

because not all desires yield well-being when achieved, subjective happiness cannot be equated with well-being (Ryan & Deci, 2001).

The eudaimonic conception of well-being, instead, calls upon people to live in accordance with their daimon, or true self (Waterman, 1993). According to Waterman (1993) the daimon refers "to those potentialities of each person, the realization of which represents the greatest fulfillment in living of which each is capable." These potentialities include those which are shared by all humans across the species, and unique potentials that distinguish individuals from one another. Eudaimonia occurs, then, when a person's life activities are most congruent with deeply held values. In such circumstances, a person would experience a state of personal expressiveness (PE) and would feel intensely alive and authentic, existing as who they really are (Waterman, 1993). Measures of hedonic enjoyment and PE are strongly correlated, but indicative of different types of experiences. Waterman (1993) showed both measures were associated with drive fulfillments, whereas PE was more strongly related to challenging and effortful activities, and activities which afforded personal growth and development. Hedonic enjoyment was more strongly related to activities which were actively or passively performed and resulted in satiation rather than personal growth. Further efforts to distinguish SWB (hedonism) from measures of eudaimonism were investigated based on Aristotle's view on well-being.

Ryff and Keyes (1995) proposed a multidimensional approach to measuring psychological well-being (PWB), a measure of eudaimonism, distinct from SWB measures for hedonism. PWB was defined by six constructs both theoretically and operationally. These six constructs are: autonomy, personal growth, self-acceptance, life purpose, mastery, and positive relatedness (Ryff & Keyes, 1995). As a measure of eudaimonism, PWB was proposed as a measure of larger scope than SWB, and SWB was indicated as a fallible indicator of healthy living (Ryff & Singer, 1998).

In response, Deiner et al (1998) clarified that while the eudaimonic criteria of PWB lets experts define well-being, SWB research allows people to tell researchers what makes their life good. As a result, PWB and SWB have remained distinct measures of well-being based on their philosophical roots of eudaimonism and hedonism, respectively.

While inquiries into hedonism have gone so far as to label their pleasure component as enjoyment, recently a more eudaimonic approach to enjoyment has been proposed based on Self-Determination Theory (Ryan & Deci, 2000; Tamborini et al, 2011). Self-Determination Theory (SDT) is a theory addressing the facilitation of intrinsic motivation, social development, and well-being. SDT posits three basic psychological needs—autonomy, competence, and relatedness—and theorizes that the fulfillment of these needs is essential for psychological growth, integrity, and well-being (Ryan & Deci, 2001). Thus, need satisfaction is a natural aim of human life that describe the meanings and purposes underlying human actions (Deci & Ryan, 2000). In their research on media enjoyment, Tamborini et al (2011) investigated the contribution of eudaimonic need satisfaction towards enjoyment. In their conception of nonhedonic (i.e. eudaimonic) need satisfaction as enjoyment, they measured autonomy and competence, two basic psychological needs within SDT. They found that hedonic (arousal and affect) and eudaimonic (competency and autonomy) need satisfaction accounted for complementary but distinct components for media enjoyment. Although the hedonistic and eudaimonistic views on well-being are often distinct from one another, both seem to contribute to enjoyment.

2.1.3 Positive Psychology

The purpose of the positive psychology 'movement' was to shift psychology's empirical focus to address all of the missions of psychology. The three missions of psychology are: curing mental illness, making the lives of all people more productive and fulfilling, and identifying and

nurturing high talent (Seligman, 2015, p. 4). After WWII, psychology focused on assessing and curing individual suffering, resulting in psychology taking a position almost as a subfield of the health profession. In Seligman's Presidential Address at the 107th Annual Convention of the American Psychological Association in 1999, he proposed that psychology had neglected the latter two of its three missions, what he called 'positive psychology' (Linley, 2009). Following his address, research on the positive side of psychology swelled. A Psychinfo search using the term positive psychology found 118,674 citations since 1999 and 35,746 citations before 1999, with 17,822 prior results occurring since 1990. Similarly, a Psychinfo search using the term enjoyment brought forth 5,709 citations since 1999 with 1,979 citations found prior. It follows that as research on the positive side of psychology increases, enjoyment research has also increased. However, with the surge of literature investigating enjoyment, many varied definitions of enjoyment can be identified, yet few are accompanied by validated measures. In the following section, I address the many current and varied definitions of enjoyment, preceded by theoretical foundations of the enjoyment construct.

2.2 Relevant Theories

To better discuss and explicate the definitions of enjoyment, first it is best to develop a common understanding about the relevant theories that are closely tied to enjoyment. Having already addressed hedonism and eudaimonism, the purpose of this section is to briefly review Self-Determination Theory (SDT) and flow. Within this review, I will highlight the role of enjoyment, as well as discuss the importance of the aforementioned theories in formulating a theoretical basis for a multidimensional view on enjoyment.

2.2.1 Self-Determination Theory (SDT)

Self-Determination Theory (SDT) is a macrotheory of human motivation, development, and wellness (Deci & Ryan, 2008b). SDT begins with the assumption that people are active organisms, with evolved tendencies toward growing, mastering challenges, and integrating new experiences into a sense of self, an organismic metatheory (Ryan & Deci, 2000). Thus, SDT investigates people's inherent growth tendencies and innate psychological needs as the basis for their self-motivation. Rather than focusing on the amount of motivation, SDT focuses on the type of motivation as predictors of performance, relational, and well-being outcomes (Deci & Ryan, 2008b). Figure 1 represents a continuum showing the types of motivation from Ryan and Deci (2000). In this review of SDT, I will examine the differing types of motivation, the three basic psychological needs, and enjoyment as a relevant regulatory process of motivation.

Behavior	Nonself-Determined					Self-Determined
Motivation	Amotivation		Extrinsic Motivation			Intrinsic Motivation
Regulatory Styles	Non-Regulation	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation	Intrinsic Regulation
Perceived Locus of Causality	Impersonal	External	Somewhat External	Somewhat Internal	Internal	Internal
Relevant Regulatory Processes	Nonintentional, Nonvaluing, Incompetence, Lack of Control	Compliance, External Rewards and Punishments	Self-control, Ego-Involvement, Internal Rewards and Punishments	Personal Importance, Conscious Valuing	Congruence, Awareness, Synthesis With Self	Interest, Enjoyment, Inherent Satisfaction

Figure 1. The self-determination continuum showing types of motivation with their regulatory styles, loci of causality, and corresponding processes (Ryan & Deci, 2000)

2.2.1.1 Distinct Types of Motivation

For SDT, the type or quality of a person's motivation is more important for predicting outcomes than the total amount of motivation (Deci & Ryan, 2008b). Traditionally, SDT started with a distinction between intrinsic and extrinsic motivation (Deci & Ryan, 1985). Presently, the primary differentiation within SDT has shifted focus to autonomous versus controlled motivation (Deci & Ryan, 2008b). Both intrinsic versus extrinsic motivation and autonomous versus controlled motivation stand apart from amotivation, which refers to a lack of motivation. Autonomous, controlled, and amotivation are central to understanding important outcomes such as psychological health and well-being, performance, creative problem solving, and deep or conceptual learning (Deci & Ryan, 2008b). First, I will address the difference between extrinsic and intrinsic motivation, then review autonomous versus controlled motivation.

Intrinsic motivation is defined as doing a behavior because the activity itself is interesting and satisfying (Deci & Ryan, 2008a). When one is intrinsically motivated, you perform activities because of the positive feelings (e.g. enjoyment, interest, satisfaction) resulting from the activities themselves. Intrinsic motivation reflects our human tendency to be active, curious, inquisitive, and playful even in the absence of external rewards (Ryan & Deci, 2000). In contrast, extrinsic motivation involves engaging in or performing an activity because it leads to a valued consequence or was initiated through some external force. Thus, extrinsically motivated behaviors are those performed to obtain a reward or avoid a punishment (Deci & Ryan, 2008a). Intrinsic and extrinsic motivation were not found to be additive effects on human motivation. In a meta-analytic examination of the effects of extrinsic on intrinsic motivation, extrinsically motivating rewards decreased intrinsic motivation across a range of activities and reward contingencies (Deci, Koestner, & Ryan, 1999). Meaning, when people were given extrinsic rewards (e.g. money) for

doing an intrinsically interesting activity, their intrinsic motivation for the activity would be undermined and decreased. However, there were conditional limits to the finding; rewards that were noncontingent, or not specifically depending on doing an activity or achieving a standard, tended not to undermine intrinsic motivation (Deci & Ryan, 2008a). Recently, with the conceptualization of internalization and types of regulation, SDT has shifted focus from intrinsic versus extrinsic to autonomous versus controlled motivation.

Autonomous motivation is comprised of both intrinsic motivation, doing an activity out of interest and enjoyment, and fully internalized extrinsic motivation. For autonomous motivation to occur as a result within the extrinsic motivation spectrum, the motivations must be those that people have identified with an activity's value and will have integrated (internalized) it into their sense of self (Deci & Ryan, 2008b). When autonomously motivated, people experience self-endorsement of their actions, or volition. In contrast, controlled motivation consists of both external regulation and introjected regulation. Where external regulation is a function of external contingencies (i.e. forced compliance, rewards or punishment), introjected regulation is regulation of action which has been partially internalized and is energized by factors such as approval motive, avoidance of shame, contingent self-esteem, and ego-involvements (Deci & Ryan, 2008b). During controlled motivation, people experience pressure to think, feel, or behave in specific ways. Further, autonomous and controlled motivation lead to different outcomes, with autonomous motivation yielding higher psychological health, more effective performance, and greater long-term persistence (Deci & Ryan, 2008b). The type of motivation experienced, according to SDT, depends on the satisfaction or thwarting of psychological needs.

2.2.1.2 Psychological Needs

SDT assumes that, universally, humans naturally strive for psychological growth and development. That is, SDT posits there are three universally necessary psychological needs for this growth and wellness: the needs for autonomy, relatedness, and competence. More positive psychological outcomes are predicted to the degree that these basic needs are more satisfied, and when needs are thwarted, more negative outcomes are predicted (Deci & Ryan, 2014).

The need for autonomy refers to initiating a behavior out of personal interest or expression of self; the individual chooses to engage in a behavior because it is compatible with his or her values (Ryan & Deci, 2002). Importantly, one can still autonomously complete a task assigned by a supervisor, if the nature of the task is inherently interesting and congruent with one's values. Satisfying the need for autonomy encourages an internal locus of causality, and is therefore likely to promote intrinsic motivation (Ryan & Deci, 2002). When given freedom to choose actions to take, one can choose an action most in line with internal values. This choice provides a positive feeling, leading to intrinsic motivation.

The second innate psychological need, the need for competence, refers to the need for a sense of proficiency and feelings of effectiveness in what one is doing (Ryan & Deci, 2002). A person is more likely to feel competence when they are engaged in a challenge which matches, and allows them to build on, their existing skills and abilities (Deci & Ryan, 2014). When the need for competence is satisfied, and activities are associated with free choice, a person is more likely to experience intrinsic motivation. One way to increase competence need satisfaction can be accomplished through positive feedback, providing information on ability to carry out a task. In an investigation on feedback and intrinsic motivation, positive feedback was found to enhance intrinsic motivation, whereas negative feedback diminished it, satisfying or thwarting competency

need satisfaction respectively (Ryan, 1982). In research on competency and autonomy as psychological needs, researchers examined if these intrinsically motivating factors would also promote internalization of extrinsic motivation, and they do (Deci, Eghrari, Patrick, & Leone, 1994). However, researchers also found another important facilitator of internalization, feeling related (Baard, Deci, & Ryan, 2004).

Different from autonomy and competence, relatedness is defined as "the intrinsic desire to connect in ways which feel authentic and supportive" (pp. 13, Rigby & Ryan, 2007). Relatedness means feeling connected, interdependent, and belonging to a group or with other individuals, which promotes intrinsic motivation (Ryan & Deci, 2002). In studying intrinsic need satisfaction in work settings, relatedness was the psychological need most related to performance appraisal ratings (Baard et al., 2004). Relatedness was also found to be important for internalization of extrinsic motivation, to integrate an activity's value into your sense of self (Baard, Deci, & Ryan, 2004). Many people confuse autonomy with independence and individualism, and relatedness with collectivism and interdependence (Markus & Kitayama, 2003). This draws autonomy and relatedness as opposite ends of a continuum. After receiving considerable attention, evidence shows relatedness is important for optimal development and well-being in collectivistic and individualistic cultures, and is not inherently antagonistic of autonomy (Ainsworth, 1979; Baumeister & Leary, 1995; Deci & Ryan, 2000). For SDT, the satisfaction of all three needs is important to experience intrinsic and autonomous motivation.

2.2.1.3 Enjoyment as a Relevant Regulatory Process

When intrinsically or autonomously motivated, a person performs a task or activity because engaging in the behavior itself is rewarding. This reward comes in the feelings of interest, satisfaction, and enjoyment (Deci & Ryan, 2000). All three are identified as regulatory processes

in the continuum posited by SDT (see Figure 1, Deci & Ryan, 2000). These processes are the feelings we experience when we fall along the respective point in the Self-Determination Continuum, with enjoyment experienced on the self-determined (i.e. intrinsically motivated) end of motivation. Thus, enjoyment can occur as an outcome of the satisfaction of the three basic psychological needs of autonomy, relatedness, and competency. When volition over our choices is provided, when we feel connected with others, and when performing a task which challenges, but does not under or over-challenge us, we feel the positive feelings of enjoyment. Certainly, this is only a piece of enjoyment, as many activities (e.g. eating cake) may provide us with enjoyment and, at the same time, not satisfy any basic psychological needs. While SDT is mainly concerned with this psychological need satisfaction approach, another theory, called flow, examined the specifics of skill versus challenge found in competency need satisfaction (Csikszentmihalyi, 1990).

2.2.2 Flow

The concept of <u>flow</u> is one of optimal experience, experiences which described the good life, as characterized by complete absorption in what one does (Nakamura & Csikszentmihalyi, 2014). Flow research and theory originated in a desire to understand the phenomenon of intrinsically motivated activity, activity rewarding in and of itself. While significant research had been conducted on intrinsic motivation (see Deci & Ryan, 1985), no systematic empirical research had attempted to clarify the subjective phenomenology of intrinsically motivated activity (Nakamura & Csikszentmihalyi, 2014). In this section, I will briefly review the conditions and characteristics of the state of flow, and discuss flow as an optimal state of enjoyment.

2.2.2.1 Conditions and Characteristics of Flow

To identify the conditions of flow and the characteristics of the subjective state of flow, Csikszentmihalyi (1975/2000) investigated optimal experiences of enjoyment through interviews.

Interviews were conducted on chess players, rock climbers, dancers, and those who identified enjoyment as the main reason for pursing an activity. Additionally, work studies on surgery were carried out to investigate the rewards of money and prestige and its impact on intrinsically motivating experiences and enjoyment. Through this research, Csikszentmihalyi (1975/2000) identified two conditions necessary to experience flow:

➢ Perceived challenges, or opportunities for action, that stretch (neither overmatching nor underutilizing) existing skills; a sense that one is engaging in challenges at a level appropriate to one's capacities

➢ Clear proximal goals and immediate feedback about the progress that is being made.

Under these conditions, experiences absorb and pass from moment to moment, called being "in flow" (Nakamura & Csikszentmihalyi, 2014). Interviewees described the experience as engaging in just-manageable challenges, tackling a series of goals, continuously processing feedback, and adjusting action based on this feedback. In review of these described experiences, Csikszentmihalyi (1975/2000) identifies the subjective state of flow as containing the following characteristics:

➢ Intense and focused concentration on what one is doing in the present moment

➢ Merging of action and awareness

➢ Loss of reflective self-consciousness (i.e., loss of awareness of oneself as a social actor)

➢ A sense that one can control one's actions; that is, a sense that one can, in principle, deal with the situation because one knows how to respond to whatever happens next

➢ Distortion of temporal experience (typically, a sense that time has passed faster than normal)

➢ Experience of the activity as intrinsically rewarding, such that often the end goal is just an excuse for the process

Thus, flow is a subjective state people report when they are completely involved in something to the point of forgetting time, fatigue, and everything else except the activity itself. Additionally, when an individual experiences flow, they operate at full capacity in a constant state of dynamic equilibrium (Nakamura & Csikszentmihalyi, 2014). This intrinsically fragile dynamic equilibrium is based on a balance between skills and challenges. Figure 2 represents the revised model of this equilibrium, accounting for the constant emergence of new goals (Csikszentmihalyi, 1997). If challenges begin to exceed skill, vigilance then anxiousness occurs; if skills begin to exceed challenges, relaxation then boredom occurs. These shifts in subjective states provide information on the changing relationship between the environment and person. In flow theory,
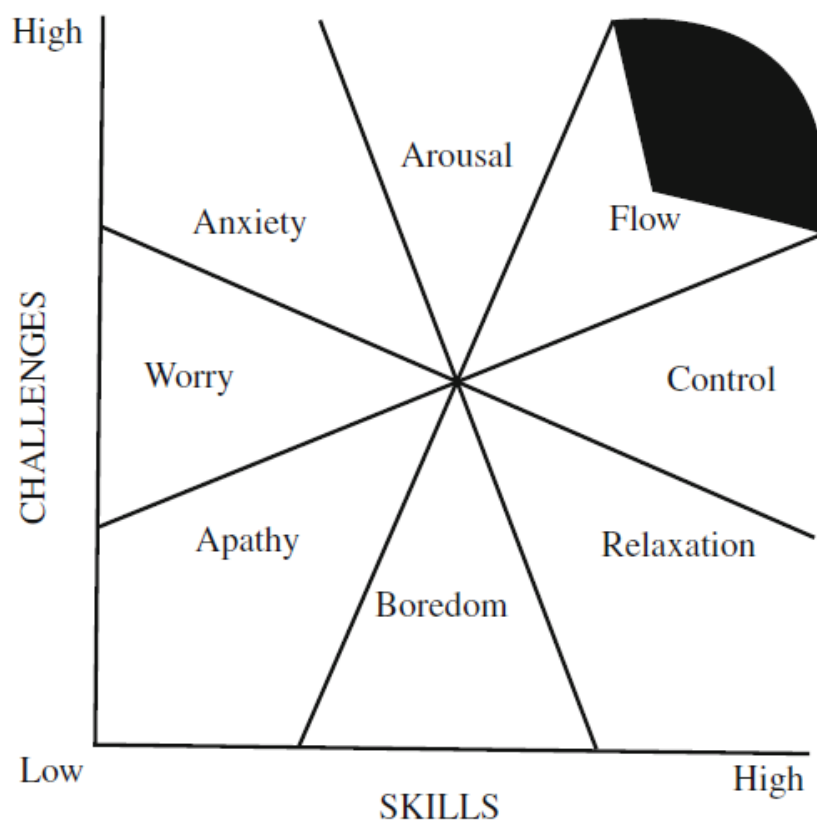
Figure 2. Quality of experience as a function of the relation between challenges and skills (Csikszentmihalyi, 1997)

experiencing anxiety or boredom pressures a person to adjust their level of skill or challenge, if possible, to reenter flow (Nakamura & Csikszentmihalyi, 2014). This experience is the same across cultures, genders, age, as well as kinds of activities (Nakamura & Csikszentmihalyi, 2014).

2.2.2.2 An Optimal State of Enjoyment

While the next section will discuss and provide the definition of enjoyment given by Nakamura and Csikszentmihalyi (2014), along with many other definitions of enjoyment, here I want to discuss flow as an optimal state of enjoyment. Flow occurs when people perceive a balance between the challenge of a situation and skills to perform the challenge (Bakker, 2008). When skill and challenge are both high, we experience a state of absorption, intrinsic motivation, and enjoyment. The feelings of enjoyment during a flow state support the idea that to experience enjoyment, one must be engaged in an activity, Certainly, when completely disengaged from a task no attention or feelings of enjoyment arise. Further, enjoyment during flow is enhanced by the matching of skill and challenge, providing high levels of competency need satisfaction as posited by SDT. It is in this highly engaging and need satisfying state of flow, in which people report feeling their strongest feelings of enjoyment (Csikszentmihalyi, 1975/2000). While certainly one can enjoy activities outside of the state of flow, such as high skill, low challenge activities (e.g. watching your favorite show, eating a favorite food), enjoyment is highly experienced when occurring in an intrinsically motivated state, such as flow (see Figure 3). To further investigate enjoyment, in the next section I will discuss and address the many varied definitions of enjoyment, followed by a differentiation between enjoyment and related constructs.
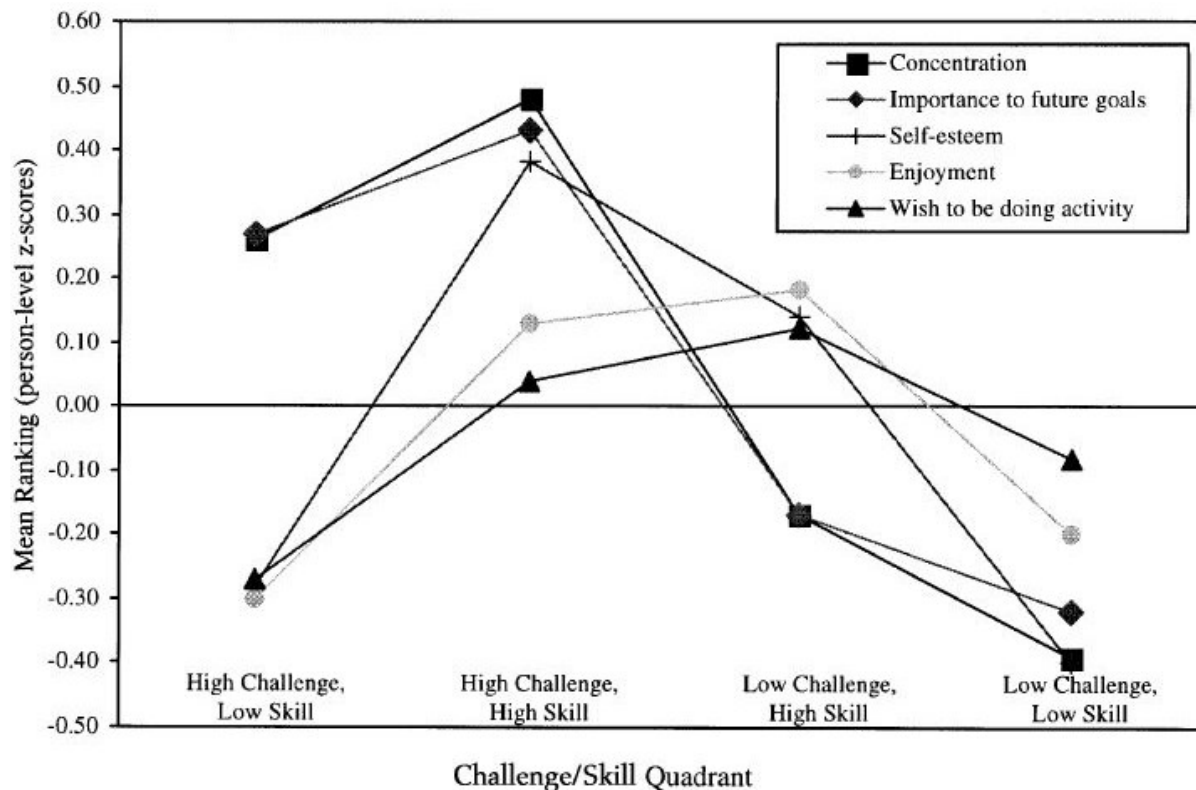
Figure 3. Quality of experience in each flow quadrant for a national sample of American adolescents (n= 824) (Nakamura & Csikszentmihalyi, 2014)

2.3 Definitions of Enjoyment

The purpose of this section is to review the extant literature which explicitly defines enjoyment. Each definition of enjoyment is presented, examined for relevant theory, validity of measurement investigated, and similarity to other constructs discussed. To find articles explicitly defining enjoyment, a Boolean search was conducted on ProQuest and Google Scholar. Within the results, 185 articles were found to be related to explicating enjoyment and, out of the 185 articles, 16 provided an explicit definition of enjoyment. For simplicity, definitions are placed into groups based on theoretical foundations and ordered by publication date. After this review of definitions, enjoyment is differentiated from similar constructs, then dimensions of enjoyment are proposed.

2.3.1 Enjoyment as Hedonism

The hedonistic view equating enjoyment with pleasure is not new; many scholars and scientists alike have followed a similar vein when defining enjoyment. One place to start then, when looking for a definition, is the dictionary. While not necessarily empirical, the dictionary definition of enjoyment does provide a commonly held definition and terms of similar nature, useful for Boolean searches. However, empirical sources for defining enjoyment are required for scientific rigor. Following a review of the dictionary definitions of enjoyment, scientific endeavors defining enjoyment as pleasure are investigated and discussed.

2.3.1.1 Dictionary Definitions of Enjoyment

In the Merriam-Webster dictionary enjoyment is defined as "the action or state of enjoying", where enjoy is defined as "to take pleasure or satisfaction in" (Enjoyment, n.d.). The Merriam-Webster definition is consistent with the idea that enjoyment equals pleasure. Interestingly, Merriam-Webster defines state not as an emotional or affective state as it is often cited in psychology, but as "a mode or condition of being" and action as "an act of will". So, according to this definition, enjoyment is a condition of being in pleasure, or an act to take pleasure in something. This implies enjoyment is either a temporary condition of feeling pleasure or act toward feeling pleasure. This ambiguity to whether enjoyment is an outcome of feeling pleasure, or an act toward pleasure leaves the Merriam-Webster definition of enjoyment wanting for clarity. The definition does offer an interesting question: is enjoyment an action, state, or possibly something else? The answer is not found within the Merriam-Webster Dictionary, but I will discuss this question in depth following the theoretical foundations of enjoyment.

In the Oxford dictionary, enjoyment is defined as "the state or process of taking pleasure in something" (Enjoyment, n.d.). Oxford cuts out the intermediate term of 'enjoy' and simply

defines enjoyment as a *state* or *process* of taking pleasure in something, where state is "the particular condition that someone or something is in at a specific time" and process is "a series of actions or steps taken in order to achieve a particular end." To Oxford, enjoyment is a pleasurable condition at a specific time, or a series of actions to achieve pleasure in something. The same dichotomy of enjoyment is presented as with the Merriam-Webster dictionary definition. Both definitions seem to result in the echoing question of: is enjoyment a motivator toward feeling pleasure (action), the result of a feeling of pleasure for a period of time, or both?

As the last dictionary definition to be reviewed before moving into research-based definitions, Cambridge was the shortest definition out of the three dictionaries. Cambridge defined enjoyment as "a feeling of happiness or pleasure" (Enjoyment, n.d.). No ambiguity is left for whether enjoyment is a state, action or feeling, per the Cambridge dictionary. Enjoyment is simply defined as a feeling, where feeling is defined as "a physical or emotional experience or awareness". However, enjoyment is defined as *happiness* or *pleasure*, where happiness is defined as "the feeling of being pleased or happy" and pleasure is defined as "a feeling of enjoyment or satisfaction..." Taken together, enjoyment seems to be defined as happiness (feeling of being pleased) or as a feeling of enjoyment. Enjoyment defined as a feeling of enjoyment, or as a feeling of pleasure construed as happiness, does not provide the clarity for empirical measurement. All three dictionaries have a common theme: defining enjoyment as a feeling of pleasure. This hedonistic view on enjoyment exits in the scientific literature as well.

2.3.1.2 Waterman (1993)

Waterman states "hedonic enjoyment may be expected to be felt whenever pleasant affect accompanies the satisfaction of needs, whether physical, intellectual, or socially based" (pp. 679). For this description, enjoyment is a form of happiness, that occurs alongside the satisfaction of

needs, and can occur physically (e.g. massage), intellectually (e.g. pleasurable thought), or socially (e.g. praise from a friend). Also, for Waterman's conceptualization of enjoyment, there is no restriction on the type of activities for which hedonic enjoyment can be felt. Hedonic "enjoyment" is a pleasure-based type of happiness alongside the eudaimonic type of happiness that involves feelings of personal expressiveness.

While hedonic enjoyment is theoretically based in maximizing pleasure and minimizing pain (hedonism), feelings of personal expressiveness are conceptually linked with feelings associated with intrinsic motivation (Deci & Ryan, 1985), flow (Csikszentmihalyi, 1975, 1988), and peak experiences (Maslow, 1964, 1968). Feelings of personal expressiveness occur when an individual experiences self-realization through the fulfillment of personal potentials, where personal potentials take the form of "development of one's skills and talents, the advancement of one's purpose in living, or both" (Waterman, 1993, pp. 679). Thus, when one is intrinsically motivated or in a state of flow, one is most likely to experience personal expressiveness (Waterman, 1990a). For Waterman, enjoyment is primarily hedonic, but he includes associated feelings of personal expressiveness, which are separately linked to eudaimonia. To measure hedonic enjoyment and feelings of expressiveness, Waterman developed the Personally Expressive Activities Questionnaire (PEAQ).

The PEAQ was initially a four-item scale measuring feelings of personal expressiveness and hedonic enjoyment, two items each. The questionnaire was expanded to six items each. For hedonic enjoyment, it included items such as "This activity gives me my strongest sense of enjoyment" and "This activity gives me my greatest pleasure." Items pertaining to personal expressiveness included "When I engage in this activity I feel that this is what I was meant to do" and "This activity gives me my strongest feelings that this is who I really am." The average alpha

coefficients for the expanded personal expressiveness and hedonic enjoyment scales were .90 and .93, respectively (Waterman, 1990). The PEAQ's validation was never published, and further hedonic enjoyment is not dimensionally explicated. However, through review of the questions used to assess hedonic enjoyment it seems engagement in a pleasurable activity is central to experiencing enjoyment.

For Waterman's definition, engagement and pleasure could be identified as dimensions of enjoyment. In his 1993 study examining the relationship between hedonic enjoyment and personal expressiveness, the correlations between the two are high, ranging from .71 ($p<.0001$) to .79 ($p<.0001$) in Study 1 and from .77 ($p<.0001$) to .86 ($p<.0001$) in Study 2. Based on these correlations, enjoyment can be said to be more than just pleasure or engagement. It also includes an aspect of eudaimonia as well. These findings coincide with other authors who investigate enjoyment as need satisfaction, a component of intrinsic motivation. Enjoyment's tie to motivation is further explained in definitions utilizing the motivation paradigm.

2.3.2 Enjoyment within the Motivation Paradigm

Enjoyment is conceptually linked to motivation through positive feelings associated with performing an activity when intrinsically motivated (Deci & Ryan, 2000). These motivations are said to occur for hedonic and eudaimonic activities, with eudaimonia being closely tied to the need satisfaction concept within SDT. As previously reviewed, SDT is a macrotheory of human motivation which identifies enjoyment as a regulatory process, with enjoyment occurring, alongside satisfaction and interest, as an outcome of the satisfaction of the three innate psychological needs, autonomy, competence, and relatedness (Deci & Ryan, 2000). When individuals are autonomously motivated, the task itself is rewarding and enjoyment, satisfaction, and interest are felt (Ryan & Deci, 2008b). With strong ties to motivation, enjoyment has been

defined based on motivational theory by several authors. In this section I will review definitions of enjoyment based on motivation and, following this section, I address definitions of enjoyment based on flow.

2.3.2.1 Davis, Bagozzi, and Warshaw (1992)

Davis, Bagozzi, and Warshaw's (1992) paper investigated the relative effects of usefulness and enjoyment on intentions to use, and usage of, computers in the workplace. In the article, enjoyment was defined as "the extent to which the activity of using a computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated" (pp. 1113). The definition was theoretically founded in intrinsic motivation; to perform an activity for no apparent reinforcement other than the process of performing the activity. They extended intrinsic motivation into a definition of enjoyment, yet did not identify any dimensions to differentiate enjoyment from intrinsic motivation. In reporting the results of both studies, enjoyment had a significant effect on intentions ($\beta = .16$ and $.15$ for studies 1 and 2, respectively). Enjoyment and perceived usefulness were found to influence usage behavior indirectly through their effects on intentions to use computers in the workplace. Together, usefulness and enjoyment explained 62% (Study 1) and 75% (Study 2) of the variance in usage intentions. Additionally, usefulness and enjoyment were found to fully mediate the effects of usage intentions on perceived output quality and perceived ease of use.

To measure enjoyment, Davis, Bagozzi, and Warshaw developed an in-house, 3 item, 7-point Likert scale. Each question was presented with an alternative (e.g. likely/unlikely) and used the following descriptors: extremely, quite, slightly, neither, slightly, quite, and extremely. The three-item scale of enjoyment employed in this research asked three basic questions: "was x enjoyable," "was x pleasant," and "was x fun," where x is the program used on the computer. Thus,

they identified enjoyment as the combination of enjoyment, a pleasant feeling, and what is considered "fun" to participants. Interestingly, the questions used do not seem to match the definition, specifically "apart from any consequences that may be anticipated." The scale was empirically tested in their two studies. The enjoyment alpha reliability coefficients were .81 and .92 for Study 1 and Study 2, respectively. Moreover, enjoyment contributed 10.6% (Study 1) and 9.7% (Study 2) of variance in usage intentions explained in the principal components analysis with a varimax rotation. The definition of enjoyment, and scale, was not empirically validated further.

The primary purpose of the paper was not to define enjoyment; it was to investigate computer usage intentions and behavior. Importantly, while this measure of enjoyment did not account for a large amount of variance in computer use, it was uniquely predictive of usage intentions. Validity of the scale for measuring general enjoyment would benefit from further content or construct validity testing. Enjoyment, per SDT, is important to intrinsic motivation, but they are not the same. To be able to differentiate empirically we must identify differences between constructs.

2.3.2.2 Gomez, Wu, and Passerini (2010)

In their paper, Gomez, Wu, And Passerini (2010) investigate the impact of enjoyment, as well as motivation and team contributions, on learning outcomes during computer-supported team-based learning (CS-TBL), where team-based learning (TBL) is an instructional strategy to promote active and effective learning through small group interactions (Michaelsen et al., 2002). In computer-supported TBL (CS-TBL), computer mediated communication tools and techniques are used to support interactions between class meeting times, to reduce the time constraints of a traditional classroom. Perceived enjoyment, which facilitates and increases student learning, is

linked to deeper involvement with learning materials due to cognitive absorption (Agarwal & Karahanna, 2000).

The Gomez, Wu, and Passerini (2010) definition of enjoyment was adapted from the definition proposed by Davis, Bagozzi, and Warshaw (1992), with *perceived* enjoyment defined as the "extent to which the learning activity (team-based learning experience) is perceived to be pleasant and satisfactory to the learners" (pp. 386). Like other authors, their definition of enjoyment is foundationally based in intrinsic motivation. Higher intrinsic motivation will lead to higher enjoyment, resulting in higher learning from CS-TBL (Gomez, Wu, & Passerini, 2010).

To measure perceived enjoyment, a 5-item scale of enjoyment was adapted from prior studies (Gomez et al., 2007). While a definition of enjoyment was provided, the in-house scale of perceived enjoyment is not provided for review, and the specific questions used to measure perceived enjoyment were not available in their published work. In a sample of 73 respondents, perceived enjoyment's Cronbach's Alpha was higher than 0.70, an EFA was performed to identify the number of factors in the model, and a CFA in a varimax rotation was used which identified six factors with eigenvalues > 1. One of the research constructs (individual preparedness) was eliminated based on ambiguous results and lack of additional variance explained. Perceived enjoyment explained 15.91% of the variance in the accepted model of perceived learning from TBL (Gomez et al., 2007).

In their definition, Gomez, Wu, and Passerini (2010) state that enjoyment is the extent to which an activity (i.e. learning) is both pleasant and satisfactory. While enjoyment as pleasure is supported and theoretically based in hedonism, it is best to differentiate enjoyment from satisfaction. Put simply, a person can be satisfied with an activity, but not enjoy it (e.g. work), and enjoy an activity, but not be satisfied by it (e.g. eating too much cake). To address all related

constructs together, I will save further differentiation between satisfaction and enjoyment for the related constructs section.

2.3.2.3 Tamborini, Grizzard, Bowman, Reinecke, Lewis, and Eden (2011)

In the Journal of Communication, Tamborini et al. (2011) investigate the unique contribution of hedonic and nonhedonic needs to media enjoyment. They address the ambiguity in past enjoyment research as only addressing the hedonic functions of media enjoyment research, of arousal regulation and pleasure seeking (Tamborini et al., 2010). For their research, Tamborini et al. defined enjoyment as the "satisfaction of both hedonic and nonhedonic intrinsic needs" (pp. 1026). Hedonic needs, in Study 1, were identified as arousal and absorption, based on Zillman and Bryant's (1985) mood management theory and Vorderer and Ritterfeld's (2009) discussion of hedonic needs related to transient responses, respectively. In Study 2, absorption was replaced by affect as a hedonic need, because it is another basic motivating factor for using entertainment media (Zillmann & Bryan, 1985). The nonhedonic needs of autonomy and competence were included based on SDT-based need satisfaction. Relatedness was not investigated as a nonhedonic need due to lack of expected association between relatedness need satisfaction and enjoyment during a single player game, which was used in the study.

To measure enjoyment, a three-item Likert scale was adapted from Ryan et al. (2006). The items for enjoyment were "This game was..." "enjoyable," "entertaining," and "appealing." Satisfaction of nonhedonic needs, autonomy and competence, were measured using the Player Experience of Need Satisfaction (PENS) scale (Ryan et al., 2006). Satisfaction of hedonic needs, arousal and absorption, were measured with three-item Likert scales. The reliabilities for autonomy ($\alpha = .86$), competence ($\alpha = .93$), arousal ($\alpha = .89$), absorption ($\alpha = .82$), and enjoyment ($\alpha = .93$) were all acceptable. In Study 1, the satisfaction of hedonic needs explained a significant

portion of the variance in enjoyment (adjusted $R^2 = .54$, $p < .001$), and the addition of nonhedonic, SDT needs, accounted for additional variance ($\Delta R^2 = .13$, $p < .001$) (Tamborini et al., 2011). In Study 2, arousal and affect were measured using an adapted version of the Affect Grid (Russell, Weiss, & Mendelsohn, 1989). Enjoyment was measured using the 7-item interest/enjoyment subset of the Intrinsic Motivation Inventory, which showed a reliability of $\alpha = .89$ (Ryan, 1982). The satisfaction of hedonic needs, arousal and affect, accounted for a significant portion of variance in enjoyment (adjusted $R^2 = .20$, $p < .001$), and the addition of nonhedonic needs to the model accounted for additional variance ($\Delta R^2 = .34$, $p < .001$). Overall, the model accounted for 67% of the variance (Study 1) and 53% of the variance (Study 2) in enjoyment by the satisfaction of both hedonic and nonhedonic needs.

The addition of SDT's nonhedonic need satisfaction to understanding enjoyment is important, as shown in the additional variance explained. Nonhedonic needs accounted for significant additional variance in enjoyment, beyond just hedonic needs. While their paper was centered around media entertainment, the approach to applying nonhedonic need satisfaction to our understanding of enjoyment of any activity, requires further empirical examination. SDT's three innate psychological needs (i.e. autonomy, competence, relatedness) provides a functional measure of intrinsic motivation, where enjoyment is a positive valuation stemming from unconscious processes in which all intrinsic needs are satisfied (see Rigby & Ryan, 2007). This view is in line with the theories of happiness, hedonism and eudaimonism, both of which could theoretically contribute uniquely to feelings of enjoyment.

2.3.2.4 Graves, Ruderman, Ohlott, and Weber (2012)

In an examination on the effects of enjoyment of work and drive to work on managers' performance, career satisfaction, and psychological strain, Graves et al. (2012) use enjoyment to

understand what induces individuals to work, sometimes excessively. Enjoyment of work is defined as "the degree to which individuals work because they find work itself intrinsically interesting or pleasurable" (Graves et al., 2012, pp. 1656). They differentiate enjoyment of work (i.e. pleasure, interest) from general positive affect toward one's job or organization (i.e. job satisfaction, organizational commitment). In the work context, enjoyment occurs when a person, (e.g. managers) pursue work activities because they are experienced as inherently enjoyable or interesting (Ng, Sorensen, & Feldman, 2007). Different from enjoyment, 'driven to work' implies individuals work because they feel that they should or must and experience feelings of guilt and anxiety if they do not (Spence & Robbins, 1992). Scholars studying workaholism typically view the enjoyment motive positively, connecting it to passionate involvement and fulfillment (Buelens & Poelmans, 2004; Porter, 2001).

Enjoyment of work was assessed using McMillan et al.'s (2002) revision (WorkBAT-R) of Spence and Robbins' (1992) Workaholism Battery (WorkBAT). The enjoyment subscale of the WorkBAT-R is a 7-item Likert scale ($\alpha = .80$). The enjoyment items assess whether individuals are motivated by the nature of work (e.g., doing more than expected just for fun, anticipating getting to work) and experience their work as interesting or pleasurable (e.g., job is interesting) (Graves et al., 2012). Enjoyment of work was found to be positively related to career satisfaction ($\beta = .25$, $p < .001$) and performance ($\beta = .21$, $p < .001$) and negatively related to strain ($\beta = -.48$, $p < .001$). While a CFA on the model was conducted (CFI = .97, SRMR = .05), variance explained by enjoyment of work was not reported. Overall self-esteem, driven to work, and enjoyment of work accounted for 11.4% of the variance in performance, 48.3% of the variance in strain, and 21.3% of the variance in career satisfaction.

In their definition of enjoyment of work, Graves et al. (2012) state enjoyment is the degree to which an activity (i.e. work) is interesting *or* pleasurable. Again, while enjoyment as pleasure is supported and theoretically based in hedonism, it is best to differentiate enjoyment from similar constructs such as interest. Interest is one of the three regulatory processes, alongside enjoyment and satisfaction, for intrinsic motivation in SDT. All three can be differentiated from one another; interest in an activity is most like being excited or enthusiastic to engage in an activity, whereas enjoyment occurs during engagement in an activity. Certainly, enjoyment and interest are positively correlated, but they are also different constructs which can be empirically measured.

2.3.2.5 Scanlan, Chow, Sousa, Scanlan and Knifsend (2016)

Scanlan et al.'s paper investigates the psychometric properties of the Sport Commitment Questionaire-2 (SCQ-2). Included in the scale is a factor of sport enjoyment, based on Scanlan and Lewthwaite's (1986) model of sport enjoyment. Previously defined as "an individual's positive affective response to his or her competitive sport experience which reflects feelings and/or perceptions such as pleasure, liking, and experienced fun" (Scanlan & Lewthwaite, 1986, pp. 32). The construct of sport enjoyment within the concept of sport commitment has undergone multiple revisions (see Carpenter & Scanlan, 1998; Scanlan et al., 2009). Presently, as a construct of sport commitment, the sport enjoyment definition has changed slightly and is defined as: "the positive affective response to a sport experience that reflects generalized feelings of joy" (Table 1, pp. 235). While not a universal definition of enjoyment, the definition serves to further our understanding of a cross-task/activity understanding of enjoyment.

In the Scanlan et al.'s (2016) article an updated questionnaire measuring sport commitment based on the Sport Commitment Model (SCM) is presented, the SCQ-2. The SCM is a theoretical framework to examine commitment and explain why athletes continue involvement and persist over time in a sport (Scanlan et al., 2016). In the SCM, sport commitment is a function of an individual's sport enjoyment, involvement alternatives, personal investments, involvement opportunities, social constraints, social support, and desire to excel (See Figure 4). Sport enjoyment is identified as a major reason for participation in sports and an important motivational factor of the sport commitment model (Scanlan & Lewthwaite, 1986).
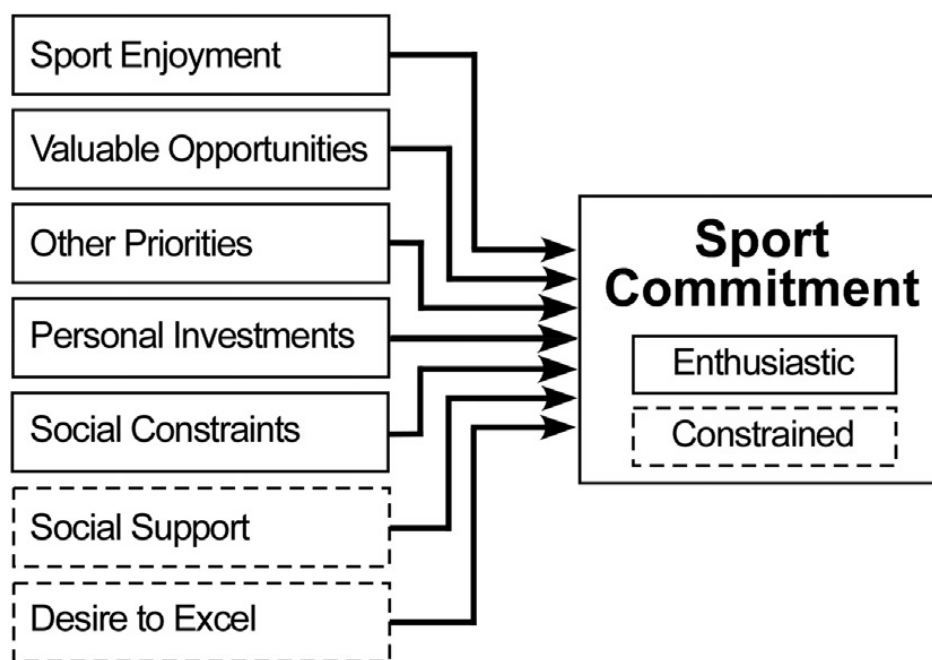
Figure 4. Sport commitment model (Scanlan, Chow, Sousa, Scanlan and Knifsend, 2016)

The SCM consists of two types of commitment, enthusiastic and constrained. Enthusiastic commitment represents the desire and resolve to persist in a sport over time, and constrained commitment represents obligations to persist in a sport over time (Scanlan et al., 2016). Enthusiastic and constrained commitment are based on autonomous and controlled motivations, respectively, presented in Self-Determination Theory (SDT) (Ryan & Deci, 2008b). Thus,

individuals persist over time in a sport when people endorse their own actions and act with volition because they find the activity to be personally valuable (autonomous motivation/enthusiastic commitment), or when people feel persuaded or coerced (controlled motivation/constrained commitment) (Deci, 2014). Sport enjoyment is considered important for enthusiastic commitment in the SCM.

To measure sport enjoyment, Scanlan et al. (2016) initially used a 7-item subscale consisting of feeling like, love, fun, happy, pleasure, joy, and passion toward the sport, based on previous studies. Using CFA sport enjoyment's composite reliability was .95, and in an EFA on source of commitment items, sport enjoyment had an eigenvalue of 1.19 and explained 2.24% of the variance in the sport commitment model. With 12 factors included to assess sources and types of commitment in the SCM, the SCQ-2 explained a large amount of variance in enthusiastic (81.8%) and constrained commitment (63.9%). Following the Phase 2 CFA, 2 items (passion and joy) were dropped from the sport enjoyment subscale due to loading highly on another factor (e.g. enthusiastic commitment factor). The resulting subscale of sport enjoyment was 5 items consisting of like, love, fun, happy, and pleasure measured on a 1 to 5 scale ranging from strongly disagree (1) to strongly agree (5).

While Scanlan et al.'s (2016) definition is specific to sports, the definition and measurement of enjoyment should have common characteristics across a breadth of activities. Like previous definitions, sport enjoyment included items relating to pleasure, liking, and fun, theoretically linking it to hedonism and intrinsic motivation. If the definition was shortened to "the positive affective response to an ~~sport~~ experience that reflects generalized feelings of joy" it could be applied to a wider range of tasks and activities. Yet specifying enjoyment as a positive response to generalized feelings of joy may cause some confusion between enjoyment and the positive

emotion scale of joviality (Watson & Clark, 1994). Also, enjoyment, while certainly also containing feelings of joy, can be more empirically measured with inclusion of additional dimensions predictive of feeling enjoyment beyond simply joy. I will review the differences between enjoyment as an affect versus emotions following this section on definitions.

2.3.3 Enjoyment and Flow

Enjoyment is central to the concept of flow, which is the positive feelings felt when the matching of skill to challenge occurs. When challenge meets skill, providing high levels of competency need satisfaction (SDT), people report their strongest feelings of enjoyment (Csikszentmihalyi, 1975/2000). However, when skill exceeds challenge, in a low challenge and high skill activity, people still report strong feelings of enjoyment (Csikszentmihalyi, 2014). Thus, while flow involves enjoyment, enjoyment does not require flow. Flow theory has been influential in psychological research; researchers looking to define enjoyment often take a flow approach. In this section I will review definitions of enjoyment foundationally based on flow, including definitions which utilize a flow and motivation (SDT) perspective.

2.3.3.1 Wankel (1993)

In Wankel's (1993) paper, the effect of enjoyment on regular physical activity to physical and psychological health benefits is highlighted. While physical activity has shown to benefit physical health, psychological health, and contribute to increased longevity, about 50% of those undertaking supervised activity programs drop out (Dishman, 1994). To increase exercise adherence and enhance the positive psychological effects of physical activity involvement, enjoyment is proposed as a key variable affecting both (Wankel, 1993). Wankel (1993) defines enjoyment as "a positive emotion, a positive affective state. It may be homeostatic in nature, resulting from the satisfaction of biological needs (e.g., need to be active), or growth-oriented,

involving a cognitive dimension focused on the perception of successfully applying one's skills to meet environmental challenges" (pp. 153). From this perspective, enjoyment is viewed as one dimension of the multi-dimensional construct of intrinsic motivation and related to flow.

Wankel's definition of enjoyment as a positive emotion, states two types of need satisfaction may result in enjoyment, a homeostatic biological need satisfaction or a growth oriented cognitive dimension of applying one's skills to environmental challenges. Examples of biological need satisfaction could occur when hungry, then you eat, or when in pain, and you feel relief. These states of fluctuation away from your norm results in a biological need, and the resulting positive feeling, when returning to homeostasis, can be perceived as enjoyment. The second type of enjoyment identified is the result of successfully applying skills to environmental challenges. When high skill meets high challenge, flow state results. By building on the flow elements: realistic challenge, clear demands and feedback, focusing of attention, and total absorption in an activity, enjoyment can be increased (Csikszentmihalyi, 1978). Both types of need satisfaction may result in enjoyment, yet the definition is not able to explain all feelings of enjoyment (e.g. watching a favorite show).

Wankel (1993) identifies enjoyment as a central feature of any activity, as people choose to spend their discretionary time participating in activities that they enjoy. The definition proposed was empirically tested in previous research, which administered a 10-item Thurstonian paired comparison inventory, called the Minor Sport Enjoyment Inventory (MSEI), to 822 youth sport participants (i.e. boys aged 7-14 years) (Wankel & Kreisel, 1985). Coefficients of agreement for each of the rankings were calculated using Kendall's U statistic and chi-square to determine if there was significant agreement among the respondents in the rankings of the Thurstonian items (See Table 1, Wankel & Kreisel, 1985). Scaling of enjoyment items was accomplished using z

scores that were adjusted by the removal of all negative scale values. Kendall's U statistic was used to measure the coefficient of agreement between respondents in rank order of the factors, where a positive U value indicates agreement; the greater the positive value, the greater the agreement. Chi-squared distribution was also employed to indicate if significant agreement was found among the participants ($p < .04$). Results showed consistency of enjoyment factors across all three sport groups. The four most important enjoyment items were: "improving skills of the game," "personal accomplishment," "excitement of the game," and "comparing skills against others." From this data, Wankel (1993) proposed a definition of sport enjoyment.

Table 1. Z scale values and rank orders of 10 sport enjoyment factors for three separate sports (Wankel & Kreisel, 1985)

Enjoyment Factor	Soccer (n = 310)		Hockey (n = 338)		Baseball (n = 174)	
	Scale Value	Rank	Scale Value	Rank	Scale Value	Rank
Pleasing others	0.00	10	0.52	9	0.22	10
Getting rewards	0.67	9	0.50	10	0.71	9
Winning the game	0.75	8	0.77	8	0.81	8
Being with friends	1.14	7	0.78	7	0.91	7
Being on a team	1.54	6	1.32	6	1.33	6
Doing the skills of the game	2.09	5	2.16	5	1.95	5
Improving the skills of the game	2.45	4	2.42	4	2.39	4
Personal accomplishment	2.81	2	2.58	3	2.39	3
Excitement of the game	2.62	3	3.24	1	2.96	2
Comparing skills against others	3.13	1	2.90	2	2.99	1
Kendall's U	+0.05		+0.07		+0.06	
Chi-square	726.47*		1100.51*		517.94*	

*Significant at $p < .001$
Constant added = 1.72

The Wankel (1993) paper offers a review on the potential importance of enjoyment to exercise adherence and a summary of the current work at the time of publication. While the research summarized identifies factors which influence enjoyment, thus adherence to physical

activity programs, many of these factors are influenced by individual differences and there is no single solution. The validation of Wankel's (1993) definition is not fully established for empirical measurement, but the interval ordering of enjoyment factors does offer relatively unique information to researchers by indicating the most important factors towards youth sport enjoyment.

2.3.3.2 Kimiecik and Harris (1996)

In their paper, Kimiecik and Harris (1996) define enjoyment and critique previously proposed definitions of enjoyment within sport and exercise psychology. For Kimiecik and Harris enjoyment equals flow; they define enjoyment as "an optimal psychological state (i.e., flow) that leads to performing an activity primarily for its own sake and is associated with positive feeling states" (pp. 256). Put simply, enjoyment is conceptualized as flow which leads to intrinsic motivation. Kimiecik and Harris (1996) argue that previous research on enjoyment was too inclusive, and should be viewed as research on affect, not enjoyment. While, Kimiecik and Harris (1996) did not develop and validate a questionnaire to test this definition of enjoyment, the Groningen Enjoyment Questionnaire was developed to test a unidimensional view on enjoyment as flow (Stevens et al., 2000).

The Groningen Enjoyment Questionnaire was used to measure enjoyment in leisure-time physical activity in sedentary older adults (Stevens et al., 2000). The Groningen Enjoyment Questionnaire is a 10-item 5-point scale based on the flow concept. It uses items intending to relate to specific activity enjoyment. Example items include "I forget the time when I'm doing leisure-time physical activities," and "Doing leisure-time physical activities makes me feel good." Enjoyment, with an eigenvalue of 5.17 and coefficient alpha of .88, accounted for 51.67% of the variance in a sample of 82 subjects. To estimate criterion-related validity, the Groningen Enjoyment Questionnaire correlation with the Snaith Hamilton Pleasure Scale (Sneith et al., 1995),

which measures pleasure in a day-to-day basis, was .26 (p < .05). The weak relationship between the scores was expected to occur because of temporal differences in measurement (specific leisure-time activity vs entire day). The correlation between participants overall rating of enjoyment (a 1-10 rating of participant's enjoyment experienced) and the Groningen Enjoyment Questionnaire was .61 (p < .01), and the correlation between participants score on the Snaith Hamilton Pleasure scale and overall rating of enjoyment was .36 (p < .01).

When referring to Csikszentmihalyi's (1975/2000) characteristics of the state of flow (e.g. concentration, clear goals, challenge-skill balance, transformation of time, autotelic experience), questions attempting to measure flow should pertain to these characteristics. Yet, the Groningen Enjoyment Questionnaire, seems to tap multiple constructs, such as interest (e.g. "I think each class is really interesting"), satisfaction (e.g. "Doing leisure-time physical activities gives me satisfaction"), absorption (e.g. "I forget the time when I'm doing leisure-time physical activities"), positive emotion (e.g. "Doing leisure-time physical activities makes me feel good"), positive affect (e.g. "Doing leisure-time physical activities makes me feel good") and relaxation (e.g. "I feel relaxed when I'm doing leisure-time physical activities"). The variety of constructs present in the questionnaire, not theoretically based in flow theory, questions the construct validity of the scale as flow, and furthermore flow as enjoyment.

One issue with the definition of enjoyment as flow is the categorization of all feelings of enjoyment as an optimal psychological experience, of flow. Experiences reported as enjoyable can occur outside of flow state (e.g. social recognition) (Nakamura & Csikszentmihalyi, 2014). This provides evidence against enjoyment equal to flow, see Wankel (1997). While Csikszentmihalyi's flow model provides rich information on a specific optimal state of experience, Csikszentmihalyi also does not equate enjoyment with flow, but he does differentiate enjoyable experiences from

pleasurable ones (Csikszentmihalyi, 2014). The Groningen Enjoyment Questionnaire attempted to provide validation for enjoyment as flow, but the items used in the final scale measure beyond flow theory, and do not include important characteristics of flow.

2.3.3.3 Sherry (2004)

In Sherry's (2004) article, media enjoyment is identified as a flow experience. Media enjoyment "results from a flow experience realized when media message content balances with individual ability to interpret that message" (pp. 328). Thus, enjoyment occurs when a person's ability to interpret a message equals the difficulty of that message to interpret for that person. Linking enjoyment to uses and gratifications research and flow theory, Sherry (2004) specifically addresses media enjoyment, rather than a universal enjoyment construct. Media enjoyment is described as a key component to media use through the uses and gratifications research paradigm (Sherry, 2004).

Uses and gratifications research is a structural-functionalist systems approach to understanding human behavior (Palmgreen, Wenner, & Rosengren, 1985). Human behavior can be understood through linking sets of components hierarchically, and organizing into structural wholes (Monge, 1977). From this systems perspective, regarding media use, people use media to solve problems and to maintain equilibrium (e.g. media providing a fantasy world to experience desired emotions) (Sherry, 2006). Thus, entertainment gratification through media enjoyment can be used to arouse, or relax and filter out the cares and concerns of everyday life (Sherry, 2004).

In Sherry's (2004) article media, enjoyment is discussed as equal to the skill versus challenge concept within flow theory (Csikszentmihalyi, 1975/2000). Flow occurs where the balance between the difficulty of a media message and individual ability meet to create enjoyment. However, as previously discussed, enjoyment can occur when skill exceeds challenge (See Figure

3, Csikszentmihalyi, 2014), meaning a person could enjoy an easy message even when skill to interpret a message is high. To provide evidence to Sherry's (2004) definition of media enjoyment, examples of differences between male and female video game players is used to explain differences in video game play time between genders. The idea presented is that males are more skilled in certain mediums, and therefore more frequently enter flow and have higher enjoyment in those types of games (i.e. when skill equals challenge in media content). Yet again, enjoyment experience in high skill-low challenge activities refutes the claim. Issues with gender differences aside, their definition of media enjoyment is not empirically tested, nor a measure of enjoyment produced to empirically test defining media enjoyment as skill versus challenge within flow theory. Further work by the authors drops linking media enjoyment with uses and gratifications and examines game use and preferences within the uses and gratifications paradigm alone (Sherry, 2006).

2.3.3.4 Sweetser and Wyeth (2005)

Sweetser and Wyeth (2005) provide a model of player enjoyment for games. Their model, based on Csikszentmihalyi's (1990) concept of flow, is called GameFlow and uses the eight elements of flow theory to model enjoyment in games (See Table 2, Sweetser & Wyeth, 2005). GameFlow consists of eight core elements: concentration, challenge, player skills, control, clear goals, feedback, immersion, and social interaction. Only the final element, social interaction, does not map directly to the elements of flow, but is highly reported in user-experience game literature (Lazzaro, 2004; Pagulayan et al., 2003). In comparison to previous definitions of enjoyment as flow, Sweetser and Wyeth (2005) go further than simply the correct combination of skill and challenge, and identify multiple elements of flow which can be used to evaluate enjoyment in games. While not an explicit definition of enjoyment, the model of GameFlow provides a more

inclusive model of enjoyment as flow than previous definitions provided. To provide proof of concept, Sweetser and Wyeth (2005) used expert evaluation of two games using their elements of GameFlow as criteria for evaluating enjoyment of the game.

Table 2. Mapping the elements from GameFlow to the elements of flow (Sweetser & Wyeth, 2005)

GameFlow	Flow (Csikszentmihalyi, 1990)
Concentration	Ability to concentrate on the task
Challenge Player Skills	Perceived skills should match challenges and both must exceed a certain threshold
Control	Allowed to exercise a sense of control over actions
Clear Goals	The task has clear goals
Feedback	The task provides immediate feedback
Immersion	Deep but effortless involvement, reduced concern for self and sense of time
Social Interaction	n/a

While Sweetser and Wyeth (2005) did not validate their model of enjoyment (i.e. GameFlow), Fu, Su, and Yu (2009) used the GameFlow framework to develop a measure of enjoyment in e-learning games. The measure, called EGameFlow, replaced control with autonomy, defined as "players feel a sense of control over their actions in the game" and skill with knowledge improvement (an increase in skill through knowledge) for their measure of enjoyment. Essentially they used the same elements of flow, adapted for an e-learning game (Fu,Su, & Yu, 2009). Following an initial factor analysis modifying the scale to 42 items, another factor analysis was conducted which yielded nine factors with eigenvalues >1.0. Together, these nine factors explained 74.29% of the total variance in the learner's enjoyment of e-learning games (measured by a visual

analogue scale between 0 and 100 which allowed players to rank their "overall sense of enjoyment"). The control factor from the GameFlow model was divided into two factors, autonomy and self-initiation. The nine extracted factors were concentration, goal clarity, feedback, challenge, autonomy, immersion, social interaction, self-initiation, and knowledge improvement. Cronbach's alpha was 0.942 for the 42 items as a group and >0.8 for each separate dimension. The scale showed acceptable validity and explained a significant portion of variance in enjoyment in an e-learning game environment.

GameFlow, and its measure, EGameFlow, explain the largest amount of variance in enjoyment as flow within the definitions reviewed. This highlights the positive feeling when a flow state occurs as enjoyment (Csikszentmihalyi, 1975/2000). Yet, it does not explain the variation in enjoyment which occurs during low challenge-high skill activities (Csikszentmihalyi, 2014). Aspects of enjoyment as flow, as measured in EGameFlow, also encompass psychological need satisfaction factors of competence (knowledge increase, skill, challenge), autonomy (control, self-initiation), and relatedness (social interaction) (Ryan & Deci, 2000). Also, EGameFlow measures a person's level of involvement in a task through concentration and immersion. This lost sense of time, in flow theory, relates to how absorbed (or engaged) a person feels with the environment (Csikszentmihalyi, 2014). These two components, psychological need satisfaction (35.13%) and engagement (18.69%), accounted for over half of the explained variance in enjoyment. Thus, GameFlow as a model of enjoyment identifies important aspects of enjoyment which may be extended to any activity, not only games.

2.3.3.5 Nakamura and Csikszentmihalyi (2014)

In Nakamura and Csikszentmihalyi's (2014) collected works he identified challenges for the future for positive psychology. One of those challenges was understanding why people opt for watching a television show over reading a challenging book, when the television show offers only mild dysphoria, whereas the book can produce flow. Nakamura and Csikszentmihalyi offer a differentiation between enjoyment and pleasure, to distinguish between types of positive experiences. Pleasure was defined as "the good feelings that comes from satisfying homeostatic needs such as hunger, sex, and bodily comfort" and enjoyment was defined as "the good feelings people experience when they break through the limits of homeostasis – when they do something that stretches them beyond what they were – in an athletic event, an artistic performance, a good deed, a stimulating conversation" (pp. 293). Thus, enjoyment occurs as a result of flow (going beyond homeostasis), whereas pleasure is basic biological need satisfaction (returning to homeostasis). Per Nakamura and Csikszentmihalyi (2014) enjoyment, not pleasure, leads to personal growth and long-term happiness.

Enjoyment, occurring as breaking through the limits of homeostasis, would also require a positive direction. The movement away from homeostasis (needs of hunger, sex, and bodily comfort) is often not enjoyable. For example: when a person becomes hungry (i.e. movement away from homeostasis) a state of increasing desire for sustenance occurs, compelling a person to eat not because of an enjoyable feeling, but due to a stomach ache. Additionally, pleasure can also occur during positive movement away from homeostasis (enjoyment), for example: when engaging in an enjoyable activity (e.g. reading a good book) many pleasures may accompany the experience, such as sitting in a comfortable chair, drinking a pleasant tea, or sitting by a warm fire. While these pleasant experiences could be categorized as returns to homeostasis (reducing muscle

strain, thirst, feeling cold) they also accompany, thus are incorporated, into the enjoyable experience of reading a book for that individual. While I agree with Nakamura and Csikszentmihalyi (2014) that pleasure and enjoyment are distinguishable, I would add that pleasant feelings (pleasure) are important to feeling enjoyment. No measure has yet been formed and validated to empirically test Nakamura and Csikszentmihalyi's definitions of enjoyment and pleasure.

In Csikszentmihalyi's (1975/2000) flow theory, one must be engaged in an activity and fulfilling a challenge-skill match (i.e. competency need satisfaction) to reach flow state. With significant amounts of variance explained in enjoyment, through definitions explaining enjoyment as flow, engagement in an activity and competency need satisfaction could then be hypothesized as important dimensional links between enjoyment and flow. While enjoyment can occur outside of flow, it occurs alongside flow as well. Flow, therefore, could be an optimal state of enjoyment, of a highly engaging and need satisfying experience which results in a positive feeling. This conclusion is further explored within the proposed model of enjoyment presented in the following chapter.

2.3.4 Multidimensional Views on Enjoyment

A multi-dimensional view on enjoyment is not novel, yet few authors validate a measure of enjoyment as such. Multiple essays identifying enjoyment as multi-dimensional lack empirical evidence and available measurement. In this section, I will review definitions of enjoyment who take a multi-dimensional perspective, or did not fit within the foundational theories of hedonism, motivation, and flow. Following this section, I first differentiate enjoyment from related constructs, then propose a model and definition of universal enjoyment.

2.3.4.1 Warner (1980)

In writing his paper, simply titled "Enjoyment", Warner (1980) conceptually defines enjoyment from a philosophical perspective. Throughout the article, enjoyment is defined through identifying restrictions on what enjoyment is, or isn't, based on conditional statements. Warner then (1980) defines enjoyment as "x enjoys an experience or activity ø at t if and only if there is an array of concepts C such that 1) x øs at t'; 2) x's øing causes x at t: i) to believe, of his øing, that the concepts in C apply to it; ii) to desire, of his øing, under the concepts in C, that it occur; 3) x desires for its own sake what (2,ii) describes him as desiring" (pp. 518). To clarify this definition, I will highlight the meaning of the conditional characters (e.g. x, ø, t, C, t'), then provide a non-conditional definition of enjoyment.

The conditional characters are fully described in detail with examples within Warner's (1980) paper. To begin, 'x' is in reference to a being (e.g. person, dog), and 'ø' is restricted to experiences and activities. Thus, enjoyment occurs when a person engages in an activity or experience, giving rise to a question: if one can enjoy a meal or painting, yet neither are activities, how is enjoyment limited to activities? This is justified through *eating* the meal and *looking* at the painting, where eating and looking are enjoyable activities based on the content which is consumed or viewed respectively. Next, 't' and 't'' refer to specific times, where 't' is the moment in time in which a person engages in the activity, and 't'' is a moment of time slightly prior. Lastly C is an array of concepts which you associate with the activity so that you are motivated to engage in the activity. To adapt an example from Warner (1980): when deep sea fishing, the concepts of being surrounded by friendly people, congratulated on your catch, nice breeze, etc... formulate a person's conceptualization of deep sea fishing, thus their desire (motivation) to engage in the activity. When adding meaning to the conditional characters, the definition could be re-written as: "a person

enjoys an activity if 1) they engage in the activity, 2) their conceptualizations of the activity apply and are desired, 3) and the activity is desired for its own sake. While Warner's (1980) definition of enjoyment is philosophically sound, empirical testing and validation was not conducted for almost 30 years.

In reviewing enjoyment literature, Lin, Gregor, and Ewing (2008) developed a scale to measure the enjoyment of web experiences based on Warner (1980). They identify three dimensions as encompassing the enjoyment definition provided by Warner (1980): (1) engagement, (2) positive affect, and (3) fulfillment. Engagement was identified as focused attention (e.g. concentration, absorption, engrossment, attention) (Novak, Hoffman, & Yung, 2000). Positive affect was identified as feelings of pleasure, happiness, or contentment (Novak, Hoffman, & Yung, 2000). Lastly, fulfillment was proposed to have four aspects: meaning, reward, usefulness, and being worthwhile, based on other enjoyment definitions and the advice of an expert review panel. An initial pool of items for enjoyment was selected based on review of the literature and existing scales resulting in 14 items with 9-point Likert scales (engagement and fulfillment) and a 9-point semantic differential scale. An EFA was conducted on an initial sample of 85 participants. Participants were directed to one of two websites, with one website (nationalzoo.si.edu) considered enjoyable and the other (dokimos.org) critiqued as the one of the worst websites of 2006 (www.webpagesthatsuck.com/10-worst-web-pages-featured-on-web-pages-that-suck-in-2006.html). A principle component analysis was conducted revealing a single factor result which accounted for 77.26% of the variability, and a three-factor result which captured 87.50% of the variability. To confirm the results, a CFA was conducted on a second sample of 111 participants using structural equation modeling (SEM). The chi-square was less than 5 (2.48) indicating good model fit, the factor reliability analysis showed the scale had good reliability ($\alpha >$

0.90), and the proportion of variability capture by the three factors in enjoyment was 89.54%. Enjoyment as a main construct did not contain additional items. Instead, enjoyment was identified as a second-order factor comprised of engagement, positive affect, and fulfillment. This approach is not shared by previously discussed measures of enjoyment. One concern for this study was the sample size is not considered adequate for eliminating subject variance as a concern, where 300 is often set as a minimum (Cabrera-Nguyen, 2010; DeVellis, 2016; Nunnally, 1978). Additionally, enjoyment was measured specifically in web experiences, rather than a universal enjoyment construct. Enjoyment as a universal construct is aided by this study, but further empirical work is needed to validate a dimensional model.

Lin, Fernandez, and Gregor (2010) further investigate Warner's (1980) definition of enjoyment in a qualitative investigation into the design of websites. In Lin, Fernandez, and Gregor's (2010) review of the enjoyment experience, they conclude enjoyment is best represented by three necessary sub-constructs: engagement, positive affect, and fulfillment. Building on Warner's (1980) definition: "for people to enjoy an activity, they have to: (a) *engage* in the activity, (b) be *positively affected* in terms of satisfaction, excitement, contentment, or similar feelings, and (c) achieve *fulfillment* of needs or desires through the activity" (pp. 907, Lin, Fernandez, & Gregor, 2010). To investigate the presence of the three sub-constructs of enjoyment and develop guidelines to web experience design, a survey was completed by 951 participants who answered four open-ended questions about the characteristics of websites that encourages enjoyment and informal online learning. Following content analysis, four design characteristics and five design guidelines are generated based on the data. The sub-dimensions of enjoyment are identified within the research findings through reviewing the nine generated categories of data (see Table 3, Lin, Fernandez, & Gregor, 2010).

Table 3. Connections between research findings and the enjoyable experience. (Lin, Fernandez, & Gregor, 2010)

Research Questions	Findings	Dimensions of Enjoyment		
		Engagement	Positive Affect	Fulfillment
Characteristics of websites which encourage enjoyable online learning	(1) Novelty	●	●	
	(2) Harmonization	●	●	
	(3) No time constraint	●	●	
	(4) Proper facilitations and associations		●	●
Design guidelines which lead to websites that support enjoyable online learning experiences	(1) Designing multisensory learning experiences	●	●	
	(2) Creating a storyline	●	●	
	(3) Mood building		●	
	(4) Fun in learning	●	●	●
	(5) Establishing social interaction		●	●

Empirical work has focused on Warner's (1980) definition of enjoyment; the dimensions of enjoyment he proposed are conceptually supported by previously reviewed theoretical foundations. While thus far, empirical work has focused on the enjoyment of web experiences, Warner's (1980) definition could be extended to a universal conceptualization of enjoyment. Engagement in an activity, as a requirement of enjoyment, is strongly supported by Flow Theory (Csikszentmihalyi, 1975/2000). Enjoyment as positive feelings (pleasure), while intuitively obvious, is supported in hedonism (Waterman, 1993). Lastly, fulfilling desires (need satisfaction) contributing to enjoyment is supported by Self-Determination Theory (Ryan & Deci, 2000). Thus, while Warner's (1980) multi-dimensional conceptualization of a universal enjoyment lacks

empirical evidence outside of web experiences, it is theoretically supported and can be applied universally to all activities.

2.3.4.2 Nabi and Kremar (2004)

For Nabi and Kremar (2004), the explications and theoretical integration of enjoyment in mass media effects research was lacking. In a review of the extant literature and prominent theories of media effects, common features underlying the concept of media enjoyment were synthesized. Nabi and Kremar (2004) then define enjoyment as "an attitude with affective, cognitive, and behavior antecedences and consequences" (pp. 305). Here, attitude is defined as "a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (pp. 1, Eagly & Chaiken, 1993). To support their conceptualization of enjoyment, they propose a tripartite model of media enjoyment's effects on viewing and content-related behavior (see Figure 5, Nabi & Kremar, 2004).

Enjoyment is conceptualized as an attitude to broaden understanding of the precursors and behavioral outcomes of enjoyment (Nabi & Kremar, 2004). Central to enjoyment, as an attitude, is the "evaluating a particular entity" portion. This evaluation results in either a positive or negative valence of the attitude as well as intensity (Eagly & Chaiken, 1993). Meaning, the enjoyment of media would be determined by this attitudinal level evaluation resulting in varying intensities of enjoyment based on the object to which the evaluation is directed. Attitudes are generally agreed upon to be multidimensional, based on varying combinations of cognitive, affective, and behavioral information (Zanna & Rempel, 1988). Thus, media enjoyment (as an attitude) is preceded by various combination of cognitive, affective, and behavioral information, which contribute to enjoyment, and enjoyment, in turn, impacts cognitive, affective, and behavioral

reactions to media messages and their subject matter. In support of the conceptualization of enjoyment as an attitude, the tripartite model of media enjoyment is presented (Figure 5).
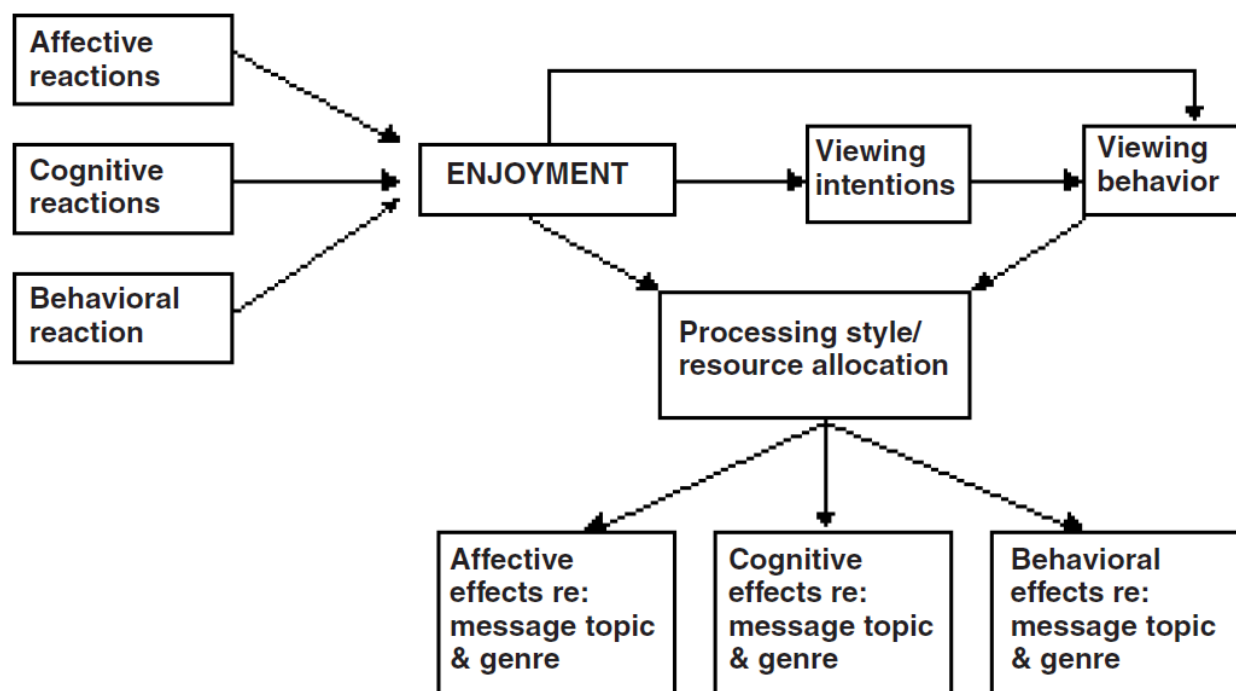
Figure 5. Tripartite model of media enjoyment's effects on viewing and content-related behavior (Nabi & Kremar, 2004)

The tripartite perspective establishes media enjoyment as an attitude, a three-dimensional construct. Media enjoyment, like other attitudes, is comprised of affective, cognitive, and behavioral information which mutually exert influence on one another (Nabi & Kremar, 2004). For the model, the underlying affective dimension focuses on empathy, although, the authors note, discrete emotion measures would likely enhance the understanding of enjoyment. Following, positive and negative moods, as well as specific affective states (e.g. horror, sadness, suspense) are proposed to also feed the affective component (see Oliver, 1993b). The cognitive component focuses on judgments of characters' actions, story assessments, and personal evaluations. Lastly,

the behavioral component is linked to selective exposure in viewing intent and the act of viewing itself. Each of the underlying affective, cognitive, and behavioral reactions are influenced by multiple factors, such as prior knowledge, direct experience, personality traits, and current mood. These factors influence the three components, which in turn inform perceptions of media enjoyment.

To test Nabi and Kremar's (2004) tripartite model of media enjoyment, an instrument was developed to measure enjoyment of computer game play by Fang et al. (2010). After initial item development, which included 66 items to measure enjoyment based on the tripartite model, an expert review, then exploratory and confirmatory card sorting procedure was used to assess construct validity and identify ambiguous items. A similar procedure was used by Moore and Benbasat (1991). Following the card sorts, 19 items were identified as demonstrating the tripartite model of media enjoyment. Next the measure was tested in surveys with 307 (Survey 1) and 508 (Survey 2) participants to test factor loadings and reliability. Following Survey 1, 8 items were found to either load on multiple factors or low reliability and eliminated from the measure. Results from Survey 2 indicated the final version (11-items) of the instrument had high reliability ($\alpha >$ 0.73 for all three factors) and high discriminant validity (all items converged on the intended construct with factor loadings > 0.535). Further criterion-related validation of the scale was not conducted.

Media enjoyment as an attitude is proposed through the tripartite model of media enjoyment. As an attitude, it's dimensionally explicated as the combination of affect, cognition, and behavior reactions which cause affective, cognitive, and behavioral effects. The affective component is focused on empathy. For media entertainment, I can see how an empathetic reaction toward a character in a movie could contribute to an overall feeling state, which emerges as

enjoyment when the character benefits from its actions. Yet, empathy itself does not constitute enjoyment; I can feel empathy toward another person's misfortune and feel no enjoyment until a resolution occurs. Thus, enjoyment is a separate affective reaction to viewing media content from empathy. While media enjoyment as an attitude broadens the construct to include negative emotion (horror, sadness, suspense), it also recalls Csikszentmihalyi's (2014) definition of pleasure, where the return to homeostasis, following an unpleasant experience (e.g. horror, sadness, suspense), results in a pleasurable feeling (Csikszentmihalyi, 2014). When the pleasurable feeling is combined with other dimensions of enjoyment (proposed later), it can result in enjoyment of the media experience. I agree with Nabi and Kremar (2004) that enjoyment can be better conceptualized and certain components, cognition and affect, are intertwined, but further empirical evidence towards conceptualizing enjoyment as an attitude would be needed.

2.3.5 Summary of Definitions

To provide a quick summary of all the definitions reviewed on enjoyment, Table 4 presents a meta-summary. While there were many varying definitions of enjoyment from domains such as psychology, communications, marketing, sport and exercise, information technology, and philosophy, none provide an empirically tested, validated, and universal measure to the enjoyment construct. In the following section, I briefly differentiate enjoyment from related constructs. Then, in the following chapter, I propose a new, multi-dimensional model of enjoyment.

Table 4. Summary of Enjoyment Definitions Reviewed and Variance Explained

Source	Definition	Tested	Variance
Merriam-Webster (2017)	the action or state of enjoying	No	
Oxford Dictionary (2017)	The state or process of taking pleasure in something.	No	
Cambridge Dictionary (2017)	a feeling of happiness or pleasure.	No	
Waterman (1993)	may be expected to be felt whenever pleasant affect accompanies the satisfaction of needs, whether physical, intellectual, or socially based	Yes	Not Reported
Davis, Bagozzi, & Warshaw (1992)	the extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated	Yes	10.6%, 9.7%
Gomez, Wu, and Passerini (2010)	the extent to which the learning activity is perceived to be pleasant and satisfactory to the learners	No	
Tamborini et al. (2011)	The satisfaction of both hedonic and nonhedonic needs	Yes	66%
Graves et al. (2012)	the degree to which individuals work because they find the work itself intrinsically interesting or pleasurable	Yes	Not Reported
Scanlan et al. (2016)	The positive affective response to a sport experience that reflects generalized feelings of joy.	Yes	2.24%
Wankel (1993)	A positive emotion/positive affective state. It may be homeostatic in nature, resulting from the satisfaction of biological needs (e.g., need to be active), or growth oriented, involving a cognitive dimension focused on the perception of successfully applying one's skills to meet environmental challenges.	Yes	Rank Order
Kimiecik and Harris (1996)	An optimal psychological state (i.e., flow) that leads to performing an activity primarily for its own sake and is associated with positive feeling states	Yes	51.67%
Sherry (2004)	A gratification that results from a flow experience realized when media message content balances with individual ability to interpret that message	No	
Sweetser and Wyeth (2005)	consists of immersion, social interaction, challenge, goal clarity, feedback, concentration, control, and knowledge improvement.	Yes	74.29%
Nakamura & Csikszentmihalyi (2014)	the good feelings people experience when they break through the limits of homeostasis—when they do something that stretches them beyond what they were—in an athletic event, an artistic performance, a good deed, a stimulating conversation.	No	
Warner (1980)	x enjoys an experience or activity ø at t if and only if there is an array of concepts C such that 1) x øs at t'; 2) x's øing causes x at t: i) to believe, of his øing, that the concepts in C apply to it; ii) to desire, of his øing, under the concepts in C, that it occur; 3) x desires for its own sake what (2,ii) describes him as desiring.	Yes	89.54%
Nabi and Kremar (2004)	an attitude with affective, cognitive, and behavioral antecedents and consequences. (pp. 305)	Yes	Not Reported

2.4 Related Constructs

Before proposing a multi-dimensional model of enjoyment, and explicating its dimensions, the current empirical work differentiates between enjoyment and related constructs. Interest, satisfaction, and happiness and subjective well-being are related to, but discernable, from enjoyment. In this section, I briefly review each construct, then differentiate enjoyment from them. Following this, in the next chapter, I propose a model of enjoyment.

2.4.1 Interest

Interest is a cognitive and affective motivational variable highly correlated with enjoyment within SDT (Ryan & Deci, 2000). In the Intrinsic Motivation Inventory (IMI), a subscale labeled "interest/enjoyment" is considered the measure of intrinsic motivation within the scale (Deci & Ryan, 2003). In Flow research, interest is described by Csikszentmihalyi and Csikszentmihalyi (2006) as "phenomenologically distinct positive emotion, creates the urge to explore, take in new information and experiences, and expand the self in the process" (pp.89). The urge to explore offers an initial clue into differentiating interest from enjoyment. Interest as a motivational variable is further defined and distinguished in the Four-Phase Model of Interest Development (Hidi & Renninger, 2006).

For Hidi & Renninger (2006), interest as a motivational variable refers to "the psychological state of engaging or the predisposition to reengage with particular class of objects, events or ideas over time" (pp. 112). The class of objects, events, or ideas over time is more simply referred to as content (Hidi & Renninger, 2006). In their review of interest research, three ways interest can be distinguished from other motivational variables (e.g. enjoyment) are provided, two of which help to distinguish interest from enjoyment. First, the affective and cognitive components

of interest have biological roots in approach circuits in the brain and in seeking behavior (Davidson, 2000; Panskepp & Moskal, 2004). Meaning, interest is incorporated into our desire to initially interact with content. Second, interest is an outcome of an interaction between a person and content (Hidi & Baird, 1986; Krapp, 2000). The potential for interest resides within the person, but the content and environment define the direction of interest and contribute to its development (Hidi & Renninger, 2006). As such, while interest is highly energizing, it can also operate in affectively negative situations (Panksepp, 2003). Thus, interest is involved with our initial desire to engage with content, and can operate in affectively negative situations.

It is difficult to distinguish between interest and enjoyment because interest has a complementary effect with enjoyment and other positive motivational feelings. While interest may guide me to engage in an activity, if I find the activity enjoyable, my interest may then continue to develop to seek the activity further. This reciprocal relationship between interest and enjoyment is important for intrinsic motivation (Deci & Ryan, 2003). To conclude, I offer a simple differentiation between interest and enjoyment: interest resides in a desire to initially engage and to continue to engage with content, and enjoyment is experienced while engaging in the content.

2.4.2 Satisfaction

Satisfaction, as a motivational variable, refers to a pleasurable or positive emotional state resulting from the appraisal of an activity or object. Conceptualizations of satisfaction vary in coverage, from a more general life satisfaction (Deiner et al., 1985) to more specific applications, such as job satisfaction (Locke, 1976). Research also suggests there is a significant reciprocal relationship between life and job satisfaction (Judge & Watanabe, 1993). Considering our mind (cognitively) can evaluate any activity, object, person, or idea presented to us, satisfaction could

also be extended to any of these. Like interest and enjoyment, satisfaction can be directed toward any identifiable content.

To assist in differentiating enjoyment from satisfaction, I will provide two examples: cake and work. 1) A man eats a slice of chocolate cake and finds it pleasurable to his senses; he then proceeds to eat multiple slices of this delicious cake. Afterwards, the man is dissatisfied with eating the cake, as it left him with a stomach ache. 2) A woman decides to stay on task and attempt to finish her work before the end of the day. She succeeds and is satisfied with her work, but does not enjoy slaving away at her computer typing all day. In the first example, the man enjoyed eating the cake, but was not satisfied with eating too much cake afterward. For the woman, she was satisfied with the result of her hard work, but did not enjoy her day of typing. In each of these examples, enjoyment and satisfaction do not occur together. However, one could imagine a situation where both enjoyment and satisfaction occur (e.g. no stomach ache, enjoying typing), meaning an enjoyable activity could also be a satisfying one.

The difference between satisfaction and enjoyment is value. Through examination of the items within satisfaction scales, such as the Satisfaction with Life Scale (SWLS) (Deiner et al., 1985), the items include statements in comparison to an ideal. For example, "In most ways my life is close to my ideal," "If I could live my life over, I would change almost nothing," and "The conditions of my life are excellent." Thus, satisfaction is measured through evaluation of current conditions in comparison to desired conditions, in value. Enjoyment, however, can occur outside of value, in pleasurable experiences. Whether that value involves enjoyment depends on the individual. I may find a snowball fight with my daughter an enjoyable activity (i.e. throwing snowballs is fun) and valuable to building a father-daughter relationship, thus also a satisfying experience. A different person may also find the activity enjoyable, but not value the activity for

anything other than playing in the snow, and with limited time available, not be satisfied with their time spent. Thus, while enjoyment and satisfaction are complementary and highly correlated, they can be differentiated in subjective measurement.

2.4.3 Happiness and Subjective Well-Being

Happiness and subjective well-being are essentially two terms describing one concept: what makes a good life? Scientists who study happiness use the term subjective well-being to describe how a person feels about their life. Subjective well-being is formally defined as "a person's cognitive and affective evaluations of his or her life" (pp. 63, Diener, Lucas, & Oishi, 2002). The differentiation between subjective well-being and enjoyment is simple. Subjective well-being is a broad concept evaluating a person's life in its entirety, whereas enjoyment is specific to an activity. Enjoyment of life, or the summation of enjoyable activities, may predict a portion of variability in subjective well-being, but first we must be able to empirically define and measure enjoyment.

CHAPTER 3

ENJOYMENT

Keeping the previously discussed literature in mind, it is now possible to provide a conceptual model with which enjoyment's dimensions can be empirically examined. To create an empirically validated measure of enjoyment, first the proposed dimensions of enjoyment are presented, then enjoyment as a construct is explicitly defined. This section examines a multi-dimensional view on enjoyment, based on previous definitions and related theoretical work. For each dimension of enjoyment, the theoretical basis and empirical evidence supporting its inclusion is provided. Following this chapter, a discussion of the steps taken to empirically examine the model of enjoyment and create a validated measure is presented.

3.1 A Multi-Dimensional Model of Enjoyment

From the literature and theories discussed thus far, enjoyment is often regarded as a unidimensional construct, measured with only a few items. To expand our understanding of enjoyment and investigate a multi-dimensional model of enjoyment further, empirical work is required. In formulation of the possible dimensions of enjoyment, a list of potential dimensions to include in a new model of enjoyment was created. This list was then organized into two tables: one defining the individual constructs that define the model (Table 5) and one defining related constructs which are not included as modeled elements but are affected by enjoyment (Table 6). The modeled constructs listed in Table 5 are then presented as a multi-dimensional model of enjoyment (Figure 6). After presentation of the proposed multi-dimensional model of enjoyment, each dimension is discussed in depth.

Table 5. Constructs Affecting Enjoyment, Colored by Proposed Dimensions

Colored Dimensions Legend
Psychological Need Satisfaction
Engagement
Pleasure

Constructs Affecting Enjoyment	Effect Size	Variance Explained	Source
Perceived Motivation	beta = .63		Gomez, Wu, & Passerini, 2010
Perceived Team Members' Contributions	beta = .34		Gomez, Wu, & Passerini, 2010
Competence Need Satisfaction	beta = .58		Przybylski, Deci, Rigby, & Ryan, 2014
Player Competence	beta = .59		Przybylski, Deci, Rigby, & Ryan, 2014
Mastery of controls	beta = .32		Przybylski, Deci, Rigby, & Ryan, 2014
Complexity	beta = -.23		Przybylski, Deci, Rigby, & Ryan, 2014
Aggressive Feelings	beta = -.28		Przybylski, Deci, Rigby, & Ryan, 2014
Self-Esteem	beta = .29		Graves et al., 2012
Relatedness	beta = .12		Ryan, Rigby, & Przybylksi, 2006
Autonomy	beta = .49		Ryan, Rigby, & Przybylksi, 2006
Competence	beta = .34		Ryan, Rigby, & Przybylksi, 2006
Autonomy	beta = .76		Reinecke et al., 2012
Competence	beta = .29		Reinecke et al., 2012
Perceived Effectance	beta = .78		Klimmt, Harmann, & Frey, 2007
Game Success	beta = .34		Rieger et al., 2014
Absorption	beta = .27	54%	Tamborini et al., 2011
Arousal	beta = .33		Tamborini et al., 2011
Competence	beta = .31	13%	Tamborini et al., 2011
Autonomy	beta = .22		Tamborini et al., 2011
Arousal	beta = .16	20%	Tamborini et al., 2011
Affect	beta = .22		Tamborini et al., 2011
Competence	beta = .24	34%	Tamborini et al., 2011
Autonomy	beta = .48		Tamborini et al., 2011
Competence	beta = .44		Tamborini et al., 2010
Autonomy	beta = .39	51%	Tamborini et al., 2010
Relatedness	beta = .22		Tamborini et al., 2010
Shared Identity	beta = .33		Chen, Lu, & Wang, 2016
Social Interaction	beta = .24		Chen, Lu, & Wang, 2016
Diversion	beta = .26		Chen, Lu, & Wang, 2016
Ease of Use	beta = .35		Lee & Tsai, 2010
Perceived Ease of Use	beta = .26		Davis, Bagozzi, & Warshaw, 1992
Perceived Output Quality	beta = .21		Davis, Bagozzi, & Warshaw, 1992
Prior Experience	beta = .64		Skalski et al., 2011
Gender	beta = .59		Skalski et al., 2011
Concentration		11.41%	Fu, Su, & Yu, 2009

Table 5 (continued). Constructs Affecting Enjoyment, Colored by Proposed Dimensions

Colored Dimensions Legend
Psychological Need Satisfaction
Engagement
Pleasure

Constructs Affecting Enjoyment	Effect Size	Variance Explained	Source
Goal Clarity		10.58%	Fu, Su, & Yu, 2009
Feedback		9.85%	Fu, Su, & Yu, 2009
Challenge		8.20%	Fu, Su, & Yu, 2009
Autonomy		7.88%	Fu, Su, & Yu, 2009
Self-Initiation		7.83%	Fu, Su, & Yu, 2009
Immersion		7.28%	Fu, Su, & Yu, 2009
Social Interaction		6.31%	Fu, Su, & Yu, 2009
Knowledge Improvement		4.91%	Fu, Su, & Yu, 2009
Satisfaction with Season's Performance	beta = .31		Scanlan & Lewthwaite, 1986
Negative Adult Affective Reactions	beta = -.28		Scanlan & Lewthwaite, 1986
Age	beta = .24		Scanlan & Lewthwaite, 1986
Perceived Ability	beta = .22		Scanlan & Lewthwaite, 1986
Positive Adult Involvement and Interactions	beta = .16		Scanlan & Lewthwaite, 1986
Competency and Recognition		24%	Wiersma, 2001
Effort Expenditure		10%	Wiersma, 2001
Affiliation with Peers		5%	Wiersma, 2001
Competitive Excitement		5%	Wiersma, 2001
Positive Parental Involvement		1%	Wiersma, 2001
Self-Referenced Competency		2%	Wiersma, 2001
Winning and Competition	beta = .19		Kim, 1997
Practice and its Benefits	beta = .36	54%	Kim, 1997
Team Atmosphere	beta = .20		Kim, 1997
Continued Education	beta = .19		Kim, 1997
Teacher Enthusiasm	beta = .31	46%	Frenzel et al., 2009
Previous Class Enjoyment	beta = .53		Frenzel et al., 2009
Supportive Relationships		29%	Wilks et al., 2017
Non-Supportive Relationships		20%	Wilks et al., 2017
Workplace Conditions		9%	Wilks et al., 2017
Negative Workplace Environment		7%	Wilks et al., 2017
Nurse Foundations for Quality Care	beta = .15		Wade et al., 2008
Nurse Manage Ability	beta = .22	31%	Wade et al., 2008
Staffing and Resource Adequacy	beta = .20		Wade et al., 2008
Collegial Nurse-Physician Relations	beta = .10		Wade et al., 2008
Demographic Variables		5%	Wade et al., 2008
Exercise Identity	beta = .24	50%	Wininger, 1999

Table 5 (continued). Constructs Affecting Enjoyment, Colored by Proposed Dimensions

Colored Dimensions Legend		
Psychological Need Satisfaction		
Engagement		
Pleasure		

Constructs Affecting Enjoyment	Effect Size	Variance Explained	Source
Individual Attraction to Group Task	beta = .41		Wininger, 1999
Perception of Music	beta = .19		Wininger, 1999
Instructor Characteristics	beta = .10		Wininger, 1999
Unresolved Curiosity	beta = -.32		Isikman, 2014
Suspense	beta = .33		Nabi et al., 2006
Pensiveness	beta = .29	33%	Nabi et al., 2006
Surprise	beta = -.29		Nabi et al., 2006
Voyeurism	beta = .33		Nabi et al., 2006
Happiness	beta = .22		Nabi et al., 2006
Surprise	beta = .25	61%	Nabi et al., 2006
Relief	beta = .17		Nabi et al., 2006
Anger	beta = -.22		Nabi et al., 2006
Spatial Presence	beta = .56	31%	Shafer & Carbonara, 2015
Spatial Presence	beta = .46	21%	Shafer & Carbonara, 2015
Flow		15.40%	Smith, 2006
Human Opponent	beta = .62		Weibel et al., 2008
Presence	beta = .17	28%	Weibel et al., 2008
Flow	beta = .43		Weibel et al., 2008
Perceived Competence	beta = .26		Lyons et al., 2014
Engagement	beta = .49		Lyons et al., 2014
Knowledge Generation		36%	Holsapple & Wu, 2008
Knowledge Utilization			Holsapple & Wu, 2008
Involvement	beta = .22		Koufaris, 2002
Challenges	beta = .34	28%	Koufaris, 2002
Skills	beta = .18		Koufaris, 2002
Value-Added Search Mechanism	beta = .21		Koufaris, 2002
Authenticity in Arts	beta = .28		Aykol, Aksatan, & İpek, 2017
Authenticity of Venue	beta = .25		Aykol, Aksatan, & İpek, 2017
Flow	beta = .22		Aykol, Aksatan, & İpek, 2017
Engagement			Lin, Gregor, & Ewing, 2008
Fulfillment		89.54%	Lin, Gregor, & Ewing, 2008
Positive Affect			Lin, Gregor, & Ewing, 2008

Table 6. Constructs Affected by Enjoyment.

Constructs Affected *by* Enjoyment	Effect Size	Variance Explained	Source(s)
Likelihood of Taking a Course	beta = .49		Falk, Dunn, & Norenzayan, 2010
Vigor	beta = .69		Raedeke, 2007
Energy	beta = .89		Raedeke, 2007
Attitude toward Technology	beta = .68		Lee & Tsai, 2010
Continued Intention	beta = .12		Lee & Tsai, 2010
Behavioral Intentions	beta = .16		Davis, Bagozzi, & Warshaw, 1992
Usage Behavior	beta = .14		Davis, Bagozzi, & Warshaw, 1992
Usage Intentions		11%	Davis, Bagozzi, & Warshaw, 1992
Psychological Strain	beta = -.48		Graves et al., 2012
Career Satisfaction	beta = .25		Graves et al., 2012
Performance	beta = .21		Graves et al., 2012
Usage Intentions	beta = .12		Chang & Chin, 2011
Sport Commitment	beta = .22		Carpenter et al., 1993
Sport Commitment	beta = .61		Scanlan et al., 1993
Perceived Learning	beta = .32		Gomez, Wu, & Passerini, 2010
Extraversion		13%	Izard et al., 1993
Physical Activity Participation		51.67%	Stevemts et al., 2000
Team-Based Learning Experiences		15.91%	Gomez et al., 2009
Ease of Use	beta = .30		Yi & Hwang, 2003
Usefulness	beta = .50		Yi & Hwang, 2003
Self-Efficacy	beta = .24		Yi & Hwang, 2003
Game Satisfaction		5.50%	Phan, Keebler, & Chaparro, 2016
Rewarding Behavior	beta = .38		Pagoto et al., 2006
Frequency of Rewarding Behavior	beta = .31	34%	Pagoto et al., 2006
Pickiness	beta = -.44		van der Horst, 2012
12-Month Physical Activity	beta = .41		Lewis et al., 2016
Student-Perceived Enthusiasm	beta = .42		Frenzel et al., 2009
Physical Activity	beta = .19		Yli-Piipari, et al., 2013
Energy Expenditure	beta = .32		Lyons et al., 2014
Behavioral Intention to Use		39%	Holsapple & Wu, 2008
User Satisfaction		26%	Holsapple & Wu, 2008
Perceived Ease of Use		9%	Holsapple & Wu, 2008
Intention to Return	beta = .35		Koufaris, 2002
Intentions to Recommend	beta = .72		Aykol, Aksatan, & İpek, 2017
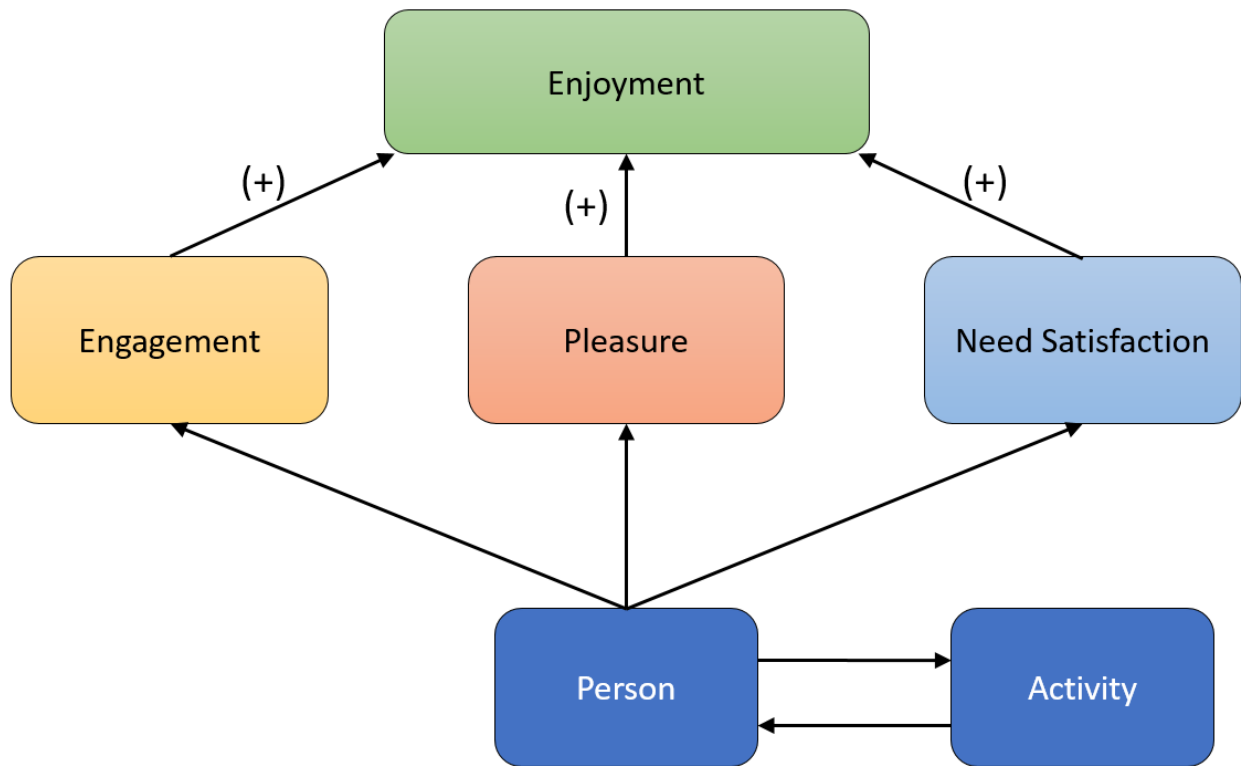
Figure 6. Multi-dimensional model of enjoyment

The multi-dimensional model of enjoyment consists of engagement, pleasure, and need satisfaction, positively influencing a person's enjoyment of any activity. Important to note, everyone brings a different set of pre-conceived notions and demographics to any activity. Meaning, not every activity will be rated the same by each person. Thus, there is a person-activity coupling which influences their engagement, pleasure, and need satisfaction. Next, the proposed dimensions of enjoyment are explicated.

3.1.1 Engagement

Engagement, as a dimension of enjoyment, is present within multiple conceptualizations and constructs presented thus far. Engagement in an activity is first conceptualized as an important dimension of enjoyment by Warner (1980), who identifies the experience or activity must first be

engaged in for a person to enjoy it. This engagement in an activity can also be seen in Flow theory, where important components of the enjoyable experience of flow are "Intense and focused concentration on what one is doing in the present moment" and "Distortion of temporal experience" (Csikszentmihalyi, 1990). Focused attention and temporal distortion are characteristic of a highly engaging experience, thus an enjoyable one. Sweetser and Wyeth (2005) identify immersion and concentration as elements of GameFlow, their measure of game enjoyment, which map onto the components of flow and begin to reveal the depth which involvement in an activity, of increasing engagement, has on enjoyment.

Research on enjoyment has shown the level of engagement in an activity has a positive effect on enjoyment. In their validation of Warner's (1980) definition of enjoyment, Lin, Gregor, & Ewing (2008) define engagement as focused attention. Within their measure of web experiences, engagement is highly correlated with enjoyment ($r = .902$, $p < .01$). In other research, elements identified as relating to engagement (Table 5) have also shown to have an effect on enjoyment, such as absorption ($\beta = .27$), diversion ($\beta = .26$), concentration (11.41% variance), immersion (7.28% variance), spatial presence ($\beta = .56$), presence ($\beta = .17$), involvement ($\beta = .22$), authenticity in arts ($\beta = .28$), authenticity of venue ($\beta = .25$), flow ($\beta = .43$, $\beta = .22$), and engagement itself ($\beta = .49$) (Aykol, Aksatan, & İpek, 2017; Chen, Lu, & Wang, 2016; Frenzel et al., 2009; Fu, Su, & Yu, 2009; Koufaris, 2002; Lyons et al., 2014; Shafer & Carbonara, 2015; Tamborini et al., 2011; Weibel et al., 2008; Wiersma, 2001). The large breadth of research shows the extent to which engagement is an important dimension of enjoyment, positively related, yet engagement also shares a similar problem with enjoyment; as Meyer, Gagne, & Parfyonova (2010) put it "There is no universally accepted definition of engagement" (pp. 63).

For this dissertation, engagement in an activity, as a dimension of enjoyment, is considered best defined by the components empirically found to effect enjoyment. Engagement, if identified as focused attention, concentration, and temporal distortion, was first explored as an important dimension to enjoyment in flow (Csikszentmihalyi, 1990). While flow requires the state of focused attention and temporal distortion, enjoyment does not (Nakamura & Csikszentmihalyi, 2014). Therefore, enjoyment can occur at low engagement (e.g. watching a television show) relative to a flow state, but not when paying no attention to an activity. Like Whitton & Moseley's (2014) conceptualization of learning engagement, engagement can be conceptualized to occur in increasing levels, with participation at the lowest level of engagement and complete absorption as the highest. Thus, engagement can be defined as: a person's level of attentional focus and involvement in an activity (i.e., immersion, concentration, absorption). This conceptualization of engagement is highly related to the motivational foundations of enjoyment, and similar to other measures of engagement (Brockmyer et al., 2009; Rich, Lepine, & Crawford, 2010; Wiebe, et al., 2014; Witemeyer, 2013). This leads to the first two hypotheses:

Hypothesis 1 (H1): Engagement in an activity is positively correlated with and is a factor of enjoyment, with higher levels of engagement leading to higher enjoyment.

Hypothesis 2 (H2): Engagement in an activity explains a significant portion of unique variance in enjoyment.

3.1.2 Pleasure

Pleasure is a term sometimes confused as synonymous with enjoyment. Many researchers offer differentiations between enjoyment and pleasure in their definitional explications. Nakamura and Csikszentmihalyi (2014), to differentiate pleasure from enjoyment, define pleasure as: "the

good feeling that comes from satisfying homeostatic needs such as hunger, sex, and bodily comfort" (pp. 293). There was a necessity to discern results from an older definition of pleasure, which was defined as "an affective response to a given stimuli" (Fechner, 1876). Thus, enjoyment, along with all affective responses, was described as pleasure. Recently, neuroscience research has shown information processing involves affective cognitive circuits in the neural structure of the brain simultaneously (Davidson, 2003). Thus, positive cognitive, emotional, and physiological sensation can be dimensioned together, as pleasure.

The hedonistic view on happiness also includes the preferences and pleasures of the mind as well as the body (Kubovy, 1999). While happiness is more global, enjoyment is specific to an activity, though the same theoretical argument applies to pleasure as a component of enjoyment. The pleasure dimension to enjoyment includes both pleasures of the mind (emotions) and body (sensations), but specific to the activity. Based on the ideas of hedonism and literature presented thus far, enjoyment is a positive feeling which occurs partially as the result of specific pleasurable sensations (e.g. satisfying homeostatic needs) and emotions (e.g. excited, enthusiastic, joyful, cheerful, energetic, happy). Thus, the pleasure dimension of enjoyment consists of all pleasurable sensations and emotions felt during the activity.

In support of positive feelings (pleasure) as a dimension of enjoyment, much previous research has examined the effect of emotions on enjoyment. Arousal (β = .16), affect (β = .22), excitement (5% variance), suspense (β = .33), pensiveness (β = .29), happiness (β = .22), and relief (β = .17) have all been shown to influence enjoyment in various empirical endeavors (Nabi et al., 2006; Tamborini et al., 2011; Wiersma, 2001). Also, negative emotions influence enjoyment negatively, such as anger (β = -.22), surprise (β = -.29), and aggressive feelings (β = -.28) (Nabi et al., 2006; Przybylski, Deci, Rigby, & Ryan, 2014). Meaning, while enjoyment, like happiness, is

not simply the sum of pleasurable feelings, pleasure is an important component to feeling enjoyment and should not be disregarded. This results in Hypothesis 3 and 4:

Hypothesis 3 (H3): Pleasure is highly positively correlated with and is a factor of enjoyment, with higher levels of pleasure leading to higher levels of enjoyment.

Hypothesis 4 (H4): Pleasurable feelings resulting from an activity explains a significant portion of unique variance in enjoyment.

3.1.3 Psychological Need Satisfaction

Psychological need satisfaction is central to Self-Determination Theory (SDT), as humans strive to grow and develop, we seek the satisfaction of psychological needs (Ryan & Deci, 2000). SDT posits three basic psychological needs of autonomy, relatedness, and competence, and the degree that these basic needs are more satisfied, more positive outcomes are predicted (Deci & Ryan, 2014). Need for autonomy refers to initiating a behavior out of personal interest or expression of self; the individual chooses to engage in a behavior because it is compatible with his or her values (Ryan & Deci, 2002). Need for competence refers to the need for a sense of proficiency and feelings of effectiveness in what one is doing (Ryan & Deci, 2002). Lastly, the need for relatedness means feeling connected, interdependent, and belonging to a group or with other individuals (Ryan & Deci, 2002). The positive outcomes include satisfaction, interest, and most important to this dissertation, enjoyment. Meaning, enjoyment occurs when our psychological (nonhedonic) needs are satisfied (Tamborini et al., 2010).

Tamborini et al. (2010) tested the hypothesis of enjoyment as psychological need satisfaction. Results indicated autonomy ($\beta = .39$), competence ($\beta = .44$), and relatedness ($\beta = .22$) accounted for 51% of the variance in enjoyment. In follow up, to investigate the contribution of

arousal (pleasure) and absorption (engagement) to enjoyment with nonhedonic (competence and autonomy) needs, Tamborini et al. (2011) found absorption (β = .27) and arousal (β = .33) accounted for 54% of the variance in enjoyment, while competence (β = .31) and autonomy (β = .22) accounted for 13% additional variance. This study, which accounted for 67% of the variance in enjoyment, was the closest study to investigating the proposed multi-dimensional model of enjoyment, as it included some components of each dimension. In the previously reviewed research (Table 5) relating to enjoyment, constructs relating to psychological need satisfaction were the most prevalent.

Psychological need satisfaction is common throughout enjoyment literature, though often not identified as such. During review, constructs relating to knowledge, skill, or general proficiency were identified as competency. Competency need satisfaction is empirically tested, often while not specifically identifying it, such as competency need satisfaction (β = .58, β = .34, β = .29, β = .31, β = .44, β = .26), player competence (β = .59), mastery of controls (β = .32), complexity (β = -.23), game success (β = .34), ease of use (β = .35, β = .26), satisfaction with performance (β = .31), and perceived ability (beta =.22) (Davis, Bagozzi, & Warshaw, 1992; Lee & Tsai, 2010; Przybylski, Deci, Rigby, & Ryan, 2014; Lyons et al., 2014; Reinecke et al., 2012; Ryan, Rigby, & Przybylksi, 2006; Scanlan & Lewthwaite, 1986; Tamborini et al., 2010; Tamborini et al., 2011). One important aside, regarding research on flow, is that a portion of flow (challenge, skill, feedback, clear goals) can be simply categorized as competency need satisfaction as it relates to enjoyment. These aspects of flow have been found to be related to enjoyment, examples are challenges (β = .34), skills (β = .18), goal clarity (10.58% variance), feedback (9.85% variance), and challenge (8.20% variance) (Koufaris, 2002; Fu, Su, & Yu, 2009). For this dissertation, and conceptualization of enjoyment, these will be considered as competency need satisfaction.

Autonomy and constructs relating to identity and self-valued choices were identified in review, such as autonomy ($\beta = .49$, $\beta = .76$, $\beta = .22$, $\beta = .44$, $\beta = .39$), self-initiation (7.83% variance), exercise identity ($\beta = .24$), perceived effectance ($\beta = .78$), and unresolved curiosity ($\beta = -.32$) (Chen, Lu, & Wang, 2016; Fu, Su, & Yu, 2009; Isikman, 2014; ; Klimmt, Harmann, & Frey, 2007; Ryan, Rigby, & Przybylksi, 2006; Reinecke et al., 2012; Tamborini et al., 2011; Tamborini et al., 2010; Wininger, 1999). Lastly, relatedness and constructs related to social interaction were identified as important contributions to enjoyment, relatedness ($\beta = .12$, $\beta = .22$), perceived team members' valuable contributions ($\beta = .34$), social interaction ($\beta = .24$), negative adult involvement and interaction ($\beta = -.28$), positive adult involvement and interactions ($\beta = .16$), team atmosphere ($\beta = .20$), supportive relationships (29% variance), and non-supportive relationships (20% variance) (Chen, Lu, & Wang, 2016; Gomez, Wu, & Passerini, 2010; Kim, 1997; Ryan, Rigby, & Przybylksi, 2006; Scanlan & Lewthwaite, 1986; Tamborini et al., 2010; Wilks, Doull, Ng Chok, & Mashingaidze, 2017). The remaining constructs identified as need satisfaction were unable to be placed into individual needs, rather they encompass more than one psychological need. The depth of research on psychological need satisfaction as it relates to enjoyment provides a mountain of evidence suggesting its inclusion as a dimension of enjoyment. Need satisfaction accounts for the hypotheses five, six, seven, and eight:

Hypothesis 5 (H5): Competency need satisfaction is positively correlated with and is a sub-factor of enjoyment.

Hypothesis 6 (H6): Autonomy need satisfaction is positively correlated with and is a sub-factor of enjoyment.

Hypothesis 7 (H7): Relatedness need satisfaction is positively correlated with and is a sub-factor of enjoyment.

Hypothesis 8 (H8): Psychological need satisfaction (Competency, Autonomy, and Relatedness) is a factor of enjoyment and explains a significant portion of unique variance in enjoyment.

3.2 Enjoyment Defined

The purpose of this dissertation is to provide evidence for a measure of enjoyment applicable across domains. Through the formulation and testing of this new measure, this dissertation works to provide empirical evidence toward a new model and universal definition of enjoyment. With the multi-dimensional model previously proposed in mind, the universal definition of enjoyment offered is:

 a positive feeling, when engaged in a pleasurable and psychologically need-satisfying activity.

Resulting in the last hypothesis:

Hypothesis 9 (H9): A large portion of variance in enjoyment is explained by the combination of engagement, pleasure, and psychological need satisfaction.

To test the proposed multi-dimensional model and definition of enjoyment, empirical studies must be conducted. As the theoretical basis of enjoyment has been established, it is used as the guiding structure for three efforts for establishing a validated measure of enjoyment. The first effort involves the creation of an initial item pool of questions related to enjoyment and truncation of those items using an expert review and questionnaire pilot study. The second effort utilizes an exploratory factor analysis (EFA) to investigate the model fit and reduce the number of items on the scale. The third effort gathers another independent sample using the revised scale from the EFA to further validate the scale and investigate model fit.

CHAPTER 4
EMPIRICAL STUDIES

To determine the feasibility of the new model of enjoyment, a series of studies will be conducted. To test the validity of the model as a conceptualization of enjoyment, a new measure will be developed. In use of the guidelines, provided by DeVellis (2016), scale development is a multi-stage iterative procedure. To create a new measure of enjoyment, multiple steps will be utilized in four separate efforts. The efforts include an initial item pool generation, expert review, an exploratory factor analysis, and confirmatory factor analysis.

4.1 Effort One: Item Generation

Given the theoretical foundation for enjoyment provided, a deductive approach to item generation was chosen. This approach will help to ensure content adequacy in the final scale (Schwab, 1980). The development of the enjoyment scale will closely follow existing guidelines for reporting scale creation and validation (e.g. Cabrera-Nguyen, 2010; DeVellis, 2016; Fry, 1977; Hinkin, 1998; Hinkin, Tracey, & Enz, 1997; Schwab, 1980). As the purpose of the scale, to measure enjoyment across domains, is clear, the first step to scale development is to generate a large pool of items that are candidates for eventual inclusion in the scale (DeVellis, 2016). New items will be created to creatively exhaust the intended dimensions of enjoyment, though not venturing beyond the bounds of the constructs. Then, items will be selected from previously developed scales, guided by the theoretical dimensions of enjoyment provided a priori, and compared to the list of creatively generated items. Multiple items for each dimension constitute a more reliable test than individual items, but each must still be sensitive to the true score of the

latent variable (DeVellis, 2016). Therefore, at the end of the item generation process, each dimension will have multiple items to create a sensitive and reliable scale.

Following initial pool development, the items will be evaluated for redundancy, length, reading level, double-barreled items, leading items, and ambiguity. Redundancy can be both a good and bad feature of items within a scale. By using multiple and seemingly redundant items, the common content of the items will summate across items while their irrelevant idiosyncrasies will cancel out. This provides greater reliability when attempting to capture the phenomenon of interest, by developing a set of items that reveal the phenomenon in different ways (DeVellis, 2016). However, not all forms of redundancy are desirable. Redundancy with respect to grammatical structure and incidental vocabulary should be avoided, such as: "I enjoyed this activity," and "I enjoyed the activity." Redundant items with respect to the variable of interest, but not in grammatical structure and incidental vocabulary, yield more reliable item sets, such as "I lost track of time during the activity," and "I felt completely absorbed by the activity." Generally, good items should be similar insofar as they share relevance to the intended variable, but not in any other regard (DeVellis, 2016). Most of the remaining characteristics that reliably separate better from worse items relate to clarity.

Aside from item selection and generation processes, the phrasing of each statement was scrutinized. Exceptionally lengthy items were modified to reduce unnecessary wordiness, with care used to avoid sacrificing meaning of an item in the interest of brevity. Consideration for reading level, equating longer words and sentences as well as semantic and syntactic factors with higher reading level, was given to the item pool (Fry, 1977). Semantic and syntactic factors include avoiding multiple negatives, double-barreled items, ambiguous pronoun references, misplaced modifiers, and using adjective forms instead of noun forms. The goal is to aim for a reading level

between fifth and seventh grade and reduce sources of item ambiguity, which is most appropriate for the general population (DeVellis, 2016). Good item phrasing allows for a reduction in cognitive demands on questionnaire respondents and increase the quality of response (Lietz, 2008).

Another consideration in scale design is the inclusion of negatively worded (reverse-scored) items. The intent is to avoid acquiescence, affirmation, or agreement bias, a respondent's tendency to agree with items irrespective of their content. However, several research studies show combining negatively and positively worded items introduces more errors in the data (Currey, Callahan, & DeVellis, 2002; Hinkin, 1997, 1998; Lietz, 2008). The disadvantages of items worded in an opposite direction outweigh any benefits, therefore the strategy was not adopted for use in this dissertation.

The next step, if following guidelines for scale development, is to determine the format for measurement. In terms of the number of response scale options, five to seven options are generally agreed to retain reliability and validity without negatively impacting respondents due to cognitive burden (Lietz, 2008). A seven-point Likert scale was chosen to ensure discrimination on the new scale of enjoyment, with response options used to provide gradations (DeVellis, 2016). Vagias' (2006) seven-point unipolar response anchors for level of agreement were selected to provide the gradations and ensure discrimination (Figure 7).

Figure 7. Seven-point Likert Scale with Unipolar Response Anchors

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

4.1.1 Method

Literature for each hypothesized dimension of enjoyment was reviewed in an effort to creatively exhaust the researchers in developing an original item pool. Previous literature including enjoyment (e.g., Nabi & Kremar, 2004; Warner, 1980), engagement (Aykol, Aksatan, & İpek, 2017; Chen, Lu, & Wang, 2016; Frenzel et al., 2009; Fu, Su, & Yu, 2009; Koufaris, 2002; Lin, Gregor, & Ewing, 2008; Lyons et al., 2014; Shafer & Carbonara, 2015; Tamborini et al., 2011; Weibel et al., 2008; Wiersma, 2001), flow (e.g., Kimiecik & Harris, 1996; Nakamura & Csikszentmihalyi, 2014; Sherry, 2004; Sweetser & Wyeth, 2005; Wankel, 1993), pleasure (e.g., Davidson, 2003; Kubovy, 1999; Nabi et al., 2006; Nabi et al., 2006; Przybylski, Deci, Rigby, & Ryan, 2014; Tamborini et al., 2011; Wiersma, 2001), and psychological need satisfaction (e.g., ; Chen, Lu, & Wang, 2016; Fu, Su, & Yu, 2009; Davis, Bagozzi, & Warshaw, 1992; Isikman, 2014; Lyons et al., 2014; Przybylski, Deci, Rigby, & Ryan, 2014; Reinecke et al., 2012; Ryan & Deci, 2000, 2002; Ryan & Deci, 2014; Lee & Tsai, 2010; Ryan, Rigby, & Przybylksi, 2006; Scanlan & Lewthwaite, 1986; Tamborini et al., 2011; Tamborini et al., 2010; Wininger, 1999) were used in the creative generation process. Potential scale items were then drawn from 35 existing questionnaires that measure important constructs related to enjoyment (e.g. pleasure, engagement, psychological need satisfaction). Table 7 presents an overview of the key dimensions of existing questionnaires used in the item pool generation.

Table 7. Overview of the questionnaires used in the item pool generation

Source	Number of Items	Target Measure	Dimensions
Agarwal, R., & Karahanna, E. (2000) – Cognitive Absorption Scale	20	Cognitive Absorption	• Temporal Dissociation • Focused Immersion • Heightened Enjoyment • Control • Curiosity
Bakker, A. B. (2008) - The Work-Related Flow Inventory (WOLF)	13	Work-Related Flow	• Absorption • Work Enjoyment • Intrinsic Work Motivation
Brockmeyer, J. H., et al. (2009) – Game Engagement Questionnaire (GEQ)	19	Engagement	• N/A
Carpenter, P. J., et al. (1993) – Sport Commitment	19	Sport Commitment	• Sport Enjoyment • Personal Investments • Social Constraints • Involvement Opportunities
Chou, T. J., & Ting, C. C. (2003) – Addiction and Flow Experience	40	Flow	• Concentration • Playfulness • Distortion in Time perception • Telepresence • Exploratory Behavior
Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992)	14	Computer Usage Intentions	• Perceived Usefulness • Enjoyment • Perceived Ease of Use • Perceived Output Quality
Davis, F.D. (1989) – Perceived Usefulness and Perceived Ease of Use	12	Perceived Usefulness and Ease of Use	• N/A
Deci, E. L., & Ryan, R. M. (2003) – Intrinsic Motivation Inventory (IMI)	45	Intrinsic Motivation	• Interest/Enjoyment • Perceived Competence • Effort/Importance • Pressure/Tension • Perceived Choice • Value/Usefulness • Relatedness

Table 7 (continued). Overview of the questionnaires used in the item pool generation

Source	Number of Items	Target Measure	Dimensions
Fang, X., Chan, S., Brzezinski, J., & Nair, C. (2010) – Enjoyment of Computer Game Play	11	Enjoyment	• Affect • Behavior • Cognition
Frederick, C. M., & Ryan, R. M. (1993) – Motivation for Physical Activity Measure (MPAM)	23	Motivation	• Body-Related • Competence • Interest/Enjoyment
Fu, F. L., Su, R. C., & Yu, S. C. (2009) - EGameFlow	42	Enjoyment	• Concentration • Goal Clarity • Feedback • Challenge • Autonomy • Immersion • Social Interaction • Knowledge Improvement
Gomez, E. A., Wu, D., & Passerini, K. (2010) – Computer Supported Team-based Learning (CS-TBL)	18	Learning Experience	• Individual Preparedness • Perceived team-members' valuable contributions • Perceived Motivation • Perceived Enjoyment • Perceived Learning
Hou, J. (2011) – Gratification of Social Games	22	Social Gratification	• Competition • Challenge • Social Interaction • Diversion • Fantasy • Arousal
Hsu, C.L., & Lu, H.P. (2004) – Technology Acceptance Model (TAM)	19	Technology Acceptance	• Social Norms • Perceived Critical Mass • Perceived Ease-of-Use • Perceived Usefulness • Flow Experience • Attitude • Intention to Play

Table 7 (continued). Overview of the questionnaires used in the item pool generation

Source	Number of Items	Target Measure	Dimensions
IJsselsteijn, W., De Kort, Y. A. W., & Poels, K. (2008) – Game Experience Questionnaire	33	Play Experience	• Immersion • Flow • Competence • Positive Affect • Negative Affect • Tension • Challenge
Jackson, S. A., & Marsh, H. W. (1996) – Flow State Scale	36	Flow	• Challenge-Skill Balance • Action-Awareness • Clear Goals • Unambiguous Feedback • Concentration on Task • Paradox of Control • Loss of Self-Consciousness • Transformation of Time • Autotelic Experience
Kendzierski, D., & DeCarlo, K. J. (1991) – Physical Activity Enjoyment Scale (PACES)	18	Enjoyment	• N/A
Lee, M.C. and Tsai, T.R. (2010) – Intention to Play	28	Play Intentions	• Continued Intention • Attitude • Subjective Norm • Perceived Behavioral Control • Perceived Enjoyment • Perceived Ease of Use • Flow Experience • Human-Computer Interaction • Social Interaction
Lin, A., Gregor, S., & Ewing, M. (2008) – Enjoyment of Web Experiences Scale	12	Enjoyment	• Engagement • Positive Affect • Fulfillment

Table 7 (continued). Overview of the questionnaires used in the item pool generation

Source	Number of Items	Target Measure	Dimensions
Lin, S. F. (2005) – Media Enjoyment	6	Enjoyment	• N/A
McMillan, L. H., et al. (2002) – Workaholism Battery	14	Workaholism	• Enjoyment • Drive
O'Brien, H. L., & Toms, E. G. (2013) – User Engagement Scale (UES)	28	Engagement	• Perceived Usability • Novelty, Felt Involvement, Endurability • Aesthetic Appeal • Focused Attention
Peterson, C., Park, N., & Seligman, M. E. (2005). – Orientation to Happiness	18	Happiness	• Meaning • Pleasure • Engagement
Phan, M. H., Keebler, J. R., & Chaparro, B. S. (2016) – Game User Experience Satisfaction Scale (GUESS)	55	User Experience	• Usability/Playability • Narratives • Play Engrossment • Enjoyment • Creative Freedom • Audio Aesthetics • Personal Gratification • Social Connectivity • Visual Aesthetics
Richard, M., et al., (1997). – Motivation for Physical Activity Measure-Revised (MPAM-R)	30	Motivation	• Enjoyment • Appearance • Social • Fitness/Health • Competence/Challenge
Rigby, S., & Ryan, R. (2007) – The Player Experience of Need Satisfaction (PENS)	21	Intrinsic Motivation	• Competence • Autonomy • Relatedness • Presence/Immersion • Intuitive Controls
Schaufeli, W. B., et al., (2002). – Engagement Scale	17	Engagement	• Vigor • Dedication • Absorption

Table 7 (continued). Overview of the questionnaires used in the item pool generation

Source	Number of Items	Target Measure	Dimensions
Sherry, J. L., et al., (2006). – Video Game Uses and Gratifications Instrument	20	Gratification	• Competition • Challenge • Social Interaction • Diversion • Fantasy • Arousal
Sørebø, Ø., & Hæhre, R. (2012). – Need Satisfaction Survey	18	Need Satisfaction	• Autonomy • Relatedness • Intrinsic Motivation • Perceived Discipline Relevance
Stevens, M., et al., (2000) – The Groningen Enjoyment Questionnaire (GEQ)	10	Enjoyment	• N/A
Venkatesh, V. (2000). – Perceived Ease of Use	40	Ease Of Use	• Behavioral Intention to Use • Perceived Usefulness • Perceived Ease of Use • Computer Self-efficacy • Facilitating Conditions • Computer Anxiety • Computer Playfulness • Perceived Enjoyment • Objective Usability • Voluntariness of Use
Watson, D., & Clark, L. A. (1999). – The PANAS-X	55	Affect	• Fear, Hostility, Guilt, Sadness • Joviality, Self-Assurance, Attentiveness • Shyness, Fatigue, Serenity, Surprise
Wiebe, E. N., Lamb, A., Hardy, M., & Sharek, D. (2014). – Revised User Engagement Scale (UESz)	29	Engagement	• Focused Attention • Perceived Usability • Aesthetics • Satisfaction

Table 7 (continued). Overview of the questionnaires used in the item pool generation

Source	Number of Items	Target Measure	Dimensions
Wiersma, L. D., (2001) – The Sources of Enjoyment in Youth Sport Questionnaire (SEYSQ)	28	Enjoyment	• Self-References Competency • Competitive Excitement • Affiliation with Peers • Effort Expenditure • Positive Parental Involvement • Other-Referenced Competency and Recognition
Wirth, W., Hofer, M., & Schramm, H. (2012). – Hedonic and Eudaimonic Entertainment Questionnaire	18	Hedonic and Eudaimonic Experience	• Purpose in Life/Self-Acceptance • Autonomy • Competence/Personal Growth • Relatedness • Activation of Central Values • Hedonic Entertainment

Following the exhaustive and previous literature item generation processes, the item pool was reviewed for refinement. First, items were screened for redundancy and similar phrasing (e.g. "I had total concentration" and "I was deeply concentrated") and reduced to a single item. Additionally, any items which were considered too specific (e.g. "I believe social games are playful") or too vague (e.g. "My thoughts go fast") were removed from the pool. Last, items which were deemed as irrelevant to assessment of enjoyment were also removed (e.g. "I feel bored"). The item pool went through multiple iterations and evaluations to determine that each item was unique and relevant to enjoyment.

4.1.2 Results

After the item pool generation steps and refinement, 136 items remained for the expert review stage. Ninety-three items were self-written based on hypothesized dimensions and 544

items were identified from previous scales for possible inclusion. Out of the 637 items, 279 items were removed for redundancy or similar phrasing, and 222 items were removed from the pool for vagueness, specificity, or lack of conceptual relevance. Forty-three out of the 136 items retained for the expert review were adapted from previous scales. Table 8 presents a summary of the number of items that were developed from each source. Appendix A provides a detailed list of the 136 items, their assumed dimension(s), and their source(s). This list of statements was then reviewed by a panel of experts in the next effort.

Table 8. Overview of number of items derived from each source

Source	Name of Questionnaire	Number of Items
Agarwal & Karahanna (2000)	Cognitive Absorption Scale	1
Bakker (2008)	Work-Related Flow Inventory	1
Brockmyer et al. (2009)	Game Engagement Questionnaire (GEQ)	1
Chou & Ting (2003)	Flow Experience*	3
Frederick & Ryan (1993)	Motivation for Physical Activity Measure (MPAM)	4
Fu, Su, & Yu (2009)	EGameFlow	4
Hou (2011)	Gratification of Social Games*	1
Jackson & Marsh (1996)	Flow State Scale	3
Kendzierski & DeCarlo (1991)	Physical Activity Enjoyment Scale (PACES)	3
Lin, Gregor, & Ewing (2008)	Enjoyment of Web Experiences*	1
Peterson, Park, & Seligman (2005)	Orientations to Happiness*	1
Phan, Keebler, & Chaparro (2016)	Game User Experience Satisfaction Scale (GUESS)	1
Richard et al. (1997)	Motivation for Physical Activity Measure-Revised (MPAM-R)	1
Rigby & Ryan (2007)	Player Experience of Need Satisfaction (PENS)	2
Schaufeli et al. (2002)	Engagement Scale*	3
Sherry et al. (2006)	Video Games Uses and Gratifications Instrument*	1
Sørebø, Ø., & Hæhre, R. (2012)	Need Satisfaction Scale*	1
Stevens et al. (2000)	Groningen Enjoyment Questionnaire	1
Watson & Clark (1999)	Positive and Negative Affect Schedule-Expanded Form (PANAS-X)	7

Table 8 (continued). Overview of number of items derived from each source		
Source	**Name of Questionnaire**	**Number of Items**
Wiersma (2001)	Sources of Enjoyment in Youth Sport Questionnaire (SEYSQ)	2
Wirth, Hofer, & Schramm (2012)	Hedonic and Eudaimonic Entertainment Questionnaire*	1
Current research	The ENJOY scale	93

*The questionnaires was not formally named. Thus, a generic name was chosen for identification.
Note: Some of the items were derived from multiple sources.

4.2 Effort Two: Expert Review

4.2.1 Method

The next effort in the scale validation process is to have the initial item pool reviewed by experts (Cabrera-Nguyen, 2010; DeVellis, 2016; Worthington & Whittaker, 2006). The review serves multiple purposes related to maximizing the content validity of the scale. Content validity refers to the extent to which a specific set of items reflects the content domain, and is easiest to evaluate when the domain (in this case enjoyment) is well defined. Having experts review the item pool further ensures the items on the scale are appropriate and relevant to the measurement of enjoyment.

4.2.1.1 Participants

To assess not only the content validity of the item pool to enjoyment, but also the quality of items and scale, two types of experts were asked to assist the scale development process in the expert review. The first, consisted of reviewers who had knowledge and experience of scale development and design. The second, consisted of academics who studied enjoyment in specific

domains (e.g. sports, video games). All of the experts were contacted and recruited through a personal network.

In total, there were seven experts (N = 7) who participated in the study. Five were both enjoyment and scale/questionnaire experts. Two were scale/questionnaire experts and experts in a related construct (i.e. Play, Game Satisfaction). All seven experts hold a Ph.D. degree in the field of psychology. In addition, all seven experts rated themselves as a 6 or 7 when asked to rate their experience level with scale/questionnaire development on a 1-7 scale (1= Novice, 7 = Expert). Table 9 shows a summary of the expert's background information.

Table 9. Demographics of the expert panel

Variable	Value
Total (N)	7
Age:	
25-34	2
35-44	3
45-54	1
55-61	1
Gender:	
Male	5
Female	2
Ethnicity:	
White (not of Hispanic origin)	5
Black or African American	
American Indian or Alaska Native	
Hispanic/Latino	
Asian or Pacific Islander	1
Other	1
I do not wish to answer	
Expert Type:	
Scale/Questionnaire	2
Enjoyment	0
Both	5
Education Level:	
Ph.D.	7

4.2.1.2 Materials

Qualtrics© Online Survey Software was used to create the questionnaire and capture comments. The online questionnaire contained a series of 136 statements from the generated item pool on a seven-point Likert scale (1 = Strongly disagree, 7 = Strongly agree). Appendix C provides a detailed list of the 136 statements used in this effort.

4.2.1.3 Procedure

After clicking the link to begin the study, all participants were asked to read and acknowledge that they have read the consent form (see Appendix B). Then participants were asked to select an activity to evaluate (see Appendix C for the instructions). Before participants began evaluating, they were asked to provide basic information on their experience with the activity (see Appendix D). Participants then progressed to the evaluation where they were asked to rate their enjoyment of the activity using a seven-point Likert scale and provide comments about the items.

To minimize scrolling the 136 items divided into sets of five items per page, with the last page containing 6 items. The order of the statements were presented in a randomized order. Appendix E provides a screenshot of one of the evaluation pages. For each item, participants were asked to scrutinize and identify any problematic items in terms of wording, as well as offer suggestions for item improvements. Furthermore, evaluators were asked to identify any items that they felt might not be relevant to enjoyment.

After the 136 items were reviewed, participants gave an overall enjoyment rating of the activity they chose to evaluate on a zero-ten slider (see Appendix F). Following the enjoyment rating, evaluators were asked to provide general comments/feedback about the entire scale as a whole, including its adequacy at measuring enjoyment (see Appendix G). Lastly, participants were asked to provide some basic demographic information (see Appendix H). The entire questionnaire

took 30-90 minutes to complete, and all participants were offered a $30 Amazon gift card upon completion of the survey.

4.2.2 Results

Overall, the expert reviewers commented the item pool was reflective of enjoyment and was a good representation of the multi-dimensional model of enjoyment. The reviewers identified certain items which were unclear (e.g. "How I behaved was up to me the last time I did the activity"). Also, some items were identified as ambiguous (e.g. "The activity was arousing") lacking clarity about whether they were referencing sexual or general states. Based on rater suggestions, items containing unclear wording, were ambiguous, or too grammatically complex were removed or changed.

After the expert feedback was analyzed, a total of 11 items were removed from the pool and 24 item's wording was modified for clarity. Most of the items were deleted for being too abstract or too similar to better items in the scale. No items were recommended to be added to the scale. Following the expert review, the total item pool was reduced to 125. These items were used in the Exploratory Factor Analysis. Appendix I provides a detailed list of the items that were revised and removed from the item pool.

4.3 Effort Three: Exploratory Factor Analysis

Following the expert review, the next step was to administer the questionnaire to a developmental sample and evaluate the items. To concentrate on the adequacy of items, the sample should be sufficiently large to eliminate subject variance as a concern. Several researchers suggest a sample size of at least 300 people is adequate for factor analysis techniques (Cabrera-Nguyen, 2010; DeVallis, 2016; Nunnally, 1978). Therefore, a minimum sample size of 300 participants was set for the developmental sample. However, it has been suggested that only after data analysis will the researchers know whether the sample size collected was appropriate for the study or not (Cabrera-Nguyen, 2010). Consequently, the same researchers recommend scale development studies which try to obtain the largest sample possible, then determine whether additional data collection is needed based on initial factor analysis results (Cabrera-Nguyen, 2010; DeVallis, 2016). Thus, the goal for the sample size was set to 600 to ensure an adequate sample is gathered for this effort.

4.3.1 Method

Over a 6-week period, a total of 1483 surveys were collected after the survey links were closed. During the screening and cleaning process 46.2% (n = 685) of the surveys contained non-valid responses. Consequently, these surveys were removed from the final data set. Survey responses were removed due to one of the following reasons:

1. Incomplete responses – participants stopped taking the study or submitted a response without completing the survey and never went back to finish it.

2. Participant was less than 18 years of age – the study was only approved by the ERAU Institutional Review Board (IRB) to collect data from people who were at least 18 years of age.

3. Multiple submissions by the same participant. Only the first valid survey was retained in cases where more than one surveys were submitted by the same participant.

4. Time – participants completed the survey, but their response was either 2 standard deviations above or below the mean. This included those who took the survey in less than 200 seconds (which would require a reading speed of greater than 1600 words per minute) and those who took longer than 2600 seconds.

5. Failed Validation Questions – two validation questions were included in the survey which simply asked the respondents: "When you read this question please answer option five, somewhat agree..." and "When you read this question please answer option two, disagree...". Responses removed did not answer the questions correctly.

6. Biased responses – participants selected the highest or lowest response on the rating scale for all items.

4.3.1.1 Participants

After screening and cleaning the data, a total of 798 responses remained for the analysis. The final data set was based on a sample of people, between 18 to 74 years of age (M = 34.71, SD = 12.55). Approximately 60% were females, 68% White, and 90% had at least some college experience. Table 9 provides a summary of participants' demographics. Figures 8 and 9 visualize the geocoordinates of respondents in a heatmap and provide a summary of the activities participants based their responses on, respectively.

Table 10. Demographics of participants in the EFA study

Variable	Value
Total (N)	798
Mean Age in years (SD)	34.71 (12.55)
Gender	
Male	308 (38.6%)
Female	479 (60%)
Other	9 (1.1%)
Ethnicity	
White (not of Hispanic origin)	541 (67.8%)
Black or African American	69 (8.6%)
American Indian or Alaska Native	10 (1.3%)
Hispanic/Latino	51 (6.4%)
Asian or Pacific Islander	120 (15.0%)
Other	3 (0.4%)
I do not wish to answer	4 (0.5%)
Education Level	
Less than high school	5 (0.6%)
High school graduate or GED	78 (9.8%)
Some college	236 (29.6%)
College Graduate (2- and 4-year degree)	343 (43.1%)
Post-graduate degree (MA, PhD, Law, Medical, or Professional school)	135 (17%)
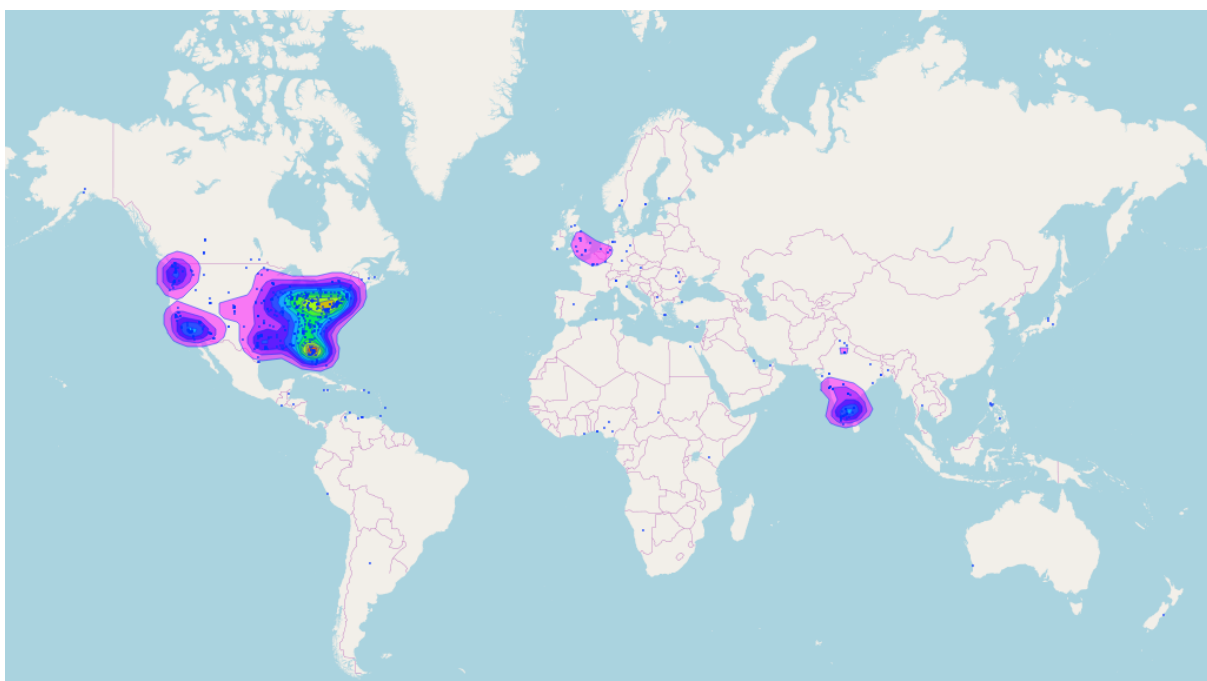
Figure 8. Geocoordinate heatmap of respondents in the EFA study
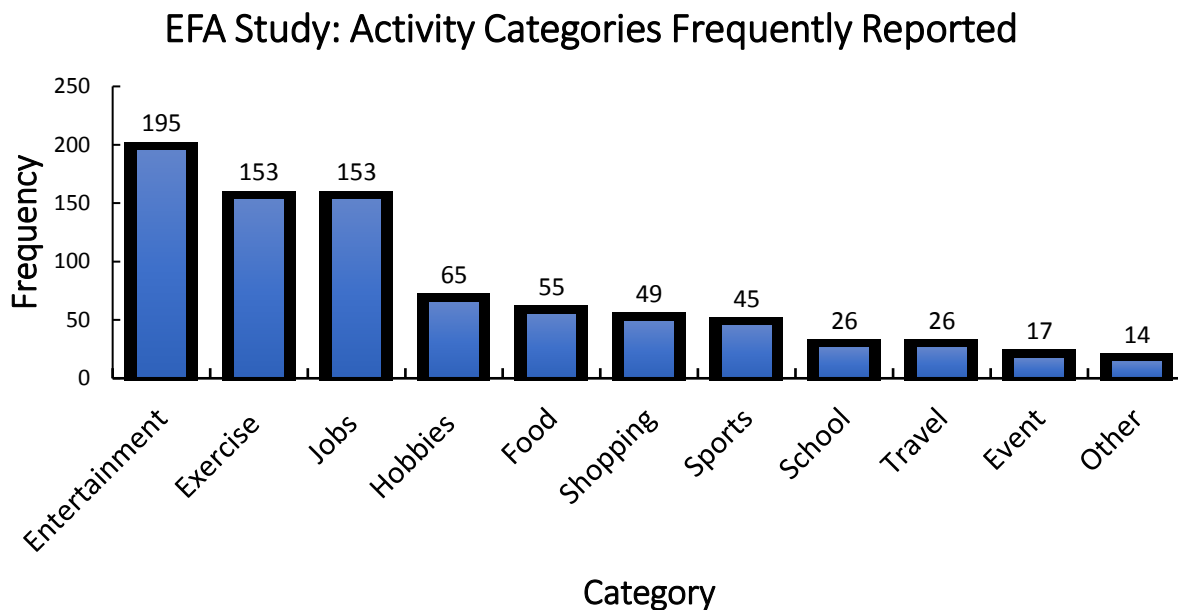
Figure 9. Activity categories participants reported frequently doing in the EFA study

4.3.1.2 Activity

After naming the activity the participant chose to evaluate, participants were given four questions regarding their experience with the activity. This information was used to assess the level of experience participants had with the activities reported. Participants were asked the amount of time they spent doing the activity, years of experience, hours in a typical week, and days in a month. Most respondents reported spending between one to three hours doing the activity they chose. Also, a majority (54.5%) of respondents indicated that they had been doing the activity for five or more years and spent less than eight hours a week doing the activity. Finally, a large majority (71%) of participants reported spending at least 4 days a month doing the activity. Figures 10, 11, 12, and 13 present a visual illustration of the time spent engaged in the reported activity, for how long participants had been doing the activity, how many hours a week they participated, and how many days in a month they spent doing the activity, respectively.

EFA Study: Time Spent Doing the Activity
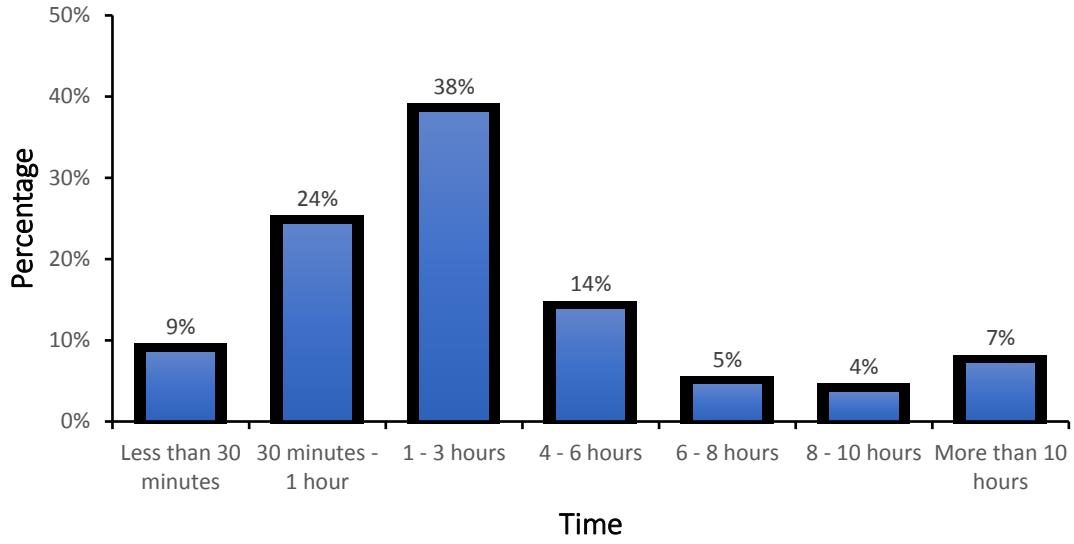
Figure 10. Time participants spent doing the activity in the EFA study

EFA Study: Experience with Activity
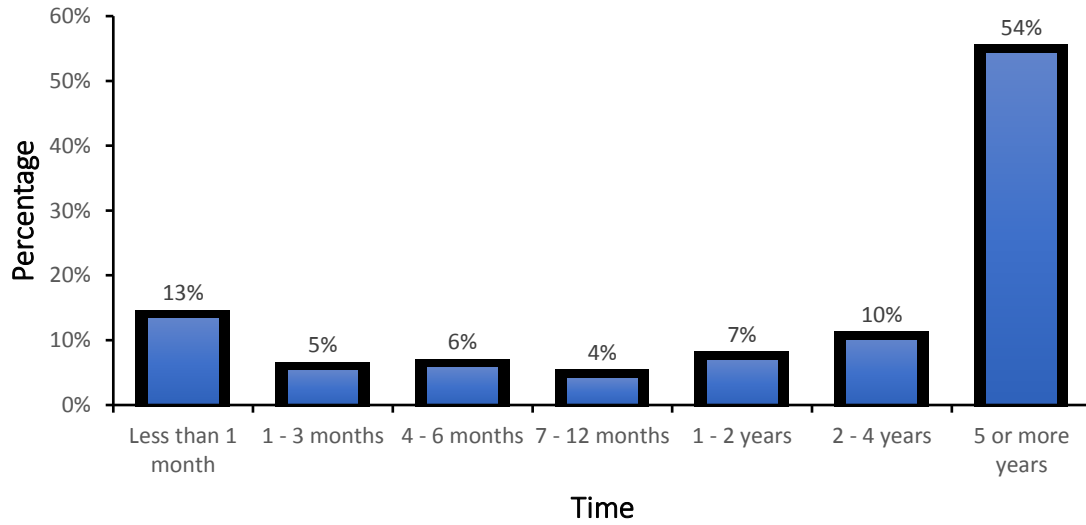
Figure 11. How long participants have been doing the activity in the EFA study

EFA Study: Hours in a Week
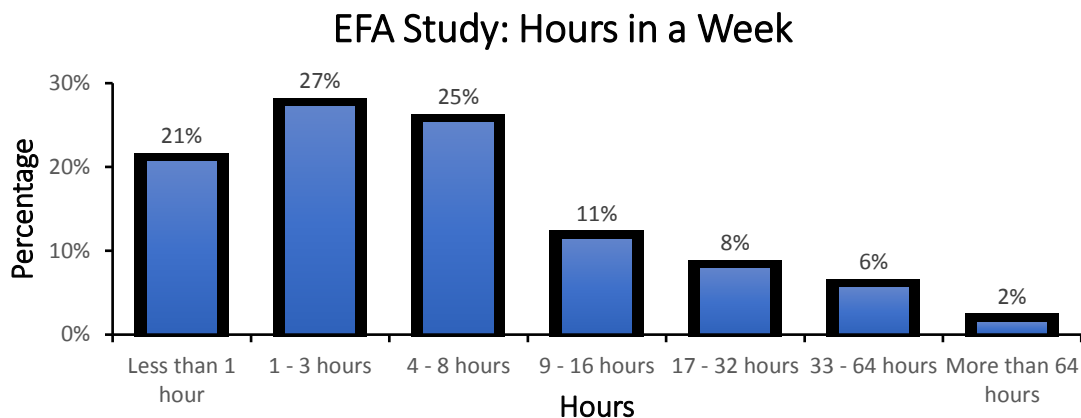
Figure 12. Hours in typical week participants do the activity in the EFA study

EFA Study: Days in a Month
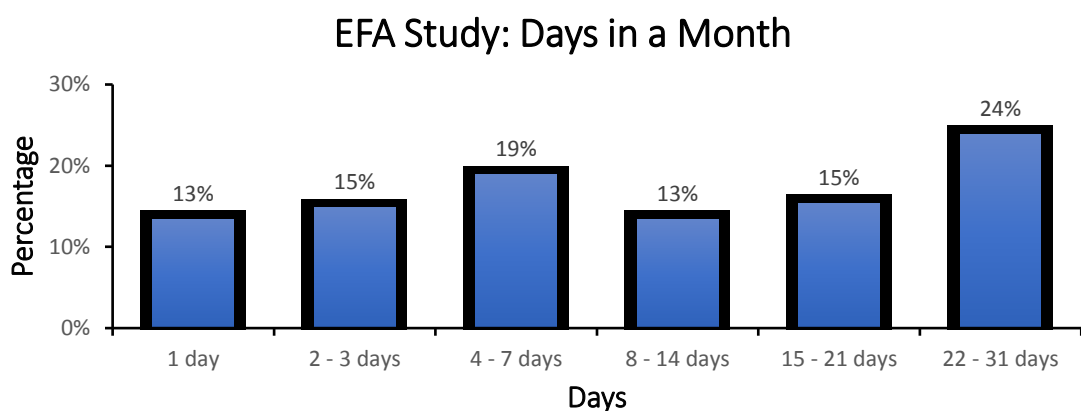
Figure 13. Days in typical month participants do the activity in the EFA study

In total, out of the 798 activities participants named to evaluate, 374 (46.9%) were unique activities. Appendix J provides a detailed list of all the name activities along with a main category and sub-category they were classified under. The activities evaluated in the EFA study covered a variety of different activities (e.g. Entertainment, Exercise, Food, Sports, Shopping, Jobs). Additionally, most of the activities evaluated were classified as either Entertainment, Exercise, or Jobs. Table 11 presents an overview of all the activities evaluated in the EFA study.

Table 11. Overview of activities evaluated in the EFA study

Main Category	*n*	Percent
Entertainment (e.g. Video Games, TV, Movies, Board Games, Music, Reading, Sex, Recreation)	195	24.4%
Exercise (e.g. Walking, Running, Swimming, Hiking, Yoga, Weight Lifting)	153	19.2%
Jobs (e.g. Chores, Cleaning, Errands, Job Tasks)	153	19.2%
Hobby (e.g. Fishing, Gardening, Drawing, Painting, Photography)	65	8.1%
Food (e.g. Cooking, Eating, Drinking)	55	6.9%
Shopping (e.g. Groceries, Online Shopping, Clothes, Bargain Shopping)	49	6.1%
Sports (e.g. Soccer, Football, Basketball, Golf, Tennis, Volleyball, Rugby, Bowling, Martial Arts)	45	5.6%
School (e.g. Studying, Homework, Teaching)	26	3.2%
Travel (e.g. Driving car, Flying, Riding Motorcycle, Visiting Family, Traveling Abroad)	26	3.2%
Event (e.g. Parties, Marriages, Funerals, Birthdays)	17	2.1%
Other (e.g. Relaxing, Talking, Religion)	14	1.8%

Finally, at the end of the survey participants were asked to rate their level of enjoyment with the activity on a 1-10 slider. Most of the activities evaluated in the EFA study were rated as enjoyable (M = 7.54, SD = 2.29). Participants tended to evaluate activities they "Liked" rather than "Disliked". Figure 13 shows a visual representation of participants' overall level of enjoyment with the activity they rated.

EFA Study: Overal Level of Enjoyment with Activity
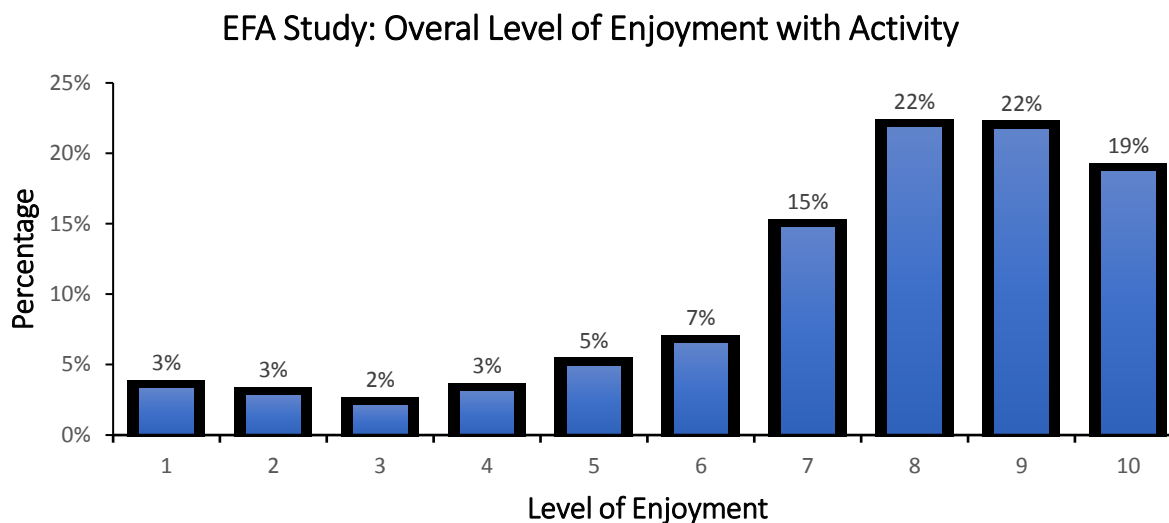
Figure 14. Participant rated overall level of enjoyment for activity in the EFA study

4.3.1.3 Materials

Qualtrics© Online Survey Software was used to create the questionnaire. After clicking the anonymous link, participants were directed to the first section which contained a consent form (see Appendix K). The second section asked participants to name an activity they did in the last 5 days (see Appendix C). The answer the participants chose in the second section (e.g. name of activity) was inserted into the survey questions throughout the remainder of the survey to help remind participants which activity they choose. In the third section participants were asked to briefly describe the activity they chose, and answer four basic questions about their experience with the activity (see Appendix L).

The fourth section contained a series of 125 enjoyment related statements on a seven-point Likert scale. An eighth option, "Not Applicable" or "N/A", was added at the end in the situation that the statement did not apply to the activity chosen. To minimize scrolling, each page displayed

a random set of five statements chosen from the item pool. An example screenshot of one of the survey pages and the list of statements used in this study are provided in Appendix M and N, respectively.

The fifth section asked participants to provide an overall rating of enjoyment for the activity they chose on a 1-10 slider (see Appendix O). Lastly, the sixth section contained demographic questions about the participants such as age, gender, ethnicity, and education (see Appendix P). After the participants finished filling out the survey, they were asked to provide a valid email to enter in the drawing for one of ten $30 Amazon gift cards. This contact data was stored separately from the study data and participants were informed their contact information would not be used for any other purposes except the selection of gift card winners.

4.3.1.4 Procedure

The survey link was shared on popular internet sites (e.g. Reddit.com) and a crowdsourcing internet marketplace (i.e. Amazon's Mechanical Turk). The survey was also posted on the ERAU Sona System where participants were offered a choice between 1 Sona credit or to be entered in a random drawing to have a chance to obtain one of ten $30 Amazon gift cards. All participants outside of Sona Systems were also offered the opportunity to be entered into the same raffle to win 1 of 10 $30 Amazon gift cards.

The survey link was open for 44 days, from November 20th, 2017 to January 3rd, 2018. After the data collection phase ended, a random drawing was conducted to select the gift card recipients. All participants who completed the survey and indicated that they wanted to enter into the gift card raffle were eligible to receive a $30 Amazon gift card. After the gift card recipients had confirmed their email address, a $30 gift card was sent from Amazon.com to their email address.

4.3.2 Results

IBM SPSS Statistics 23 and Microsoft Excel 2016 were used to analyze the data.

4.3.2.1 Normality

Results of the Shapiro-Wilk and ocular inspection of the histograms revealed that each of the 125 items deviated significantly from a normal distribution. Participants tended to give positive ratings about the activity they chose. This is consistent with participants' reports of overall enjoyment for the activity near the end of the survey. The majority tended to choose activities they liked rather than disliked. Most of the data was moderately skewed (i.e., skewness $< |2|$ and kurtosis < 7; Finney & Distefano, 2006). Additionally, there are two variables with skewness value greater than $|2|$ and/or kurtosis value greater than 7. Appendix Q contains a detailed report of the skewness and kurtosis values of all the items.

When looking at options for transforming the data, the decision was made to keep the data untransformed. There were several reasons for keeping the data untransformed. It allows for easier interpretation of results, and reflects the true nature of the data collected. Moreover, leaving the data untransformed more closely matches the exploratory nature of the study. Researchers note non-normal data is common in survey research and often conduct factor analysis on severely non-normal data (Blanca, et. al. 2013; Wang, Fan, & Wilson, 1996). Likewise, researchers have demonstrated that data transformations are not always appropriate when item responses are skewed, specifically in relation to Cronbach's alpha and Pearson product-moment correlation (Norris & Aroian, 2004).

4.3.2.2 Missing Data

Missing responses and "N/A" responses were treated as missing values. In total, there was 3.9% of the data missing, which is deemed as inconsequential (Tabachnick & Fidell, 2012; Bennett, 2001). Results of Little's MCAR test χ^2 (44279, N = 798) = 45,981.095, p < .001 suggested that the data was not missing completely at random. Every one of the variables (n = 125) and cases (n = 798) contained at least one missing value. The percentage of missing values for each variable or item ranges from 0.1% to 16.2%. All the variables contained less than 20% of missing values, thus none was removed from the initial stage of analyses. Table 10 lists all of the variables that contained over 10% of missing values with their mean and standard deviation. Appendix R provides a complete list of all of the variables with missing values.

Since the missing data was scattered throughout cases and variables, the deletion of cases would mean a substantial loss of subjects. Therefore, the decision was made to estimate the missing data using a data estimation technique (e.g. regression, multiple imputation). The missing data technique decided on was Expectation Maximization (EM; Dempster, Laird, & Rubin, 1977) method thru SPSS's Missing Value Analysis (MVA) module to replace the missing values. EM creates a missing data correlation matrix by assuming the shape of the distribution for the partially missing data and basing inferences about the missing values on the likelihood under that distribution (Tabachnick & Fidell, 2012). It is a two-step iterative procedure which finds conditional expectations of the missing data, then performs maximum likelihood (ML) estimation as though the missing data had been filled in.

Table 12. EFA study: variables with over 10% of missing values

Item	Missing Values		Mean	SD
	n	Percent		
The relationships I have with others through the activity are fulfilling.	129	16.2%	5.12	1.68
I received support from my friends which helped me do the activity.	128	16.0%	4.47	1.99
The activity made me feel closer to my friends.	113	14.2%	4.14	2.01
I received support from my family which helped me do the activity.	112	14.0%	4.61	1.99
I cooperated with others during the activity.	111	13.9%	4.96	1.95
The relationships I have with others through the activity are important.	108	13.5%	4.95	1.81
The activity made me closer to my family.	98	12.3%	4.23	2.03
I felt like I was important to others during the activity.	93	11.7%	4.65	1.86
I liked interacting with others during the activity.	92	11.5%	4.73	2.02
The activity provided me feedback which indicated how well I was doing.	90	11.3%	4.94	1.80
I got positive feedback from others when I did the activity.	83	10.4%	5.20	1.71

For respondents "the activity" was replaced with the name for the activity the respondent chose in the beginning of the survey.

The reason the EM method was chosen, because it is most appropriate for non-hypothesis testing analyses such as EFA and internal consistency calculations (Schlomer, Bauman, & Card, 2010). EM has also been shown to produce more accurate parameter estimations than traditional missing data techniques (e.g. pairwise deletion, mean substitution) in numerous studies (Enders, 2003; Fox-Wasylyshyn & El-Masri, 2005; Graham, 2009). Additionally, research has demonstrated that EM methods under non-ideal conditions (e.g. small sample size, non-normally distributed data) were superior to other methods (i.e., resemblance-based hot-deck imputation, iterative stochastic regression imputation; Gold & Bentler, 2000). Finally, it is also recommended

to use ML-based methods (e.g. EM) when dealing with data that is not missing completely at random (Tsikriktsis, 2005).

4.3.2.3 Factorability

The criteria used to determine the factorability of the data included adequacy of the sample size, correlation matrix, Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity, anti-image correlation matrix, communalities, and factor loadings. The first thing to consider was the adequacy of the sample size. Researchers recommend having a sample size of at least 300 cases is desirable for factor analysis (Nunnally, 1978; Cabrera-Nguyen, 2010; DeVallis, 2016). Comrey and Lee (1992) classified sample sizes of 100 as "poor", 300 as "good", and 500 as "very good". Thus, the sample size of this study (N = 798) was deemed to be suitable for conducting an Exploratory Factor Analysis (EFA).

Factorable matrices should include several sizable correlations (Tabachnick & Fidell, 2012). The expected size then is dependent on N, with larger sample sizes tending to produce smaller correlations. If no correlation exceeds |.30|, then the use of factor analysis (FA) is questionable. Multiple correlations existed above |.30|, thus so far, the use of FA is appropriate. Factor analysis is appropriate when there is high intercorrelations among many of the items and it is recommended that items which do not correlate above |.30| with many other items be removed (Field, 2009). No items were removed at this phase of analysis.

Next, Bartlett's (1954) test of sphericity and the Kaiser-Meyer-Olkin (KMO) were used to further examine the factorability of the data. Bartlett's test of sphericity tests if the correlation in a correlation matrix are zero and is highly sensitive to sample size (Tabachnick & Fidell, 2012). The Bartlett's test of sphericity revealed that the correlation matrix is significantly different from an identity matrix, χ^2 (7750) = 84,073.127, p < .001. Suggesting the intercorrelations among the items

are due to a common variance share between the items (Zygmon and Smith, 2014). The KMO is a ratio of the sum of squared correlations to the sum of squared correlations plus sum of squared partial correlations. A KMO value of .60 and above are required for good FA and approaches 1 if partial correlations are small (Tabachnick & Fidell, 2012). The KMO for the items was 0.97, which indicates the results obtained from a FA should generate distinct and reliable factors (Field, 2009).

Further, the anti-image correlation matrix, communalities, and factor loadings were examined to evaluate scale factorability. The anti-image correlation matrix contains the negatives of partial correlations between pairs of variables with effects of other variables removed (Tabachnick & Fidell, 2012). All diagonal elements of the anti-image correlation matrix should be greater than .50, with consideration given to dropping variables which do not meet the cutoff (Field, 2009; Tabachnick & Fidell, 2012). Initial data exploration revealed all the diagonal elements were greater than .50, with only one item below .90. MacCallum, Widaman, Zhang, and Hong (1999) show that samples in the range of at least 100-200 are acceptable with well-determined factors (i.e. most factors defined by many indicators) and communalities in the range of .5. The initial data explorations also revealed that most factors were defined by many indicators and many items had communalities in the .50 range. All indicators taken into account, with a sample size of ~800, the results further contribute to the overall confidence that conducting a factor analysis is appropriate (MacCallum, Widaman, Zhang, & Hong, 1999; Worthington & Whittaker, 2006).

4.3.2.4 Factor Extraction

Consideration was paid to the degree of non-normality of the data when deciding on an extraction method. Presently, maximum likelihood is used in many EFA studies as the main extraction method, but numerous researchers have warned against its use when the data is not normally distributed (Costello & Osborne, 2005; Treiblmaier & Filzmoser, 2010; Zygmon & Smith, 2014). Costello and Osborne (2005) suggest, instead, to use principal axis factoring (PAF) when data has violated the normality assumptions. The goal of principal factors extraction (e.g. PAF) is to extract maximum orthogonal variance from the data set with each succeeding factor and analyzes common variance with unique and error variance removed (Tabachnick & Fidell, 2012).

The next decision in factor extraction is which rotation method to use. In general, oblique rotations yield more accurate results than orthogonal rotations, especially when factors are thought to be correlated (Costello & Osborne, 2005; Tabachnick & Fidell, 2012; Treiblmaier & Filzmoser, 2010; Worthington & Whittaker, 2006). While orthogonal solutions offer greater ease of interpretation, they strain "reality" unless the underlying processes are almost independent (Tabachnick & Fidell, 2012). Oblique rotations, on the other hand, provide conceptual advantages but practical disadvantages if the factors may be correlated. Researchers maintain the best way to determine the appropriate rotation method is to first perform and oblique rotation on the data and see if there are inter-factor correlations (Field, 2009; Tabachnick & Fidell, 2012).

Tabachnick and Fidell (2012) suggest running an oblique rotation and looking at the factor correlation matrix for correlations around .32 and above. If correlations exceed .32, then there is 10% (or more) overlap in variance, which is enough to warrant use of oblique rotation. As far as which type of oblique rotation to perform, there is no widely preferred method of oblique rotation;

all tend to produce similar results (Fabrigar et al., 1999). Promax was chosen as it maximizes simple structure by clarifying which variables do and do not correlate with each other and has the added benefit of being fast for large data sets (Tabachnick & Fidell, 2012; Field, 2009). An initial EFA with the PAF extraction method and promax rotation (kappa = 4) was conducted. Kappa was set to default (4) because changes to Kappa appear to introduce unnecessary complexity for interpretation of results (Costello & Osborne, 2005). The results indicated multiple inter-factor correlations at .32 or above. Based on recommendations, with adequate correlations among factors, the decision to keep the oblique rotation was made.

To determine the number of factors to retain, multiple factor-retention strategies were employed and compared. One strategy by Cattell (1966) is to plot a graph of each eigenvalue against the factor with which it is associated, then visually examine the plot for a substantial break or the position of the elbow. Another, by Kaiser (1960) is to retain all factors with eigenvalues greater than 1. Results from an unrotated factor solution generated by the PAF extraction method indicates 16 factors met Kaiser's criterion (see Table 11). Visual inspection of the scree plot using Cattell's (1966) method suggested five factors (see Figure 9).

Another extraction method, parallel analysis, was proposed by Horn (1965) and is regarded as one of the best methods for determining the correct factor solution (Henson & Roberts, 2006; Matsunaga, 2010; Russell, 2002; Zygmon & Smith, 2014). Parallel analysis is a 3-step iterative procedure which is an alternative to retaining all principal components with eigen values greater than 1. A parallel analysis works by performing a principle component analysis (PCA) repeatedly on a randomly generated data set, then the generated eigenvalues are averaged and compared to the results from the real data set (Tabachnick & Fidell, 2012). Each factor from the real data set is

retained if its eigenvalue exceeds the parallel factor's randomly generated and averaged eigenvalues.

O'connor's (2000) SPSS syntax was used to conduct a parallel analysis. The syntax was set to run 1000 parallel data sets with the distributions and random data eigenvalue' percentile at 95%. The syntax was set to run principle components analysis based on permutations of the original data set. Permutations of the original data set is recommended by the author when the data does not meet the normality assumptions. Results revealed 9 underlying factors (see Table 12).

Table 13. Initial eigenvalue output

Factor #	Eigenvalue	% Variance
1	43.595	34.876
2	8.191	6.553
3	6.675	5.340
4	5.004	4.003
5	3.680	2.944
6	2.524	2.019
7	2.322	1.858
8	1.862	1.490
9	1.737	1.390
10	1.455	1.164
11	1.379	1.103
12	1.191	.953
13	1.168	.934
14	1.119	.895
15	1.076	.861
16	1.028	.822
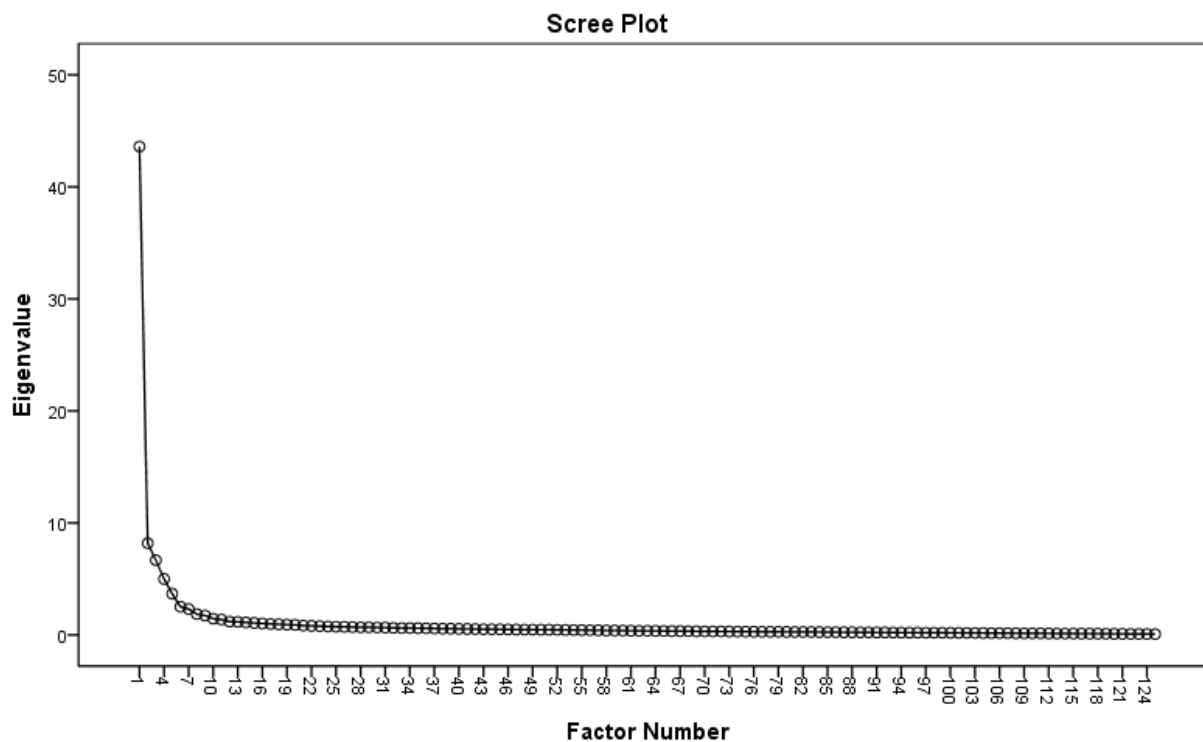
Figure 15. Scree plot for unrotated factor solution

Table. 14 parallel analysis results

Factor #	Original Data's Eigenvalue	Parallel Factors' Eigenvalue
1	43.595	1.90
2	8.191	1.85
3	6.675	1.82
4	5.004	1.79
5	3.680	1.76
6	2.524	1.73
7	2.322	1.71
8	1.862	1.68
9	1.737	1.66

To further guide the process of factor retention, other criteria were applied to the factor structure in addition to Kaiser's (1960) criterion, Cattell's (1966) scree test, and Horns' (1965) parallel analysis. Specifically factors with fewer than three items would be rejected to avoid weak and unstable factors (Costello & Osborne, 2005; Tabachnick & Fidell, 2012). Lastly, good factors should have simple structure and are easy to explain. Therefore, factors which could not be interpreted meaningfully will not be retained.

The primary goal of factor analysis is to uncover a parsimonious structure solution through explanation of the data with the fewest number of factors possible. Therefore, the decision was made to avoid retaining more than 10 factors. As a result, the 16-factor solution resulting from Kaiser's eigenvalue (1) criterion would not be considered. To explore possible factor solutions further the results from the scree plot and parallel analysis would be used as the boundaries for possible factor solutions.

Five EFAs were conducted with a PAF extraction method and promax rotation for a 5-, 6-, 7-, 8-, and 9-factor solution. Both pattern matrix and structure matrix were examined during the process of factor interpretation. However, because the factors are correlated, the pattern matrix was the primary focus of factor interpretation (Costello & Osborne, 2005; Field, 2009; Russell, 2002; Tabachnick & Fidell, 2012). Researchers deem the pattern matrix as being more meaningful in determining which items load uniquely on which factor. In terms of the cutoff values for item loading, the recommended range is from |.32| to |.70| (Hinkin, 1995; Field, 2009; Matsunga, 2010; Tabachnick & Fidell, 2012). The value of |.40| was selected for item loadings. This value was selected because it is the most common cutoff value and it falls in the range of recommended cutoff values. The value equates to approximately 16% overlapping variance between variable and factor.

4.3.2.5 Item Removal

Inspections of the factor solutions revealed the 5-factor solution had the most interpretable structure and clear variable loadings. Also, the 5-factor solution was most conceptually relevant to the multi-dimensional model of enjoyment established a priori. Next, it is important to examine the 5-factor solution with weak variables removed. Weak variables appeared to be interfering with the other factor solutions. To improve the interpretability of the data structure, an item removal procedure was implemented at this stage.

Multiple criteria were used for the item removal process. Items which were candidates for deletion consisted of items that: contain factor loadings below |.40|, crossload on two or more factors with loading values greater than |.32|, have a communality coefficient below .30, make little or no contribution to the internal consistency of the scale scores, have low conceptual relevance to a factor, and/or not conceptually consistent with other items loaded on the same factor (Costello & Osborne, 2005; Worthington & Whittaker, 2006; Tabachnick & Fidell, 2012). Each time an item was deleted an EFA and internal reliability analysis (Cronbach's α) was run to ensure the deletion would not have a major effect on the factor structure or internal consistency of the scale.

Based on the criteria, 33 items were removed from further analysis during item removal. Appendix S presents a list of all the items that were excluded during item removal at this stage. The Cronbach's α for the remaining 92 items was 0.98, which indicates "excellent" internal consistency of the items on the scale (Hinkin, 1997; Nunnally & Bernstein, 1994).

4.3.2.6 The 5-Factor Solution

Following item removal, the 5-factor solution maintained the most interpretable structure and clear factor loadings. The 5-factor solution aligns with ocular inspection of the scree plot. Together, the five factors explained 59.5% of the total variance (see Table 15). The Cronbach's alpha for each factor surpassed or met the 0.90 "excellent" threshold, with all five subscales ranging from 0.90 to 0.98 (Hinkin, 1997; Nunnally & Bernstein, 1994).

The five factors are named: Pleasure, Relatedness, Competence/Challenge, Improvement, and Engagement. The Pleasure factor contained 35 items and accounted for 37.8% of the variance (see Table 16). The Relatedness factor contained 17 items and accounted for 8.0% of the variance (see Table 17). The Competence factor contained 13 items and accounted for 6.1% of the variance (see Table 18). The Challenge/Improvement factor contained 14 items and accounted for 4.2% of the variance (see Table 19). Finally, The Engagement factor contained 13 items and accounted for 3.4% of the variance (see Table 20). Appendices T and U provide a complete look at the pattern matrix and structure matrix of the 5-factor solution, respectively.

Table 15. 5-Factor solution: summary of eigenvalues and Cronbach's alphas

Factor Number	# of Items	Eigenvalues	% of Variance	Cronbach's α
Factor 1: Pleasure	35	34.37	37.4	0.98
Factor 2: Relatedness	17	6.99	7.6	0.95
Factor 3: Competence	13	5.19	5.6	0.92
Factor 4: Challenge/Improvement	14	3.69	3.7	0.92
Factor 5: Engagement	13	2.63	2.9	0.90

Note: Eigenvalues were based on the Promax Rotation (Kapp = 4).

Table 16. Factor 1 (Pleasure): summary of the factors' items

Item	Mean	SD	Factor Loadings		h^2
			Pattern	Structure	
The activity was pleasurable to me.	5.76	1.60	1.00	0.88	0.80
The activity made me feel happy.	5.82	1.52	0.95	0.88	0.78
The activity was fun.	5.75	1.67	0.94	0.84	0.74
The activity made me feel good.	5.89	1.40	0.93	0.86	0.76
I liked doing the activity.	6.01	1.48	0.93	0.85	0.74
The activity made me feel great.	5.64	1.57	0.90	0.88	0.79
I had fun during the activity.	5.77	1.56	0.90	0.83	0.73
Doing the activity made me feel joyful.	5.42	1.65	0.89	0.88	0.77
The activity cheered me up.	5.56	1.59	0.88	0.85	0.73
I felt delighted when I did the activity.	5.41	1.63	0.86	0.87	0.75
I felt cheerful during the activity.	5.53	1.54	0.84	0.84	0.72
The activity brought out good feelings.	5.76	1.44	0.84	0.85	0.74
I felt glad the last time I did the activity.	5.82	1.39	0.81	0.80	0.65
I felt excited the last time I did the activity.	5.32	1.71	0.79	0.84	0.72
I felt positive sensations the last time I did the activity.	5.72	1.45	0.79	0.84	0.72
The activity was relaxing.	5.21	1.87	0.78	0.66	0.47
I felt refreshed after the activity.	5.17	1.79	0.78	0.72	0.53
I felt energized by the activity.	5.28	1.72	0.78	0.79	0.65
I enthusiastically did the activity.	5.62	1.53	0.76	0.83	0.70
The activity was invigorating.	5.17	1.67	0.76	0.80	0.66
I felt content during the activity.	5.72	1.40	0.75	0.77	0.62
The activity made me feel energetic.	5.13	1.77	0.73	0.78	0.65
Doing the activity made me feel alive.	5.27	1.66	0.73	0.81	0.69
My body felt good when I did the activity.	5.19	1.74	0.73	0.70	0.51
I felt good inside when I did the activity.	5.80	1.38	0.73	0.79	0.65
The activity excited my senses.	5.31	1.68	0.72	0.80	0.65
I felt lively during the activity.	5.36	1.61	0.72	0.81	0.68
I felt thrilled the last time I did the activity.	4.97	1.81	0.72	0.80	0.66
The activity made me feel alive.	5.31	1.66	0.72	0.81	0.67
The activity was exhilarating.	4.96	1.80	0.69	0.79	0.66
I would choose to do the activity again.	6.41	1.14	0.68	0.60	0.38
The activity made me feel stimulated.	5.59	1.54	0.67	0.75	0.59
I found myself smiling during the activity.	5.35	1.73	0.65	0.70	0.57
I felt personally interested in the activity.	5.90	1.42	0.60	0.73	0.55
The activity was worthwhile.	6.20	1.10	0.41	0.52	0.34

Note: Pattern = Pattern Matrix, Structure = Structure Matrix, and h^2 = Communality Coefficient

Table 17. Factor 2 (Relatedness): summary of the factors' items

Item	Mean	SD	Factor Loadings		h^2
			Pattern	Structure	
The activity was a shared effort with others.	4.14	2.18	0.88	0.79	0.65
I liked interacting with others during the activity.	4.56	2.01	0.85	0.83	0.69
I felt close to others when I did the activity.	4.43	1.93	0.84	0.86	0.74
I cooperated with others during the activity.	4.81	1.92	0.83	0.77	0.61
I felt connected with others during the activity.	4.54	1.96	0.82	0.84	0.71
I did the activity so I could interact with others.	3.72	2.18	0.79	0.75	0.58
The activity made me feel closer to my friends.	4.02	1.97	0.77	0.82	0.69
I wanted to do the activity with others.	4.72	2.08	0.74	0.71	0.51
I did the activity with friends.	3.89	2.32	0.74	0.73	0.55
The relationships I have with others through the activity are important.	4.81	1.78	0.71	0.74	0.56
I received support from my friends which helped me do the activity.	4.35	1.95	0.68	0.74	0.58
The relationships I have with others through the activity are fulfilling.	4.92	1.68	0.67	0.75	0.60
I was supported by others to do the activity.	4.99	1.66	0.66	0.68	0.48
I felt like I was important to others during the activity.	4.56	1.83	0.61	0.66	0.52
The activity made me closer to my family.	4.16	1.95	0.61	0.60	0.39
I received support from my family which helped me do the activity.	4.56	1.94	0.55	0.60	0.39
I felt a sense of belongingness when I did the activity.	5.00	1.67	0.47	0.65	0.55

Note: Pattern = Pattern Matrix, Structure = Structure Matrix, and h^2 = Communality Coefficient

Table 18. Factor 3 (Competence): summary of the factors' items

Item	Mean	SD	Factor Loadings		h^2
			Pattern	Structure	
I was proficient in the activity.	5.72	1.26	0.84	0.70	0.54
I felt competent at performing the activity.	5.89	1.22	0.83	0.75	0.57
I am good at the activity.	5.85	1.17	0.80	0.69	0.52
I felt very capable during the activity.	5.79	1.17	0.78	0.78	0.61
I felt like I did a good job the last time I did the activity.	5.92	1.11	0.75	0.76	0.58
I felt effective at doing the activity.	5.79	1.19	0.74	0.75	0.57
I felt competent when I was doing the activity.	5.81	1.19	0.68	0.68	0.47
I felt I was successful at completing the activity.	6.01	1.11	0.67	0.67	0.45
I felt in control of my actions during the activity.	6.00	1.10	0.56	0.58	0.35
I felt confident during the activity.	5.68	1.30	0.55	0.73	0.58
I felt my skills matched the challenges of the activity.	5.50	1.40	0.51	0.59	0.39
My ability to do the activity was well matched with the activity's challenges.	5.60	1.31	0.48	0.60	0.40
I had a good sense of how well I was doing during the activity.	5.73	1.16	0.48	0.63	0.45

Note: Pattern = Pattern Matrix, Structure = Structure Matrix, and h^2 = Communality Coefficient

Table 19. Factor 4 (Challenge/Improvement): summary of the factors' items

Item	Mean	SD	Factor Loadings		h^2
			Pattern	Structure	
The activity allowed me to develop new skills.	4.73	1.84	0.84	0.76	0.62
I felt challenged, but not under-challenged, during the activity.	5.05	1.65	0.82	0.70	0.51
I improved my skills the last time I did the activity.	5.10	1.61	0.82	0.77	0.60
I felt challenged, but not over-challenged, during the activity.	4.97	1.69	0.68	0.63	0.41
During the activity I was able to get better at doing it.	5.42	1.48	0.67	0.73	0.54
I liked the challenge the activity provided me.	5.36	1.58	0.66	0.77	0.65
I was able to overcome challenges during the activity.	5.24	1.43	0.66	0.67	0.47
I improved my knowledge when I did the activity.	4.86	1.78	0.63	0.64	0.45
I felt a sense of achievement when I did the activity.	5.80	1.32	0.59	0.67	0.52
The activity provided me feedback which indicated how well I was doing.	4.87	1.77	0.55	0.57	0.35
I felt daring during the activity.	4.15	1.83	0.49	0.59	0.40
I was able to apply my knowledge during the activity.	5.41	1.45	0.46	0.57	0.38
I felt proud when I did the activity.	5.44	1.47	0.46	0.68	0.54
I felt strong during the activity.	5.11	1.60	0.41	0.66	0.54

Note: Pattern = Pattern Matrix, Structure = Structure Matrix, and h^2 = Communality Coefficient

Table 20. Factor 5 (Engagement): summary of the factors' items

Item	Mean	SD	Factor Loadings		h^2
			Pattern	Structure	
I lost track of what was going on outside of the activity.	4.56	1.86	0.80	0.70	0.53
I lost track of what was going on around me during the activity.	4.55	1.84	0.78	0.70	0.51
I forgot what was going on around me during the activity.	4.58	1.81	0.75	0.70	0.51
I lost track of time during the activity.	5.01	1.78	0.66	0.63	0.40
When I did the activity, I thought about nothing else.	4.49	1.84	0.59	0.66	0.45
I blocked out most other distractions during the activity.	5.33	1.58	0.58	0.65	0.44
My attention was focused on the activity.	5.97	1.15	0.54	0.66	0.50
I felt absorbed in the activity.	5.60	1.42	0.52	0.69	0.53
I felt immersed in the activity.	5.67	1.36	0.51	0.71	0.58
I concentrated on the activity.	5.91	1.18	0.50	0.62	0.48
I remained concentrated on the activity.	5.85	1.22	0.49	0.65	0.51
I deliberately focused on the activity.	5.79	1.31	0.47	0.57	0.38
I felt engrossed by the activity.	5.29	1.62	0.46	0.64	0.48

Note: Pattern = Pattern Matrix, Structure = Structure Matrix, and h^2 = Communality Coefficient

Lastly, to develop an understanding about the relationships among the factors, the average ratings of all of the items per factor were calculated for each response and multiple Pearson's product moment correlations were performed. Pearson's correlation tests were also conducted to assess relationships between each of the five factors and the overall level of enjoyment experienced as rated by participants. Results reveal a significant positive relationship among all the factors and between the factors and overall enjoyment. Meaning, overall enjoyment ratings increased as the average of each factor increased. Table 21 presents the correlation results between factors and between each factor and overall enjoyment ratings.

Table 21. Factor correlations and correlations with overall enjoyment (N = 798, df = 797)

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Overall Enjoyment
Factor 1: Pleasure	1.00					
Factor 2: Relatedness	0.45^{**}	1				
Factor 3: Competence	0.56^{**}	0.33^{**}	1			
Factor 4: Challenge/Improvement	0.60^{**}	0.45^{**}	0.57^{**}	1		
Factor 5: Engagement	0.59^{**}	0.27^{**}	0.45^{**}	0.53^{**}	1	
Overall Enjoyment	0.77^{**}	0.38^{**}	0.38^{**}	0.42^{**}	0.44^{**}	1

Note: Overall enjoyment was based on a ten-point slider (M = 7.54, SD = 2.29)
**. Correlation is significant at the 0.01 level (2-tailed).

Based on these results, Hypothesis 1, 2, 3, 4, 5, 7, 8, and 9 were supported. Engagement, pleasure, and psychological need satisfaction (i.e. relatedness, competence) were all unique factors of, explained a portion of unique variance, and were positively correlated with enjoyment. These results do not strongly support Hypothesis 6, as autonomy was not found to be a unique factor of enjoyment.

4.3.2.7 Scale Length Optimization

To reduce cognitive burden on respondents, while maintaining the psychometric strength of the full scale, a short form will be developed (DeVellis, 2016). With 92 items remaining in the scale, a second item removal process was conducted to develop the short form of the scale. The goal of the scale length optimization is a scale with the best 5 items per subscale. Each subscale should retain a minimum of .83 reliability while dropping "bad" items (DeVellis, 2016). Criteria used to select items included: size of factor loadings in the 5-factor solution, average inter-item correlation, and change in alpha from the subtraction of the item.

Based on the established criteria, 67 items were removed from the scale. The remaining 5 items per factor retained reliabilities above 0.83 and the overall alpha of 0.91 indicating "excellent" overall reliability (Hinkin, 1997; Nunnally & Bernstein, 1994). Following item removal, the short form of the 5-factor solution maintained its structure and clear factor loadings. In the short form, the five factors explained 64% of the total variance (see Table 22). Appendices V provides a summary of the remaining factors' items.

Table 22. Short form 5-factor solution: summary of eigenvalues and Cronbach's Alphas

Factor Number	# of Items	Eigenvalues	% of Variance	Cronbach's α
Factor 1: Pleasure	5	7.66	30.6	0.95
Factor 2: Relatedness	5	2.80	11.2	0.92
Factor 3: Competence	5	2.19	8.6	0.87
Factor 4: Challenge/Improvement	5	1.79	7.1	0.86
Factor 5: Engagement	5	1.58	6.3	0.85

Note: Eigenvalues were based on the Promax Rotation (Kapp = 4).

4.3.2.8 Activity Experience and Enjoyment

To test whether enjoyment varied as a function of activity experience, multiple one-way ANOVAs to compare the effects of time spent doing the activity, experience with activity, hours in a week, and days in a month on enjoyment. There was a significant positive effect of time spent doing the activity ($F(6, 787) = 3.49$, $p = .002$) and hours in a week ($F(6, 787) = 4.43$, $p = .000$) on enjoyment. The more time spent on the activity and more hours in a week spent doing the activity resulted in significantly higher enjoyment ratings. There was a not a significant effect for experience with the activity ($F(6, 784) = 0.90$, $p = .489$) or days in a month spent doing the activity ($F(5, 787) = 0.88$, $p = 495$) on enjoyment. Interestingly, enjoyment varied with amount of hours spent doing the activity and during the week, but not in days or years of experience.

4.3.3 Discussion

The EFA study's results indicate the 5-factor solution was the most parsimonious and conceptually relevant model based on the observed data. Each of the five factors, minus one, were as predicted based on relevant theory and previous work. The 5-factor model consisted of the following underlying factors: Pleasure, Relatedness, Competence, Challenge/Improvement, and Engagement. Pleasure included the positive feelings and sensations felt resulting from the activity and during it. Relatedness involves feelings of shared effort, cooperating with, interacting with, feeling close to, and being supported by others. Competence centered on being proficient and competent in the activity and feelings of effectiveness and success. Challenge/Improvement refers to improving skills and a sense of achievement when doing a challenging activity. Engagement related to losing track of time during, intense concentration on, and feeling completely absorbed by the activity.

When looking at the 5 factors in relation to one another, Pleasure factor had the two highest correlation coefficients was between Pleasure and Challenge/Improvement ($r = 0.60$) and between Pleasure and Engagement ($r = 0.59$). Interestingly, this suggests feeling enjoyment during an activity is strongly related to four specific occurrences: positive sensations/feelings occurring, feeling challenged, feeling of skills improving, and being adequately engaged in the activity. However, in regard to variance explained, Competence (5.6%) and Relatedness (7.6%) account for a much larger portion of the variance than Challenge/Improvement (3.7%) and Engagement (2.9%). This implies that while Challenge/Improvement and Engagement were more strongly related to Pleasure, Competence and Relatedness contribute more to overall enjoyment. When looking at the five factors together, all had significant positive relationships with the overall enjoyment ratings. This provides further evidence of the construct validity of the scale. The

correlation coefficients for all five factors with overall enjoyment were in the medium to large range.

Interestingly, Pleasure alone accounted for 37.4% of the variance in the data in the full-length scale and was most highly correlated with overall enjoyment (r = 0.77). This could be due to the possibility the overall construct being measured is larger than enjoyment, and the pleasure subscale equates to enjoyment. Though, considering it only consists of positive feelings and sensations it is likely this is not the case. Based on the literature reviewed enjoyment consists of more than just positive feelings. Thus, when the new data sample collected for the CFA study a single factor model will be closely examined for indications if a single-dimension model of enjoyment better explains the data.

Psychometrically, the Cronbach's alpha statistics indicate that each of the five factors has great internal consistency in the full and short form. Therefore, it is likely the factors will remain stable in the CFA study. The CFA study will not only re-examine the reliability of the scale, but focus on evaluating overall fit of the full 5-factor model and short version. To increase the confidence of the 5-factor model, it will be compared against alternative models using goodness-of-fit statistics (i.e. 3-factor, 4-factor, 6-factor, Single-factor). The 4-factor model combined Challenge/Improvement, and Competence into a single factor. In the 3-factor model the Engagement subscale was combined into the combined Competence and Challenge/Improvement factor. Both the Relatedness and Pleasure factor remained stable.

4.4 Effort Four: Confirmatory Factor Analysis

To provide increased validity of the proposed model of enjoyment and confirm the 5-factor solution derived from the EFA, a confirmatory factor analysis (CFA) was used on a second large independent sample. The hypothesized 5-factor model was also be compared to alternative models using goodness-of-fit statistics. Two to three fit indices along with chi-squared were used to determine overall model fit and compare the 5-factor model against the 4-factor, 3-factor, and 1-factor models (Worthington & Whittaker, 2006). Like the EFA a minimum of 300 participants was set, and goal of 600, to ensure an adequate sample is gathered for this effort.

4.4.1 Method

Over a period of three and a half weeks (25 days), a total of 1112 surveys were collected after the survey links were closed. During the screening and cleaning process 39.9% (n = 444) of the surveys contained non-valid responses. Responses were removed for the same reasons listed in the EFA study (e.g. incomplete, failed validation questions, biased responses). Additionally, to ensure an independent sample was collected for the CFA, any surveys identified to be from the same person who participated in the EFA study were also removed.

4.4.1.1 Participants

After the data was screen and cleaned, a total of 668 responses remained for the analysis. The final data set was based on a sample of people, between 18 to 73 years of age (M = 34.76, SD = 11.64). Approximately 68% were females, 69% White, and 91% had at least some college experience. Table 23 provides a summary of participants' demographics. Figure 16 and 17 visualizes the geocoordinates of respondents in a heatmap and provides a summary of the activities participants choose, respectively.

Table 23. Demographics of participants in the EFA study

Variable	Value
Total (N)	668
Mean Age in years (SD)	34.76 (11.64)
Gender	
Male	212 (31.7%)
Female	451 (67.5%)
Other	5 (0.7%)
Ethnicity	
White (not of Hispanic origin)	459 (68.7%)
Black or African American	57 (8.5%)
American Indian or Alaska Native	7 (1.0%)
Hispanic/Latino	41 (6.1%)
Asian or Pacific Islander	80 (12.0%)
Other	17 (1.0%)
I do not wish to answer	7 (1.0%)
Education Level	
Less than high school	7 (1.0%)
High school graduate or GED	56 (8.4%)
Some college	200(29.9%)
College Graduate (2- and 4-year degree)	293 (43.9%)
Post-graduate degree (MA, PhD, Law, Medical, or Professional school)	112 (16.8%)
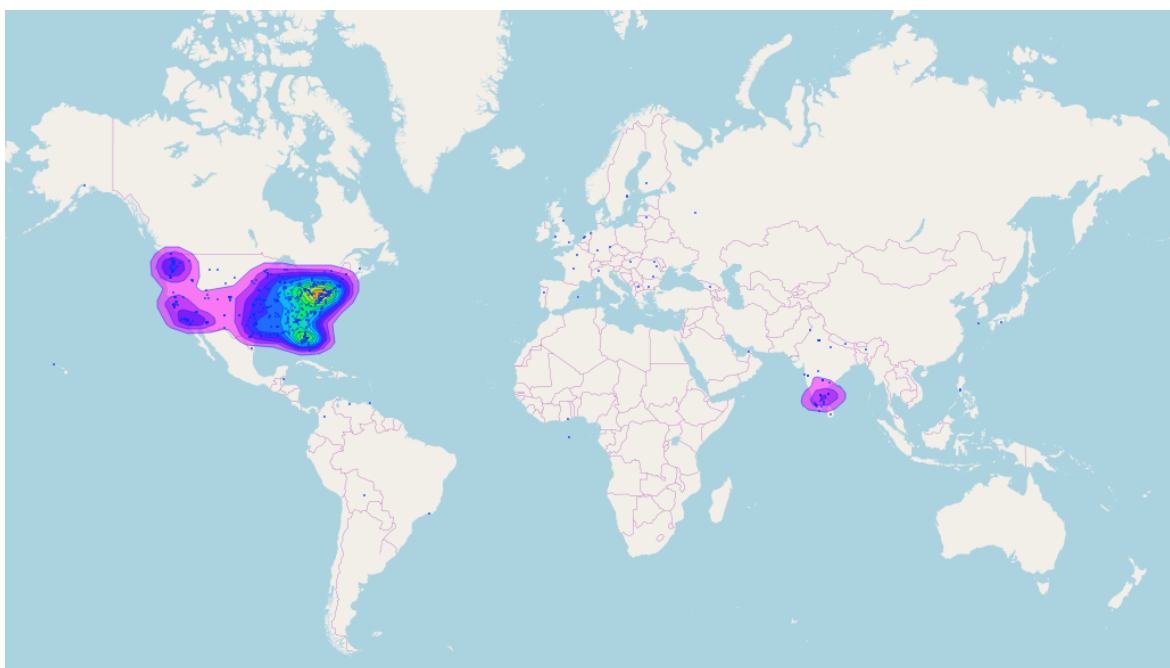
Figure 16. Geocoordinate heatmap of respondents

CFA Study: Activity Categories Frequently Reported
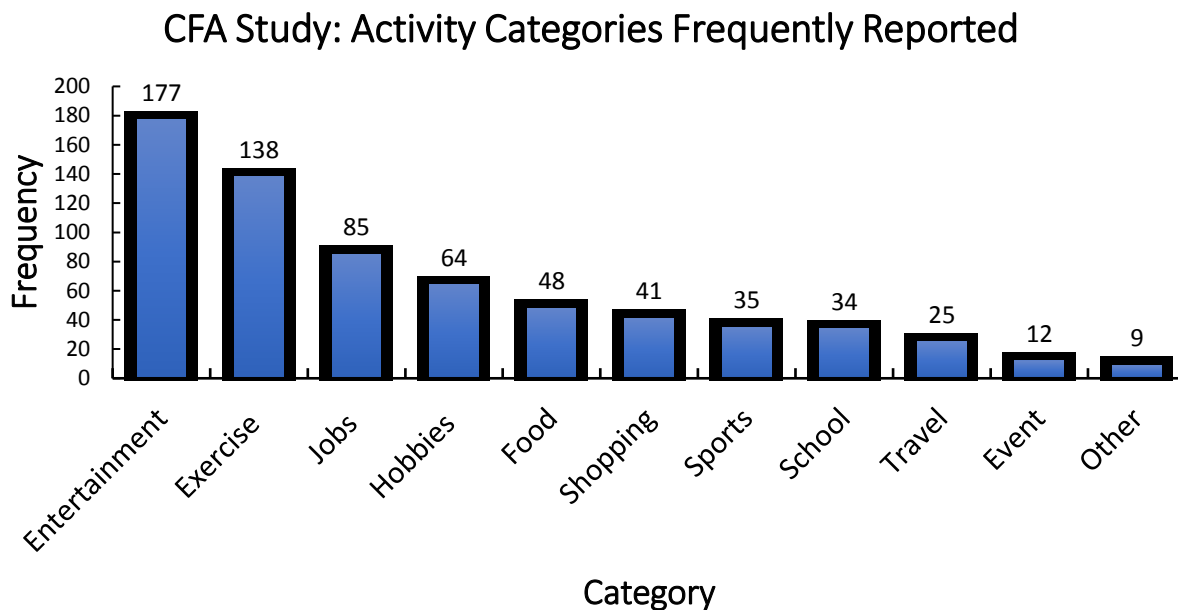
Figure 17. Activity categories participants reported frequently doing

4.4.1.2 Activity

Similar to the EFA, after naming the activity the participant chose to evaluate, participants were given four questions regarding their experience with the activity. Participants were again asked the amount of time they spent doing the activity, years of experience, hours in a typical week, and days in a month. Activities evaluated in the CFA study closely mirrored those from the EFA. Most respondents reported spending between one to three hours doing the activity and a majority (59.7%) indicated they had been doing the activity for five or more years. Additionally, most respondents spent less than eight hours a week doing the activity and a large majority (81.9%) of participants reported spending at least 4 days a month doing the activity. Figure 18, 19, 20, and 21 present a visual illustration of the time spent doing the activity, for how long they had been doing the activity, how many hours in a week, and how many days in a month they spent doing the activity, respectively.

CFA Study: Time Spent Doing the Activity
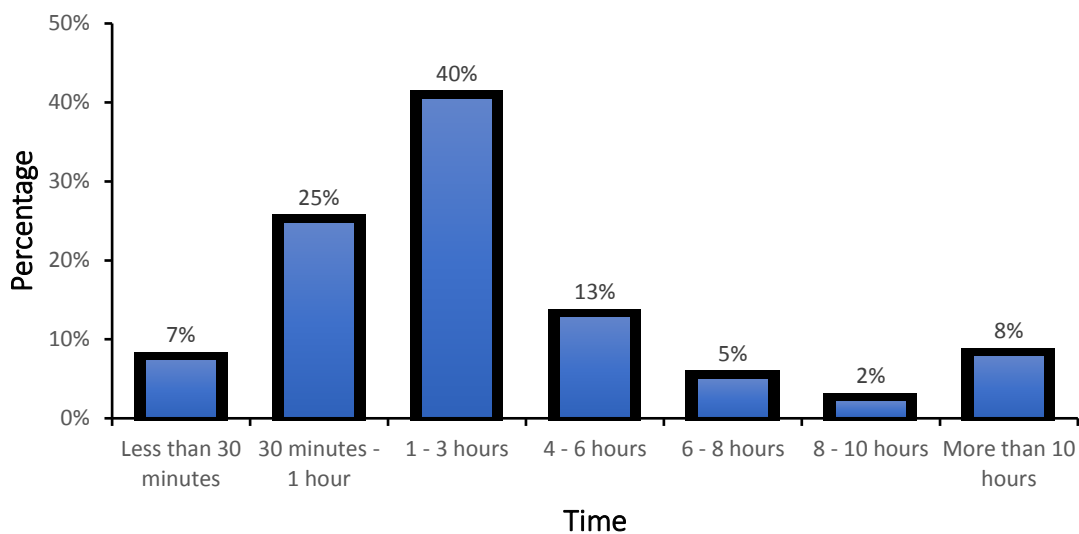
Figure 18. Time participants spent doing the activity in the CFA study

CFA Study: Experience with Activity
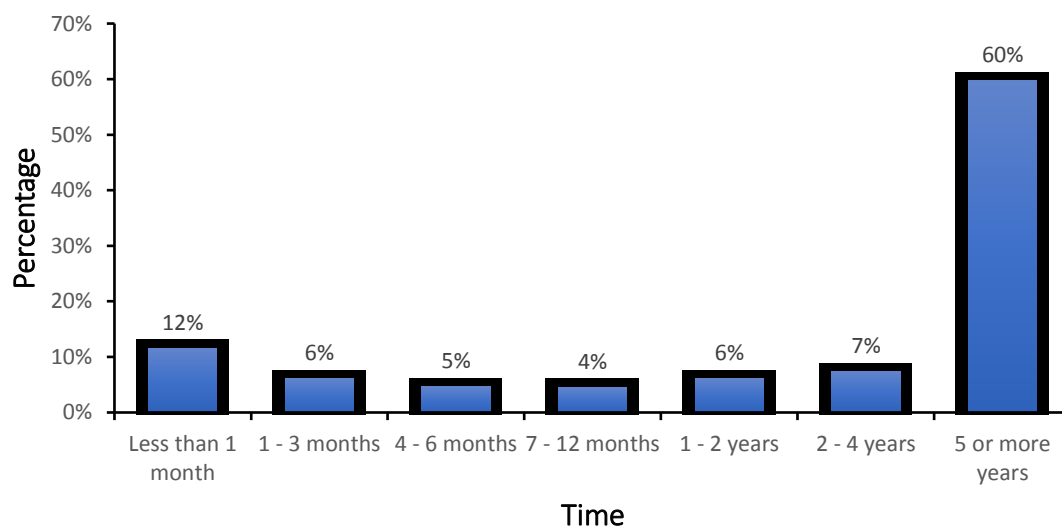
Figure 19. How long participants have been doing the activity in the CFA study

CFA Study: Hours in a Week
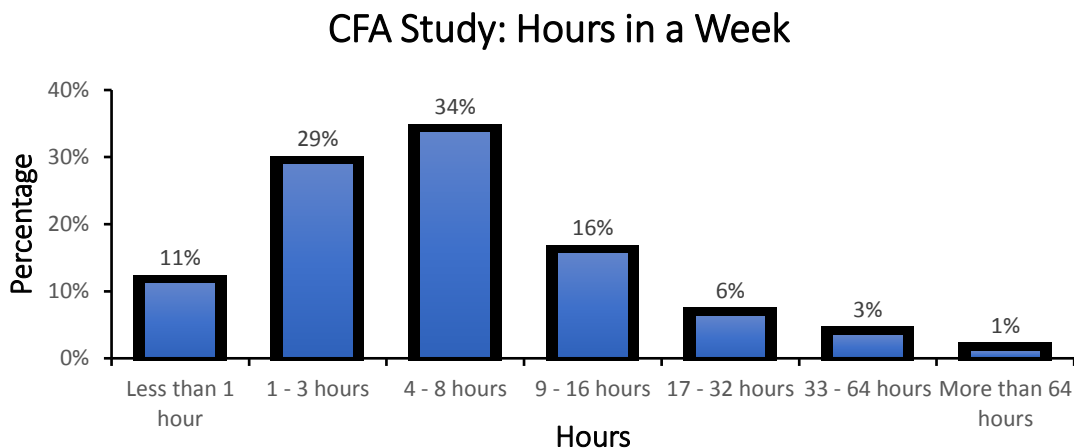
Figure 20. Hours in typical week participants do the activity in the CFA study

CFA Study: Days in a Month
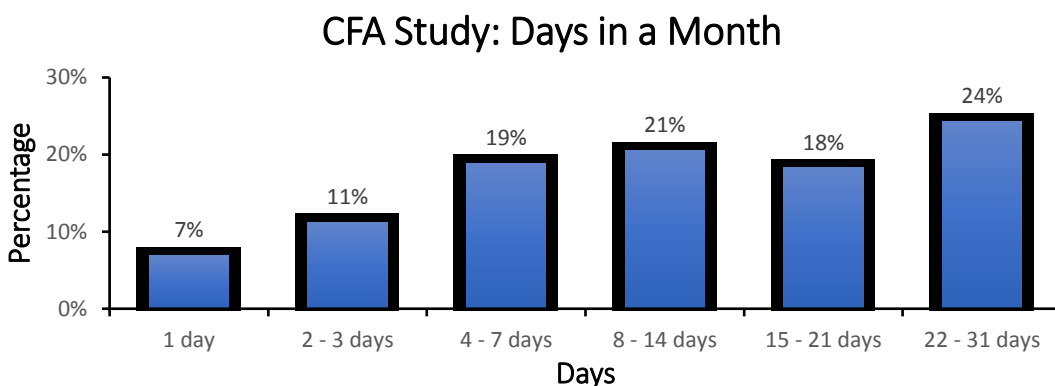
Figure 21. Days in typical month participants do the activity in the CFA study

Again, like the EFA out of the 668 activities participants evaluated, 365 (54.6%) were unique. Appendix W provides a detailed list of all the name activities along with a main category and sub-category they were classified under. The activities evaluated in the CFA study covered a larger proportion of different activities. Lastly, most of the activities evaluated were classified as either Entertainment, Exercise, or Jobs. Table 24 presents an overview of all the activities evaluated in the CFA study.

Table 24. Overview of activities evaluated in the EFA study

Main Category	*n*	Percent
Entertainment (e.g. Video Games, TV, Movies, Board Games, Music, Reading, Sex, Recreation)	177	26.5%
Exercise (e.g. Walking, Running, Swimming, Hiking, Yoga, Weight Lifting)	138	20.7%
Jobs (e.g. Chores, Cleaning, Errands, Job Tasks)	85	12.7%
Hobby (e.g. Fishing, Gardening, Drawing, Painting, Photography)	64	9.6%
Food (e.g. Cooking, Eating, Drinking)	48	7.2%
Shopping (e.g. Groceries, Online Shopping, Clothes, Bargain Shopping)	41	6.1%
Sports (e.g. Soccer, Football, Basketball, Golf, Tennis, Volleyball, Rugby, Bowling, Martial Arts)	35	5.2%
School (e.g. Studying, Homework, Teaching)	34	5.1%
Travel (e.g. Driving car, Flying, Riding Motorcycle, Visiting Family, Traveling Abroad)	25	3.7%
Event (e.g. Parties, Marriages, Funerals, Birthdays)	12	1.8%
Other (e.g. Relaxing, Talking, Religion)	9	1.3%

In the CFA, at the end of the survey each participant was asked to rate their level of enjoyment with the activity on a 1-10 slider. Most of the activities evaluated in the CFA study were rated as slightly more enjoyable (M = 7.83, SD = 2.17), than in the EFA study. Overall, participants again tended to evaluate activities they "Liked" rather than "Disliked". Figure 22 shows a visual representation of participants' overall level of enjoyment with the activity they rated.

CFA Study: Overal Level of Enjoyment with Activity
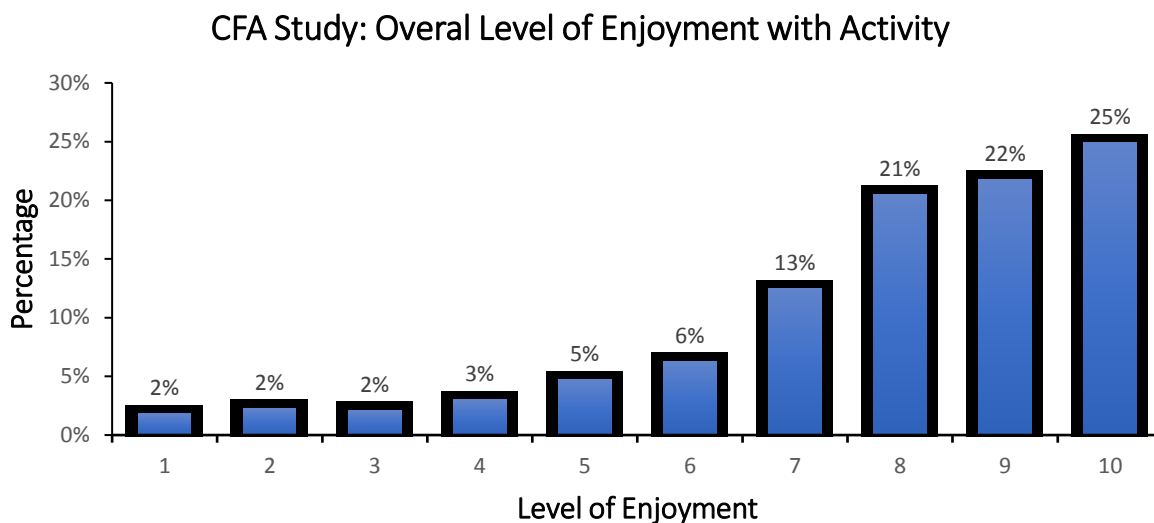
Figure 22. Participant rated overall level of enjoyment for activity in the CFA study

4.4.1.3 Materials

Qualtrics© Online Survey Software was used to create the questionnaire. The questionnaire used in this study was almost identical to the previous EFA study. The only difference between the two surveys was the total number of items. In this effort, the survey was reduced by 33 items to a total of 92 (see Appendix T). All the major sections and structure of the survey remained the same as in the EFA study.

The CFA study questionnaire contained the following sections: consent form (see Appendix X), named activity (see Appendix C), activity description and experience questions (see Appendix L), enjoyment statements (see Appendix T), overall rating of enjoyment (see Appendix O), and demographic questions about the participants (see Appendix P). After finishing the survey, participants were asked if they wanted to provide an email to enter in the drawing for 1 of 10 $30 Amazon gift cards and informed this contact data was only used for the selection of gift card winners.

4.4.1.4 Procedure

An anonymous survey link was shared on popular internet sites (e.g. Reddit.com) and a crowdsourcing internet marketplace (i.e. Amazon's Mechanical Turk). The survey was also posted on the ERAU Sona System where participants were offered a choice between 1 Sona credit or to be entered in a random drawing to have a chance to obtain 1 of 10 $30 Amazon gift cards. All participants outside of Sona Systems were also offered the opportunity to be entered in a raffle to win 1 of 10 $30 Amazon gift cards.

The CFA survey link collected data at a faster rate and was only open for 25 days, from January 9th, 2018 to February 3rd, 2018. After data collection phase ended, a random drawing was conducted to select the gift card recipients. All participants who completed the survey and indicated that they wanted to enter in the gift card raffle were eligible to receive a $30 Amazon gift card. After the gift card recipients had confirmed their email address, a $30 gift card was sent from Amazon.com to their email address.

4.4.2 Results

IBM SPSS Statistics 23, SPSS Amos 25, and Microsoft Excel 2016 were used to analyze the data.

4.4.2.1 Normality

Results of the Shapiro-Wilk and ocular inspection of the histograms revealed that each of the 92 items deviated significantly from a normal distribution. Participants tended to give positive enjoyment ratings about the activity chosen. This is consistent with the EFA data and participants' reports of overall enjoyment for the activity near the end of the survey. Again, most of the responses choose activities they liked rather than disliked. Also, a majority of responses was

moderately skewed (i.e., skewness < |2| and kurtosis < 7; Finney & Distefano, 2006). Lastly, there are three variables with skewness value greater than |2| and/or kurtosis value greater than 7. Appendix Y contains a detailed report of the skewness and kurtosis values of all the items. Much like the EFA study, the decision was made to keep the data untransformed.

4.4.2.2 Missing Data

Missing responses and "N/A" responses were treated as missing values. In total, there was 4% of the data missing, which is deemed as inconsequential (Tabachnick & Fidell, 2012; Bennett, 2001). Results of Little's MCAR test χ^2 (26022, N = 668) = 27972.988, p < .001 suggested that the data was not missing completely at random. Approximately 97.8% of the variables (n = 90) and 99.9% of cases (n = 667) contained at least one missing value.

The percentage of missing values for each variable or item ranges from 0.0% to 16.8%. All the variables contained less than 20% of missing values, thus none was removed from this stage of analyses. Table 25 lists all the variables that contained over 10% of missing values with their mean and standard deviation. Appendix Z provides a complete list of all the variables with missing values.

Table 25. CFA study: variables with over 10% of missing values

Item	Missing Values		Mean	SD
	n	**Percent**	**Mean**	**SD**
I cooperated with others during the activity.	112	16.8%	4.79	2.07
The relationships I have with others through the activity are fulfilling.	109	16.3%	5.00	1.82
I received support from my friends which helped me do the activity.	106	15.9%	4.35	2.05
I received support from my family which helped me do the activity.	104	15.6%	4.52	2.02
The activity provided me feedback which indicated how well I was doing.	97	14.5%	4.82	1.87
The activity made me feel closer to my friends.	89	13.3%	3.99	2.04
I liked interacting with others during the activity.	88	13.2%	4.63	2.03
The relationships I have with others through the activity are important.	87	13.0%	4.90	1.82
The activity made me closer to my family.	84	12.6%	4.06	1.97

For respondents "the activity" was replaced with the name for the activity the respondent chose in the beginning of the survey.

4.4.2.3 Data Estimation

Like the EFA, the missing data was scattered throughout cases and variables, meaning the deletion of cases would mean a substantial loss of subjects. Thus, the missing data was estimated using a data estimation technique (e.g. regression, maximum likelihood). Since the data did not follow normal distributions, multiple estimation methods were considered for replacing the missing data. One method, asymptotically distribution free (ADF; Browne, 1984) was developed specifically for non-normal data. However, ADF estimation requires sample sizes greater than 1,000 and has demonstrated poor performance with sample sizes smaller than 2,500 (Curran, West, & Finch, 1996; Hu, Bentler, & Kano, 1992; Muthen & Kaplan, 1992). Another estimator for non-

normal data is the unweighted least square (ULS), but it offers only a limited amount of goodness-of-fit indices on AMOS.

The last estimator to use is the maximum likelihood (ML), which assumes the data of the observed variables is normally distributed. Three considerations must be made when using ML to estimate non-normal data. First, inflated chi-square statistic, which can lead to the over-rejection of models (Brown, 2014; Curran, West, & Finch., 1996; Kenny, 2014). Second, possibility of plausible models being rejected because of the underestimation of certain fit indices (e.g. GFI, CFI) (Brown, 2014; Finney & DiStefano, 2006). Last, standard errors of parameter estimates would be underestimated (Brown, 2014; Finney & DiStefano, 2006). However, ML estimator is considered appropriate for estimation when data is only moderately skewed (skewness $< |2|$ and kurtosis < 7) (Finney & DiStefano, 2006). Additionally, numerous research studies back up this claim, showing that ML is robust in situations of mild to moderate violations of normality. (Chou, Bentler, & Satorra, 1991; Fan, Thompson, & Wang, 1999; Matsunaga, 2010).

Due to the constraints and considerations made for the data, AMOS' full information maximum likelihood (FIML) estimation was used as the primary missing data estimation method. Specifically, FIML was used to produce most of the CFA results (e.g. parameter estimates, CFI, RMSEA, chi-squared, Hoelter's CN). FIML does not input any missing values, it utilizes all information available in the incomplete dataset to estimate parameters. FIML has been shown to generate unbiased parameter estimates, standard errors, and model fit information when the data is not missing completely at random (Dong & Peng, 2013; Enders & Bandalos, 2001; Hallgren & Witkiewitz, 2013).

While FIML was the most suitable missing data estimation technique for much of the CFA analysis. Certain analysis are not allowed when using FIML (e.g. SRMR, internal reliability), and

FIML does not generate a standardized residual covariance matrix. Thus, the EM method via SPSS MVA module was used to generate Cronbach's alpha, SRMR, Pearson's r statistical test results, and generating the standardized residual covariance matrix. Both ML-based methods (i.e. EM, FIML) have been shown to produce similar results (Dong & Peng, 2013; Graham, Olchowski, & Gilreath, 2007).

4.4.2.4 Model Fit Assessment

To evaluate model fit, researchers recommend using two to three fit indices (e.g. CFI, SRMR, RMSEA) alongside the chi-squared test statistic (Hu & Bentler, 1999; Worthington & Whittaker, 2006). However, chi-squared has been widely criticized based on its assumption that the model fits perfectly in the population, and its sensitivity to sample size and non-normality. Thus, researchers suggest reporting the chi-squared test statistic, but not depending on it for assessment of overall model fit. (Bryne, 2010, Hu & Bentler, 1999; Kline, 2005; Worthington & Whittaker, 2006).

The three fit indices mainly used were room mean square error of approximation (RMSEA; Steiger, 1980), standardized root mean square residual (SRMR), and Hoelter's Critical N (CN; Hoelter, 1983). RMSEA assesses how well the model fits the population covariance matrix and takes into account sample size and model complexity. A RMSEA value less than .05 indicates good fit, while values between .05 and .08 indicate adequate fit (Browne & Cudeck, 1993; Fabrigar et al., 1999). SRMR is a fit index which measures poorness of fit, with higher values suggesting a poorer fit. SRMR measures discrepancies between covariance matrices of the data and model. A SRMR value of less than .10 indicates adequate fit, with .08 or below indicating good model fit (Hu & Bentler, 1999). Lastly, Hoelter's CN investigates the study's sample size and reports the largest sample size to yield a non-significant chi-square value. A CN value over 200 signifies the

sample size and model fit are adequate, while values below 75 signify unacceptable model fit and sample size (Byrne, 2010; Kenny, 2014).

Another goodness-of-fit index frequently used to determine overall model fit is the Comparative Fit Index (CFI; Bentler, 1990). A CFI value above 0.95 indicates good fit and 0.90 to 0.95 may be indicative of acceptable model fit (Bentler, 1990; Hu & Bentler, 1999). However, researchers advise against using CFI when the RMSEA value of the null model is below 0.158 (Kenny, 2014). This is due to the fact that the CFI value tends to be very small when the RMSEA of the null is also small. The null model for the full 5-factor solution in this study has a RSMEA value of 0.132 with the lower and upper bound values of the 90% confidence interval being 0.131 and 0.133, respectively. Accordingly, the CFI statistic was reported, but not evaluated in terms of overall model fit for the full model.

To compare the hypothesized 5-factor model against alternative models, the three fit indices (i.e. RMSEA, SRMR, and Hoelter's CN) along with the Expected Cross-Validation Index (ECVI; Browne & Cudeck, 1989) fit index and the chi-squared difference ($\Delta\chi^2$) were used. The ECVI is a predicted fit index which assesses how well the model fits other samples similar in size and from the same population (Browne & Cudeck, 1989). Unlike other fit indices, the ECVI does not have a fix range of values, rather it is useful for comparing alternative models (Byrne, 2010; Fabrigar, et al., 1999). The smallest ECVI value is considered the best model for replication purposes. Lastly, the chi-squared difference test was used to compare fit between the hypothesized 5-factor model against a reduced model (e.g. 4-factor, 3-factor). In the chi-squared difference test a significant statistic ($p < .05$) typically suggests that the larger model is the better model. Table 26 provides the summary of the guidelines for assessing model fit and comparing the hypothesized model to alternative models.

Table 26. Guidelines for overall model fit assessment and model comparison

Fit Statistic	Fit Recommendation(s)
RMSEA	Adequate: .06 to .08
	Good: $\leq$ .06
SRMR	Adequate: .08 to .10
	Good: < .08
Hoelter's CN	Adequate > 200
	Unacceptable: <75
ECVI	Smallest Value
$\Delta\chi^2$	Preferred: p < .05

4.4.2.5 Hypothesized 5-Factor Model Fit Assessment

Based on the EFA study the 5-factor full and short form solution were used in this study as the hypothesized full and short model, respectively. The full model consisted of the unobserved latent factors of: Pleasure (35 items), Relatedness (17 items), Competence (13 items), Improvement (14 items), and Engagement (13 items). In a CFA study, each item is considered an observed or measured variable. All of the latent factors were allowed to covary with each other. Table 27 lists all of the items in the CFA study. Figure 19 provides a simplified illustration of the 5-factor hypothesized model. The ellipses represent latent variables and rectangles represent observed variables.

Table 27. 92 Observed variables in the CFA study

Variable Code	Item
P01	The activity was pleasurable to me.
P02	The activity made me feel happy.
P03	The activity was fun.
P04	The activity made me feel good.
P05	I liked doing the activity.
P06	The activity made me feel great.
P07	I had fun during the activity.
P08	Doing the activity made me feel joyful.
P09	The activity cheered me up.
P10	I felt delighted when I did the activity.

Table 27. 92 Observed variables in the CFA study (continued)

Variable Code	Item
P11	I felt cheerful during the activity.
P12	The activity brought out good feelings.
P13	I felt glad the last time I did the activity.
P14	I felt excited the last time I did the activity.
P15	I felt positive sensations the last time I did the activity.
P16	The activity was relaxing.
P17	I felt refreshed after the activity.
P18	I felt energized by the activity.
P19	I enthusiastically did the activity.
P20	The activity was invigorating.
P21	I felt content during the activity.
P22	The activity made me feel energetic.
P23	Doing the activity made me feel alive.
P24	My body felt good when I did the activity.
P25	I felt good inside when I did the activity.
P26	The activity excited my senses.
P27	I felt lively during the activity.
P28	I felt thrilled the last time I did the activity.
P29	The activity made me feel alive.
P30	The activity was exhilarating.
P31	I would choose to do the activity again.
P32	The activity made me feel stimulated.
P33	I found myself smiling during the activity.
P34	I felt personally interested in the activity.
P35	The activity was worthwhile.
R01	The activity was a shared effort with others.
R02	I liked interacting with others during the activity.
R03	I felt close to others when I did the activity.
R04	I cooperated with others during the activity.
R05	I felt connected with others during the activity.
R06	I did the activity so I could interact with others.
R07	The activity made me feel closer to my friends.
R08	I wanted to do the activity with others.
R09	I did the activity with friends.
R10	The relationships I have with others through the activity are important.
R11	I received support from my friends which helped me do the activity.
R12	The relationships I have with others through the activity are fulfilling.
R13	I was supported by others to do the activity.

Table 27. 92 Observed variables in the CFA study (continued)

Variable Code	Item
R14	I felt like I was important to others during the activity.
R15	The activity made me closer to my family.
R16	I received support from my family which helped me do the activity.
R17	I felt a sense of belongingness when I did the activity.
C01	I was proficient in the activity.
C02	I felt competent at performing the activity.
C03	I am good at the activity.
C04	I felt very capable during the activity.
C05	I felt like I did a good job the last time I did the activity.
C06	I felt effective at doing the activity.
C07	I felt competent when I was doing the activity.
C08	I felt I was successful at completing the activity.
C09	I felt in control of my actions during the activity.
C10	I felt confident during the activity.
C11	I felt my skills matched the challenges of the activity.
C12	My ability to do the activity was well matched with the activity's challenges.
C13	I had a good sense of how well I was doing during the activity.
CI01	The activity allowed me to develop new skills.
CI02	I felt challenged, but not under-challenged, during the activity.
CI03	I improved my skills the last time I did the activity.
CI04	I felt challenged, but not over-challenged, during the activity.
CI05	During the activity I was able to get better at doing it.
CI06	I liked the challenge the activity provided me.
CI07	I was able to overcome challenges during the activity.
CI08	I improved my knowledge when I did the activity.
CI09	I felt a sense of achievement when I did the activity.
CI10	The activity provided me feedback which indicated how well I was doing.
CI11	I felt daring during the activity.
CI12	I was able to apply my knowledge during the activity.
CI13	I felt proud when I did the activity.
CI14	I felt strong during the activity.
E01	I lost track of what was going on outside of the activity.
E02	I lost track of what was going on around me during the activity.
E03	I forgot what was going on around me during the activity.
E04	I lost track of time during the activity.
E05	When I did the activity, I thought about nothing else.
E06	I blocked out most other distractions during the activity.
E07	My attention was focused on the activity.

Table 27. 92 Observed variables in the CFA study (continued)

Variable Code	Item
E08	I felt absorbed in the activity.
E09	I felt immersed in the activity.
E10	I concentrated on the activity.
E11	I remained concentrated on the activity.
E12	I deliberately focused on the activity.
E13	I felt engrossed by the activity.
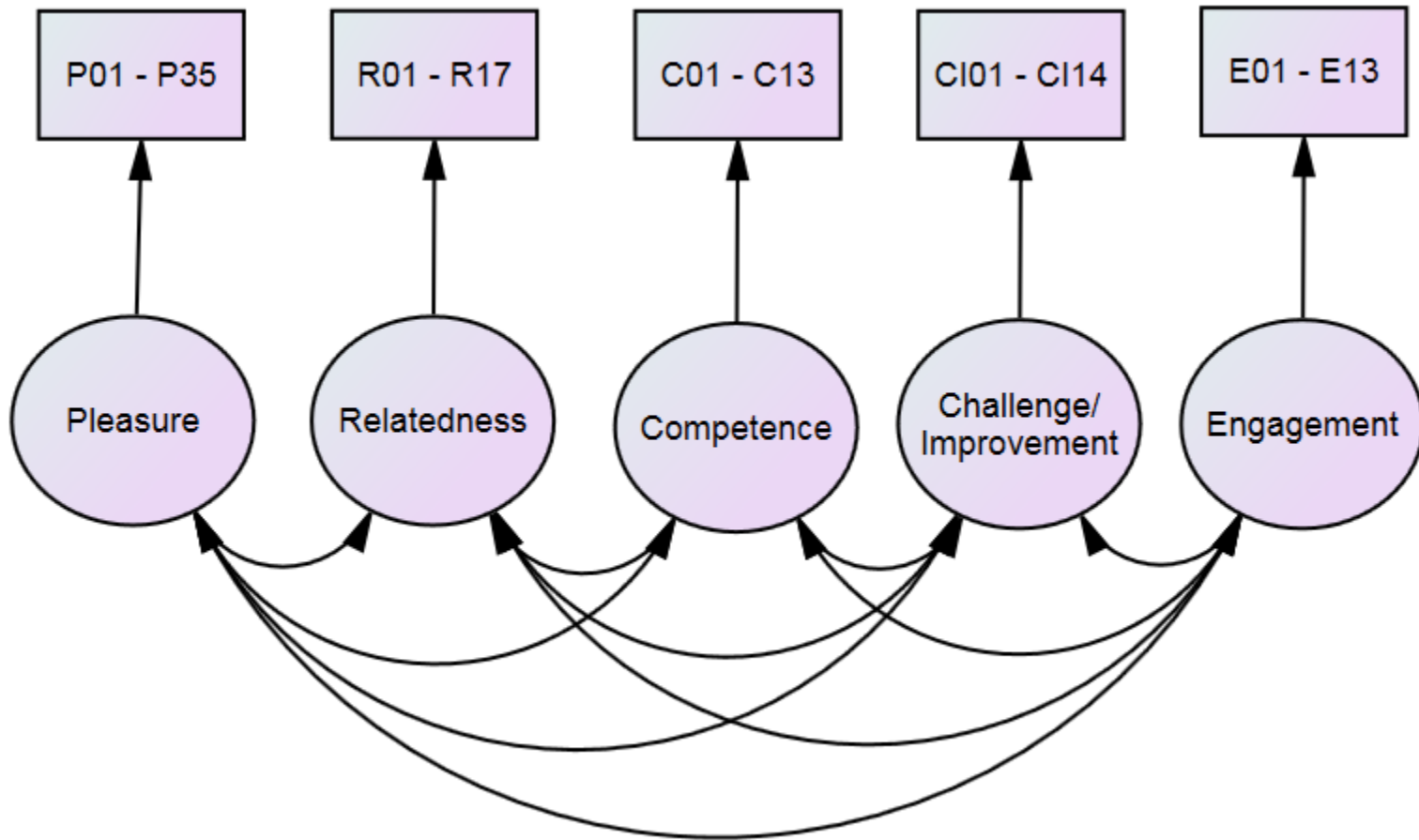
Figure 23. Visual representation of the hypothesized 5-factor model.

Results discovered that the hypothesized 5-factor model has an overall adequate fit with the new data sample. The chi-squared statistics, $\chi^2(4048, N = 668) = 14887.11$, $p < .001$, was significant due to the large sample size (N = 668) and non-normal data. The CFI value (0.78) was very low due to the small RMSEA value (0.132) of the null model. The three primary goodness-of-fit indices (i.e., RMSEA, SRMR, and Hoelter's CN) suggest good to adequate fit between the 5-factor model and the observed data. The SRMR indicated good fit and the RMSEA indicated adequate fit. Hoelter's .05 and .01 CN values for the full model were below the 200 indicator of a good model, 190 and 193 respectively. Table 28 provides the values of all the fit indices for the hypothesized 5-factor model. Overall it was determined the full model has adequate fit.

Table 28. Hypothesized 5-factor model's fit statistics (N = 668)

	Value
Fit Index	**Full**
χ^2	(4048) = 14887.11, p < .001
CFI	0.78
RMSEA (90% CI)	.063 (.062, 0.64)
SRMR	0.08
Hoelter's CN (.05, .01)	190, 193

Note: Chi-squared statistics and CFI were not used in overall assessment of model fit due to large sample size (N =668) and the null model's RMSEA being below 0.158.

Additionally, all the observed variables have adequate loading on the corresponding latent factor. Specifically, all the unstandardized regression weights were significant and standardized regression weights were above 0.40. Table 29 presents the unstandardized and standardized regression weights, standard errors (SE), and squared multiple correlations (SMC) for each pair of observed variable and latent factor. Lastly, the inter-relationship among all the factors were significant. Table 30 presents the covariances and correlations between each pair of factors.

Table 29. Unstandardized and standardized factor loadings

Pair	Unstandardized Estimate	SE	Standardized Estimate	SMC Estimate
P35 <--- Pleasure	1		0.511	0.261
P34 <--- Pleasure	1.793	0.136	0.72	0.518
P33 <--- Pleasure	2.248	0.172	0.708	0.501
P32 <--- Pleasure	2.019	0.151	0.737	0.544
P31 <--- Pleasure	1.15	0.099	0.572	0.328
P30 <--- Pleasure	2.502	0.183	0.777	0.604
P29 <--- Pleasure	2.397	0.173	0.797	0.635
P28 <--- Pleasure	2.678	0.191	0.817	0.667
P27 <--- Pleasure	2.267	0.167	0.763	0.582
P26 <--- Pleasure	2.379	0.174	0.771	0.595
P25 <--- Pleasure	1.948	0.141	0.788	0.62
P24 <--- Pleasure	2.211	0.17	0.707	0.499
P23 <--- Pleasure	2.393	0.17	0.821	0.674
P22 <--- Pleasure	2.402	0.18	0.739	0.545
P21 <--- Pleasure	1.912	0.14	0.774	0.598
P20 <--- Pleasure	2.422	0.176	0.781	0.61
P19 <--- Pleasure	2.321	0.166	0.809	0.655
P18 <--- Pleasure	2.525	0.183	0.793	0.629
P17 <--- Pleasure	2.448	0.18	0.763	0.581
P16 <--- Pleasure	2.208	0.175	0.662	0.439
P15 <--- Pleasure	2.242	0.158	0.841	0.708
P14 <--- Pleasure	2.629	0.184	0.85	0.722
P13 <--- Pleasure	1.887	0.138	0.771	0.595
P12 <--- Pleasure	2.299	0.159	0.878	0.771
P11 <--- Pleasure	2.461	0.17	0.881	0.777
P10 <--- Pleasure	2.497	0.175	0.852	0.727
P09 <--- Pleasure	2.489	0.173	0.869	0.756
P08 <--- Pleasure	2.589	0.178	0.886	0.786
P07 <--- Pleasure	2.463	0.172	0.86	0.74
P06 <--- Pleasure	2.343	0.163	0.862	0.744
P05 <--- Pleasure	2.311	0.162	0.848	0.72
P04 <--- Pleasure	2.106	0.147	0.854	0.729
P03 <--- Pleasure	2.421	0.171	0.83	0.689
P02 <--- Pleasure	2.376	0.164	0.879	0.772
P01 <--- Pleasure	2.407	0.169	0.847	0.717
R01 <--- Relatedness	1		0.71	0.504
R02 <--- Relatedness	1.009	0.055	0.766	0.586

Table 29. Unstandardized and standardized factor loadings (continued)

Pair	Unstandardized Estimate	SE	Standardized Estimate	SMC Estimate
R03 <--- Relatedness	1.05	0.052	0.84	0.705
R04 <--- Relatedness	0.928	0.057	0.697	0.486
R05 <--- Relatedness	1.072	0.053	0.834	0.695
R06 <--- Relatedness	0.988	0.057	0.721	0.52
R07 <--- Relatedness	1.008	0.055	0.769	0.591
R08 <--- Relatedness	0.993	0.056	0.725	0.526
R09 <--- Relatedness	1.09	0.064	0.712	0.507
R10 <--- Relatedness	0.929	0.05	0.784	0.614
R11 <--- Relatedness	0.875	0.056	0.667	0.445
R12 <--- Relatedness	0.903	0.05	0.763	0.582
R13 <--- Relatedness	0.657	0.049	0.564	0.318
R14 <--- Relatedness	0.822	0.051	0.669	0.447
R15 <--- Relatedness	0.693	0.054	0.548	0.3
R16 <--- Relatedness	0.595	0.056	0.458	0.21
R17 <--- Relatedness	0.79	0.048	0.683	0.466
C01 <--- Competence	1		0.745	0.556
C02 <--- Competence	0.964	0.048	0.769	0.592
C03 <--- Competence	0.947	0.052	0.713	0.509
C04 <--- Competence	1.04	0.051	0.786	0.618
C05 <--- Competence	0.841	0.047	0.697	0.486
C06 <--- Competence	0.936	0.052	0.706	0.498
C07 <--- Competence	1.003	0.051	0.76	0.577
C08 <--- Competence	0.739	0.048	0.611	0.374
C09 <--- Competence	0.652	0.048	0.536	0.287
C10 <--- Competence	1.054	0.054	0.76	0.577
C11 <--- Competence	0.912	0.056	0.645	0.416
C12 <--- Competence	0.902	0.057	0.633	0.401
C13 <--- Competence	0.663	0.051	0.522	0.272
CI01 <--- Challenge/Improvement	1		0.771	0.594
CI02 <--- Challenge/Improvement	0.771	0.042	0.697	0.485
CI03 <--- Challenge/Improvement	0.929	0.044	0.798	0.637
CI04 <--- Challenge/Improvement	0.736	0.045	0.638	0.407
CI05 <--- Challenge/Improvement	0.773	0.038	0.778	0.606
CI06 <--- Challenge/Improvement	0.838	0.043	0.733	0.537
CI07 <--- Challenge/Improvement	0.726	0.041	0.694	0.481
CI08 <--- Challenge/Improvement	0.772	0.049	0.619	0.383
CI09 <--- Challenge/Improvement	0.563	0.036	0.598	0.358

Table 29. Unstandardized and standardized factor loadings (continued)

Pair	Unstandardized Estimate	SE	Standardized Estimate	SMC Estimate
CI10 <--- Challenge/Improvement	0.728	0.053	0.562	0.316
CI11 <--- Challenge/Improvement	0.722	0.053	0.544	0.296
CI12 <--- Challenge/Improvement	0.584	0.044	0.532	0.283
CI13 <--- Challenge/Improvement	0.678	0.038	0.679	0.461
CI14 <--- Challenge/Improvement	0.698	0.046	0.598	0.357
E01 <--- Engagement	1		0.646	0.417
E02 <--- Engagement	1.014	0.068	0.656	0.43
E03 <--- Engagement	1.116	0.07	0.72	0.519
E04 <--- Engagement	0.916	0.068	0.584	0.342
E05 <--- Engagement	1.083	0.07	0.689	0.474
E06 <--- Engagement	0.877	0.058	0.663	0.439
E07 <--- Engagement	0.636	0.042	0.665	0.442
E08 <--- Engagement	0.873	0.054	0.73	0.533
E09 <--- Engagement	0.88	0.052	0.761	0.579
E10 <--- Engagement	0.638	0.045	0.625	0.391
E11 <--- Engagement	0.798	0.049	0.74	0.547
E12 <--- Engagement	0.668	0.048	0.608	0.37
E13 <--- Engagement	0.814	0.057	0.633	0.4

Note: SE = Standard Error and SMC = squared multiple correlations.

Table 30. Covariances and correlations between factors

Pair	Covariance	SE	Correlation
Pleasure <--> Relatedness	0.405	0.049	0.477
Pleasure <--> Competence	0.276	0.031	0.539
Pleasure <--> Challenge/Improvement	0.486	0.051	0.616
Engagement <--> Pleasure	0.429	0.047	0.653
Engagement <--> Relatedness	0.5	0.086	0.268
Engagement <--> Competence	0.525	0.06	0.467
Engagement <--> Challenge/Improvement	0.866	0.094	0.501
Relatedness <--> Competence	0.416	0.066	0.286
Relatedness <--> Challenge/Improvement	1.044	0.115	0.467
Competence <--> Challenge/Improvement	0.702	0.071	0.521

Note: SE = Standard Error

In support of the conclusions drawn from the EFA, the CFA results echoed support for the same hypotheses. Based on these results, again Hypothesis 1, 2, 3, 4, 5, 7, 8, and 9 were supported. Engagement, pleasure, and psychological need satisfaction (i.e. relatedness, competence) were all unique factors of, fit well within the model, and were positively correlated with enjoyment. Hypothesis 6 was not further investigated during the CFA, as autonomy was not found to be a unique factor of enjoyment in the EFA.

4.4.2.6 Model Comparisons

The hypothesized 5-factor model was compared against five alternative models in terms of overall model fit. All of the models have the same number of cases (N = 771) and observed variables (N = 92) except the short model, which had reduced number of variables (N = 25). The first alternative model was the same 5-factor structure, except the factors in the model were not allowed to covary with one another (see Figure 24). Second, the short model had a reduced number of items (N = 25) (see Figure 25).

Next, the 4- and 3- factor models were suggested as possible factor solutions based on the results from the EFA study aside from the 5-factor solution (see Figure 26 and 27). The 4-factor solution combined Competence and Challenge/Improvement factors into a single factor. The 3-factor solution combined Competence, Challenge/Improvement, and Engagement into one factor. Both the 3- and 4- factor models were allowed to covary with each other. Last, a 1-factor model hypothesized that all observed variables loaded on the same factor (see Figure 28).

The large sample size and small RMSEA value of the null model resulted in statistically significant chi-square and substandard CFI values across the uncorrelated 5-factor, 1-, 3-, and 4-factor models. The short form 5-factor model had a RMSEA value of the null model (0.218) above the 0.158 cutoff. The CFI for the short form was 0.94 which is considered indicative of acceptable

model fit (see Table 31). In terms of the main fit statistics used to compare model fit in this study, the 4-. 3-, and 1- factor models had poor fit with at least two of the main fit indices. The short form 5-factor model had improved fit indices compared to the hypothesized 5-factor full model. The short form model had the lowest RMSEA and SRMR values, and highest Hoelter's CN and CFI.

Lastly, the chi-squared difference tests conducted resulted in statistically significant results between the hypothesized 5-factor model and the 5- (uncorrelated) 4-, 3-, and 1- factor models. This indicated that the hypothesized 5-factor model has a significantly better fit in comparison to these four alternative models. However, the short form model also had a statistically significant result between itself and the hypothesized 5-factor full model. This means that while the 5-factor model was significantly better than the alternative models, the short form version was significant better fit in comparison to the full model. Overall, results from the goodness-of-fit statistics demonstrated that the short 5-factor solution is the most appropriate model. Table 32 presents the results of all main fit statistics across different models. Appendix AA includes an additional model run in an exploratory effort to examine a higher order factor.

Table 31. Chi-square and CFI fit indices across models (N = 668)

Model	χ^2	CFI
5 factors (correlated)	$\chi^2(4048, N = 668) = 14887.11, p < .001$	0.78
5 factors (uncorrelated)	$\chi^2(4094, N = 668) = 15951.90, p < .001$	0.76
5 factors (short)	$\chi^2(265, N = 668) = 911.87, p < .001$	0.94
4 factors (combined C and CI)*	$\chi^2(4089, N = 668) = 16725.49, p < .001$	0.74
3 factors (combined C, CI, and E)*	$\chi^2(4092, N = 668) = 18724.79, p < .001$	0.70
1 factor	$\chi^2(4094, N = 668) = 25271.37, p < .001$	0.57

Note: Chi-squared statistics and CFI were not used in overall assessment of model fit due to large sample size (N =668) and the null model's RMSEA being below 0.158 for all models except short. *C = Competence, CI = Challenge/Improvement, and E = Engagement.

Table 32. Main fit indices across models (N = 668)

Model	RMSEA (90% CI)	SRMR	Hoelter's .05; .01	EVCI (90% CI)	Δχ²	Δχ² (Short Model)
5 factors (correlated)	.063 (.062, 0.64)	0.08	190; 193	23.18 (22.62, 23.74)	N/A	Δχ²(3829) = 139745.24, p < .001
5 factors (uncorrelated)	.066 (.065, .067)	0.25	178, 181	24.74 (24.17, 25.33)	Δχ²(46) = 1064.79, p < .001	-
5 factors (short)	.060 (.056, .065)	0.06	223; 236	1.62 (1.49, 1.77)	-	N/A
4 factors (combined C and CI)*	.068 (.067, .069)	0.09	170; 172	25.92 (25.33, 26.52)	Δχ²(41) = 1838.38, p < .001	-
3 factors (combined C, CI, and E)*	.073 (.072, .074)	0.09	152; 154	28.91 (28.28, 29.55)	Δχ²(44) = 3837.68, p < .001	-
1 factor	.088 (.087, .089)	0.11	113; 114	38.72 (37.97, 39.47)	Δχ²(46) = 10384.26, p < .001	-

Note: The chi-squared difference test between the 5-factor (correlated) and 5-factor (short) used the short model as the "larger" model because it has fewer degrees of freedom, for all other models the 5-factor (correlated) model was used as the "larger" model.
*C = Competence, CI = Challenge/Improvement, and E = Engagement.
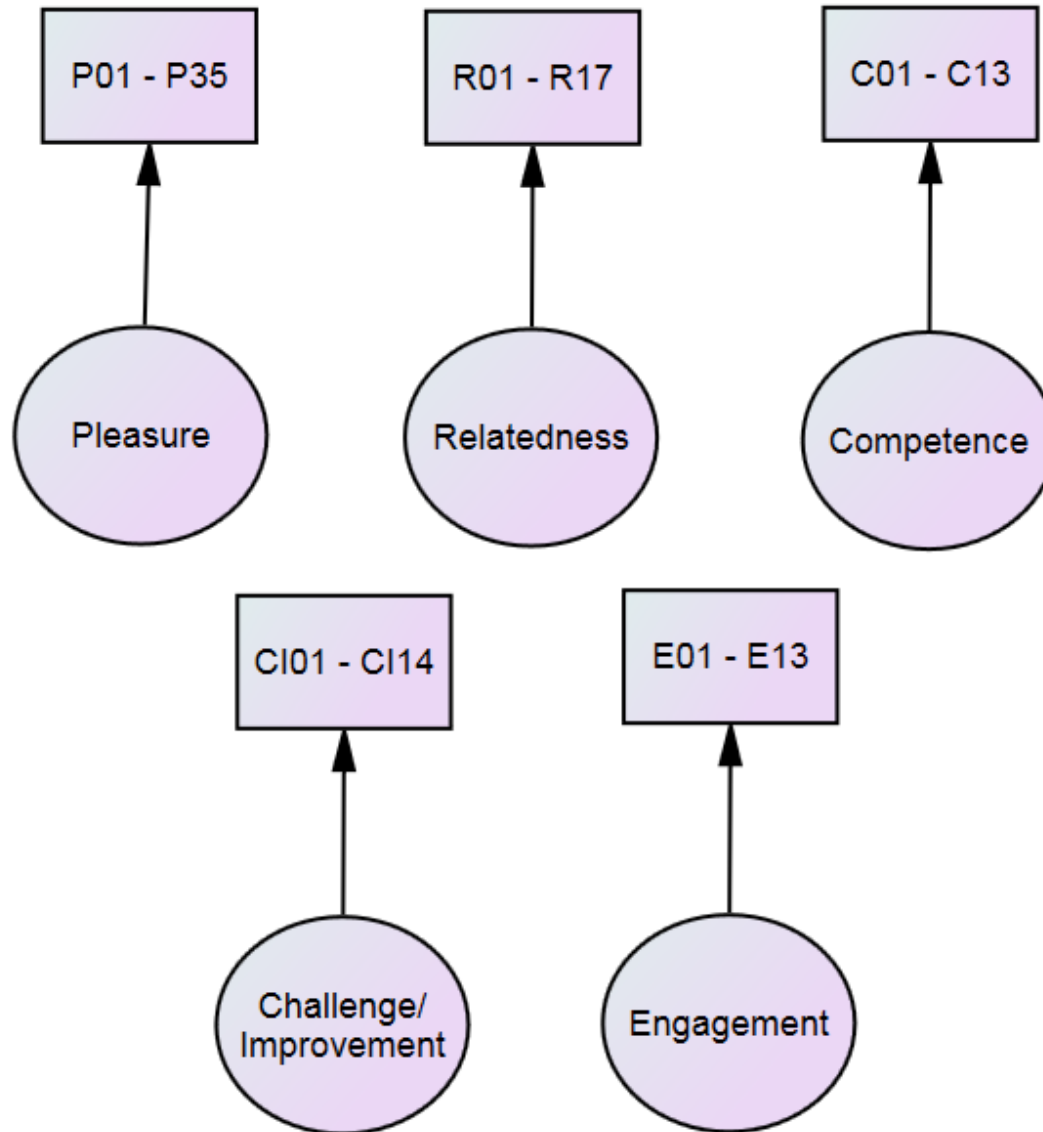
Figure 24. A visual representation of the 5-factor (uncorrelated) model
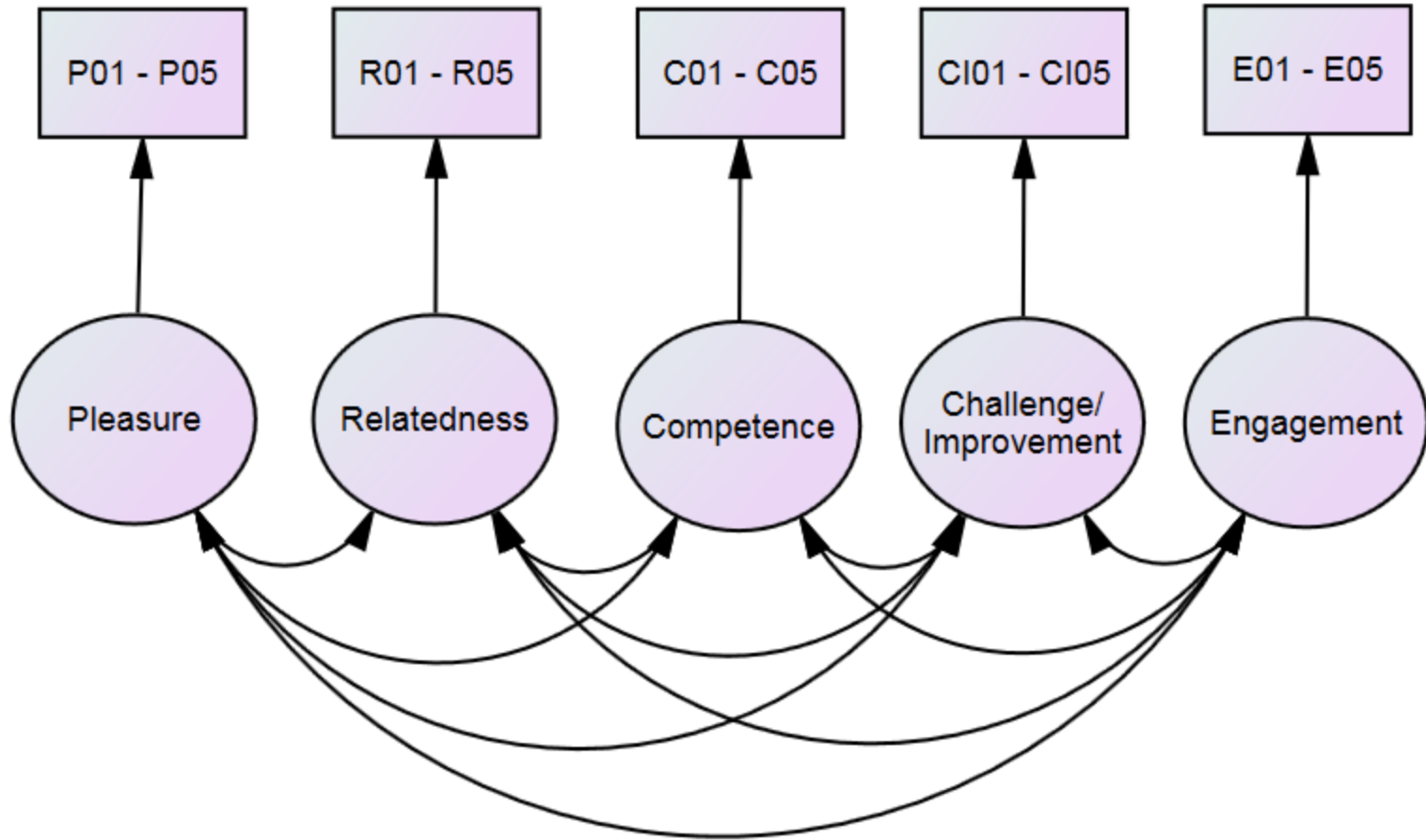
Figure 25. A visual representation of the 5-factor (short) model
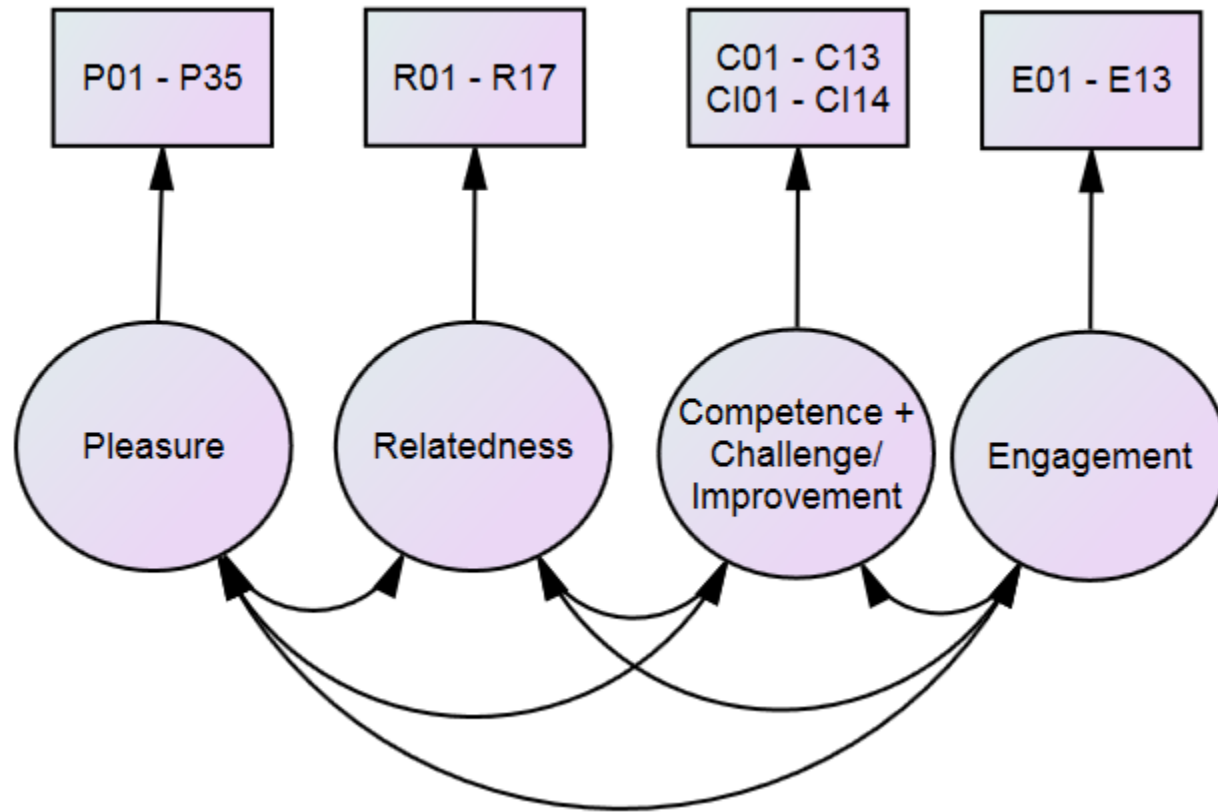
Figure 26. A visual representation of the 4-factor model
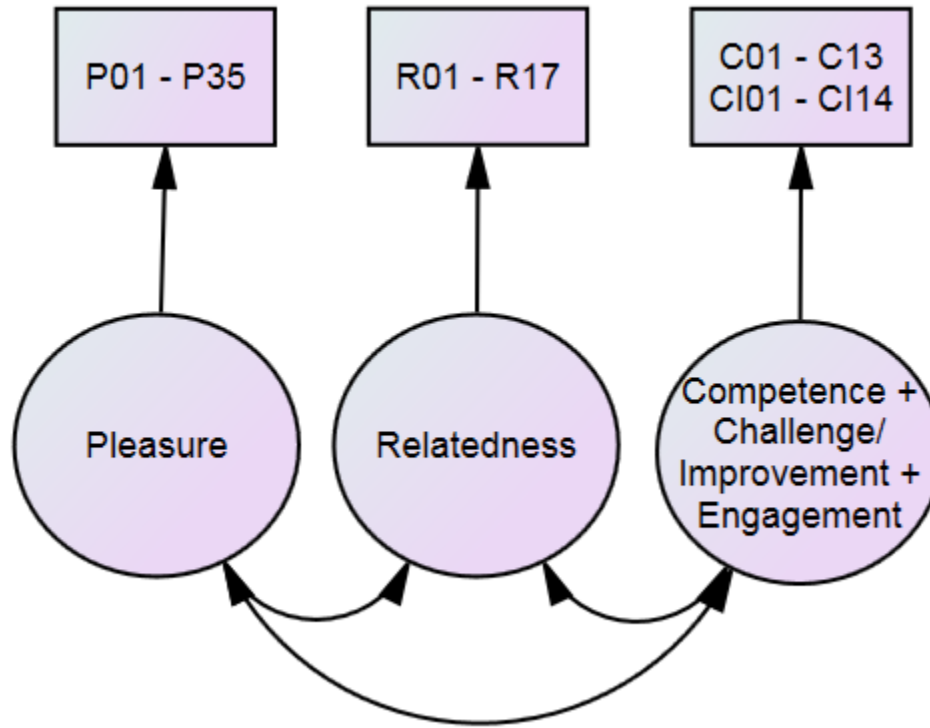
Figure 27. A visual representation of the 3-factor model
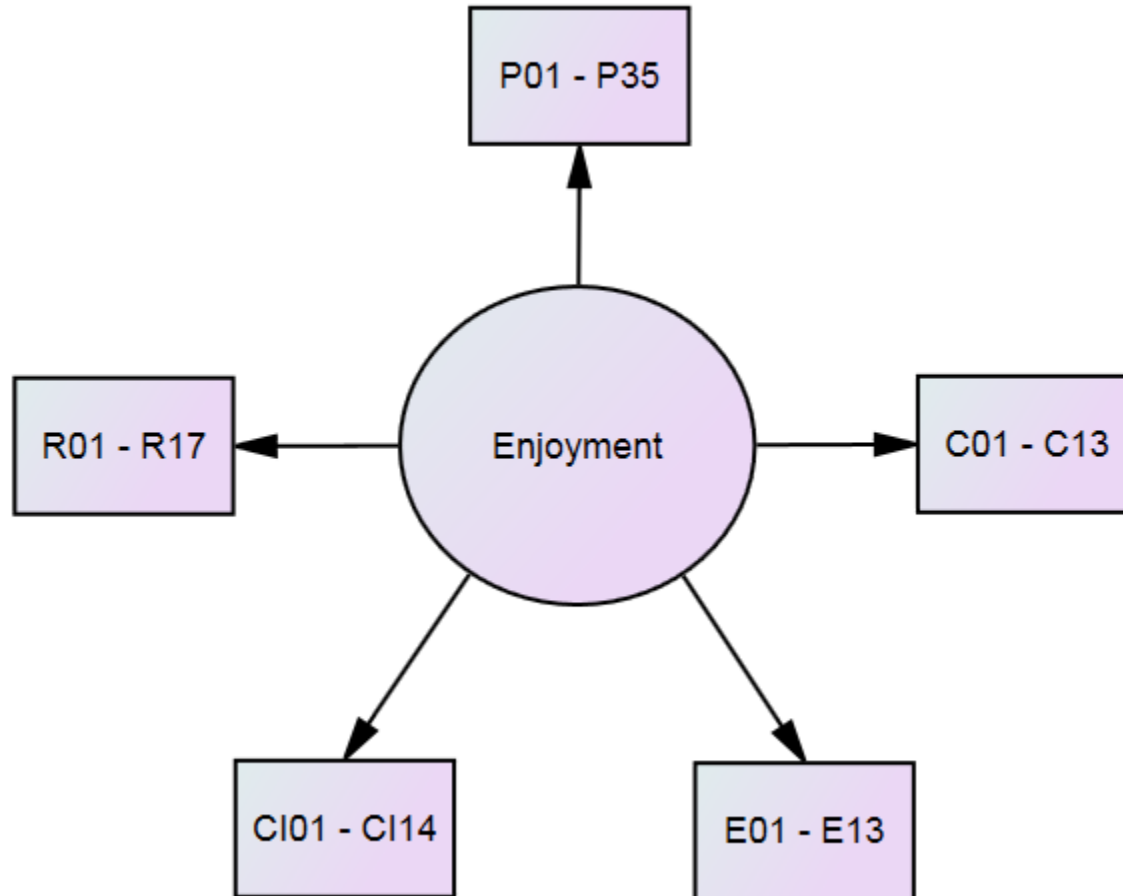
Figure 28. A visual representation of the 1-factor model

4.4.2.7 Scale Reliability and Validity Assessment

Following the assessment of model fit, the last step in the CFA is to re-examine the reliability of the scale and assess the convergent and discriminant validity of the scale (Cabrera-Nguyen, 2010). First, the internal consistency of the 5-factor short solution was compared across the EFA and CFA studies. Cronbach's alpha as calculated for each factor and the overall scale from each sample (see Table 33). Cronbach's alpha above 0.70 is acceptable, 0.80 good, and 0.90 excellent (DeVellis, 2016; Hinkin, 1997; Nunnally & Bernstein, 1994).

Results show the internal consistency of the scale showed stability across the EFA and CFA studies. The largest fluctuation of Cronbach's alpha was 0.03 and all of the factors remained in the good to excellent range for the EFA and CFA studies. The overall Cronbach's alpha did not change between the EFA and CFA studies, remaining in the excellent range. Lastly, the relationship between overall enjoyment and each of the factors was fairly stable across both studies, with all relationships resulting in statistically significant Pearson's correlation coefficients ($p < .01$). These results increase evidence to the construct validity of the scale and measuring enjoyment across activities. Table 34 provides the details of Pearson's r results across the EFA and CFA studies.

Table 33. Cronbach's alphas across EFA (N = 798) and CFA (N = 668) studies

Factor	EFA Study Cronbach's α	CFA Study Cronbach's α
Factor 1: Pleasure	0.95	0.94
Factor 2: Relatedness	0.92	0.90
Factor 3: Competence	0.87	0.87
Factor 4: Challenge/Improvement	0.86	0.87
Factor 5: Engagement	0.85	0.88
Entire Scale	0.90	0.90

Table 34. Correlations across EFA (N = 798, DF = 797) and CFA (N = 668, DF = 666) studies

Factor	1: P	2: R	3: C	4: C/I	5: E
EFA Overall Enjoyment	0.78**	0.34**	0.32**	0.35**	0.30**
CFA Overall Enjoyment	0.76**	0.25**	0.38**	0.41**	0.34**

Note: Overall enjoyment is based on a 10-point slider (M_{EFA} = 7.54, SD_{EFA} = 2.29; M_{CFA} = 7.83, SD_{CFA} = 2.17). Factor 1 = Pleasure, Factor 2 = Relatedness, Factor 3 = Competence, Factor 4 = Challenge/Improvement, and Factor 5 = Engagement. **$p < .01$ (2-tailed).

Second, the convergent validity was examined using standardized factor loadings. Researchers identify factor loadings below 0.40 as weak and those above 0.70 as strong (Cabrera-Nguyen, 2010). All of the factor loadings were above 0.40, with all but 4 loadings above 0.70 (see Table 35). Lastly, correlations among the factors in the CFA study were examined to assess discriminate validity of the scale. Researchers recommend that factor correlations be below 0.80 or 0.85 to ensure good discriminant validity (Brown, 2015; Cabrera-Nguyen, 2010; Kline, 2005). All of the factors were below the 0.80 recommendation, the two strongest factor correlations were between Pleasure and Challenge/Improvement ($r = 0.46$); and Pleasure and Competence ($r = 0.45$). In total, results demonstrate that the 5-factor solution has good convergent and discriminant validity.

Table 35. CFA Study: standardized factor loadings below 0.70

Pair	Standardized Estimate
C05 <-- Competence	
I felt like I did a good job the last time I did the activity.	0.67
CI04 <-- Challenge/Improvement	
I felt challenged, but not over-challenged, during the activity.	0.63
E04 <-- Engagement	
I lost track of time during the activity.	0.69
E05 <-- Engagement	
When I did the activity, I thought about nothing else.	0.60

To further establish convergent and discriminant validity, as well as reliability of the scale, the Composite Reliability (CR), Average Variance Extracted (AVE), and Maximum Shared Variance (MSV) were calculated (Hair, et al., 2010). Composite Reliability (CR) estimates the extent to which a set of latent construct indicators share in their measurement of a construct, with values > 0.7 indicating good reliability. Average Variance Extracted (AVE) is a measure of the amount of variance that is captured by a construct in relation to the amount of variance due to measurement error, with values > 0.5 indicating good convergent validity. For Maximum Shared Variance (MSV) values below the AVE indicate good discriminant validity. All of the factors had CR values above 0.7, AVE values above 0.5 and MSV values were below AVE values (See Table 36). Additionally, a factor correlation matrix with the square root of the AVE on the diagonal is used to further establish discriminant validity, where values greater than inter-construct correlations indicate good discriminant Validity. All of the values along the diagonal were greater than the inter-construct correlations (See Table 37). Again, results demonstrate that the 5-factor solution has good convergent and discriminant validity.

Table 36. Reliability and validity testing.

	CR	AVE	MSV
Pleasure	0.943	0.769	0.213
Relatedness	0.890	0.619	0.130
Competence	0.869	0.571	0.206
Challenge/Improvement	0.868	0.570	0.213
Engagement	0.888	0.619	0.184

Table 37. Factor correlation matrix with square root of the AVE on the diagonal

Engagement	Pleasure	Relatedness	Competence	Improvement
0.786				
0.429	**0.877**			
0.125	0.361	**0.787**		
0.245	0.454	0.201	**0.755**	
0.251	0.461	0.356	0.273	**0.755**

4.4.2.8 Activity Experience and Enjoyment

To test whether enjoyment varied as a function of activity experience in the CFA sample, multiple one-way ANOVAs were conducted to compare the effects of time spent doing the activity, experience with activity, hours in a week, and days in a month on enjoyment. There was a significant positive effect of time spent doing the activity ($F(6, 655) = 3.21$, $p = .004$) on enjoyment. The more time spent doing the activity resulted in significantly higher enjoyment ratings. There was a not a significant effect for hours in a week ($F(6, 653) = 1.84$, $p = .089$), experience with the activity ($F(6, 655) = 1.70$, $p = .118$), or days in a month ($F(5, 656) = 2.14$, $p = .059$) on enjoyment. Similar to the EFA, level of enjoyment with the activity did vary with the amount of hours spent doing it, but not in days or years of experience doing the activity.

Last, to examine if enjoyment varied as a function of the activity categories in the EFA and CFA sample, multiple pairwise comparisons were conducted. Overall enjoyment means varied between activities (see Figure 29) and activity categories resulted in significant mean differences for overall enjoyment between the main categories (See Table 38). The three activities with the highest enjoyment ratings were for Hobbies (M = 8.39, SD = 1.81), Events (M = 8.17, SD = 2.21), and Entertainment (M = 7.98, SD = 1.94). The three activities with the lowest enjoyment ratings were Travel (M = 6.75, SD = 2.65), Other (M = 6.86, SD = 2.34), and Jobs (M = 6.99, SD = 2.66).

The level of enjoyment with the activity did vary depending on the type of activity respondents evaluated.

Overall Enjoyment by Category: EFA and CFA Studies
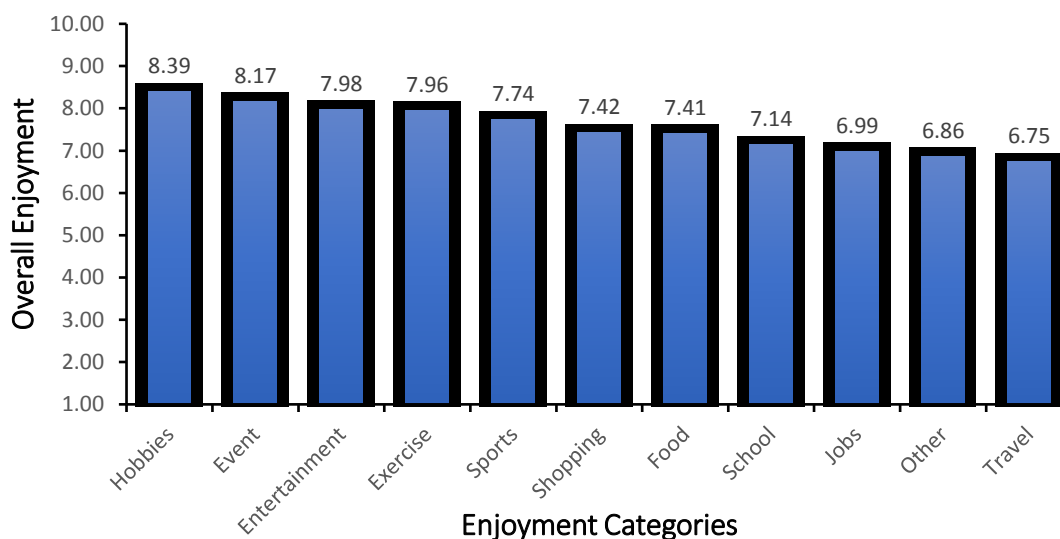
Figure 29. Enjoyment means by category

Table 38. Significant mean differences in overall enjoyment between activity categories

	1	2	3	4	5	6	7	8	9	10
1	0.00									
2	-0.19	0.00								
3	0.03	0.22	0.00							
4	0.57*	0.76	0.55*	0.00						
5	-0.41	-0.22	-0.44	-0.99***	0.00					
6	0.99***	1.19**	0.97***	0.42	1.41***	0.00				
7	1.12*	1.31*	1.092*	0.54	1.53**	0.12	0.00			
8	0.84**	1.03*	0.82*	0.27	1.26***	-0.15	-0.27	0.00		
9	0.56*	0.75	0.53*	-0.01	0.97***	-0.43	-0.56	-0.28	0.00	
10	0.24	0.43	0.22	-0.33	0.66*	-0.75**	-0.87	-0.60	-0.32	0.00
11	1.24***	1.43**	1.21***	0.66	1.65***	0.24	0.12	0.39	0.68	0.99*

1 = Entertainment, 2 = Events, 3 = Exercise, 4 = Food, 5 = Hobbies, 6 = Jobs, 7 = Other, 8 = School, 9 = Shopping, 10 = Sports, 11 = Travel. $* = p < .05$, $** = p < .01$, $*** = p < .001$

CHAPTER 5
DISCUSSION

The purpose of this study was to create and validate a multi-dimensional measure of enjoyment that could be used across domains and activities. The literature review revealed numerous attempts to explain enjoyment in various domains, and showed a multitude of benefits of enjoyment. However, empirical research measuring enjoyment across domains was found to be inadequate. To develop a more thorough understanding of enjoyment, this research created a validated measure of enjoyment in survey form based on a multi-dimensional model of enjoyment. The resulting model of enjoyment was found to be largely accurate, including pleasure, engagement, competence, challenge/improvement, and relatedness as key factors of enjoyment. In this section, the overall findings, implications, and the new instrument are discussed. Last, directions for future research are posed and potential avenues for using the new model of enjoyment and the ENJOY scale are suggested.

5.1 Study Summaries

The empirical studies conducted during this dissertation developed and validated a scale of enjoyment. The rigorous process of scale development and validation consisted of four main efforts to construct the new scale of enjoyment. Specifically, the four efforts included item generation, expert review, exploratory factor analysis, and confirmatory factor analysis.

The item generation effort consisted of multiple iterative phases of refinement before being presented to a panel of experts for review. The item pool was revised according to the experts' suggestions and the scale was distributed online to a large sample of people. An exploratory factor

analysis was conducted to uncover the underlying factor structure of the scale and the length of the scale was reduced by removing ineffective items and the development of a short form. The revised scale was then distributed to a second independent sample and a confirmatory factor analysis was performed to evaluate how well the hypothesized multi-dimensional model of enjoyment fit the sample of observed data. The majority of hypotheses were supported, suggesting the model was a reasonable descriptor of enjoyment.

5.2 The ENJOY Scale

The material outcome of this dissertation is a new measure of enjoyment. Following the completion of the scale development process, the ENJOY scale was created. The ENJOY scale consists of 5 separate subscales and 25 items. The 5 subscales of enjoyment are: Pleasure, Relatedness, Competence, Challenge/Improvement, and Engagement. ENJOY was found to have strong psychometric properties, including high content validity based on the expert review.

Additionally, the ENJOY was found to have excellent internal consistency in both the EFA and CFA studies. Based on the results from the CFA, the ENJOY demonstrated good discriminant and convergent validity as well as strong evidence to the construct validity of the scale. Altogether, the results provide confidence that the ENJOY scale is a reliable and valid measure of a multi-dimensional view of enjoyment.

The ENJOY scale is an innovative way to measure enjoyment in several ways. First, the ENJOY scale can be administered and used to evaluate enjoyment across any activity. Additionally, the ENJOY scale was developed with simple language that can be easily understood by anyone with at least some high school education. The ENJOY scale was developed and validated based on the assessment of over 600 unique activities across a wide range of categories.

Last, the final version of the ENJOY scale is not lengthy, consisting of only 25 items across the 5 subscales. The entire scale takes between 3-5 minutes to complete.

The final form of the ENJOY scale is shown in Appendix ENJOY. When administering the scale, it is recommended that the items be displayed in a randomized order in a set of five items to seven items per page. For scoring the ENJOY scale, the ratings of all items per subscale can be averaged to attain a score for each subscale. Also, the sum of average scores for each subscale can be used as a composite score of enjoyment. Not all subscales must be administered; for example, if the activity does not involve other people, the relatedness subscale can be dropped. Last, it is recommended to replace "the activity" with the name of the activity being evaluated for specified activities.

Presently, the ENJOY scale has just been developed and validated. Thus, there is no information yet on scoring standards for different activities. A composite score can be calculated by summing the average score from each subscale. Composite scores using all 5 subscales can range from 5 to 35, with scores closer to 35 indicating a higher level of enjoyment experienced. When examining activities which do not include interactions with other people, the Relatedness subscale is not be applicable and should not be administered. Also, for easier interpretation, all items can be averaged to obtain an overall score for enjoyment on a 1 to 7 Likert scale, with averages closer to 7 indicating a higher level of enjoyment experienced. It is recommended that the entire scale be kept intact, when possible, for more accurate results.

In terms of applications of using the ENJOY scale, ENJOY can be used in industry as well as academia. The ENJOY scale can be used to compare enjoyment across different activities or from different versions to determine if changes improved enjoyment over older ones. For example, a product company could use the ENJOY scale to assess enjoyment of using different versions of

their product to determine which design should be developed further. Alternatively, ENJOY can be administered throughout the development to determine if iterations of design are increasing enjoyment as desired. For Human Factors practitioners and academics, the ENJOY scale could be used to assist in evaluation of design decisions for products, or evaluating enjoyment differences between multiple experimental setups. Thus, it is suitable for evaluating enjoyment in either an industry or academic setting.

5.3 A Multi-Dimensional Model of Enjoyment

Another outcome of this dissertation, was a preliminary investigation into the dimensionality of enjoyment. While a model was presented earlier in the dissertation (see Figure 6), it was necessary to update the model based on the results of the studies. Nine hypotheses were proposed and tested during the scale development process. Of the nine hypotheses, 6 were fully or partially supported based on results. Engagement in an activity was linked to and explained unique variance in enjoyment (*H1*, *H2)*; pleasure was a factor of enjoyment and explained variance in enjoyment (*H3*, *H4*); competence and relatedness were identified as factors of enjoyment (*H5*, *H7*); psychological need satisfaction (i.e. competence, relatedness) was partially a factor of enjoyment and explained unique variance (*H8*); and a large portion of variance was explained by the combination of pleasure, engagement, and psychological need satisfaction.

However, some results were not as expected. Hypothesis 6, which predicted autonomy would be a unique factor of enjoyment, was not supported. This finding was interesting because while the competence and relatedness were both important for enjoyment, autonomy was not linked to autonomy across activities. This may have been because autonomy may not have been adequately measured through the items developed, or autonomy is not central to enjoyment as it is with intrinsic motivation. It is also possible that autonomy precedes engagement and so occurs

in the choice of the activity, rather than results from engagement in the activity. Additionally, a new factor emerged that was not predicted a priori. The Challenge/Improvement factor account for a significant amount of unique variance in enjoyment. Thus, based on the 5-factor solution an updated multidimensional model of enjoyment was created (see Figure 29).
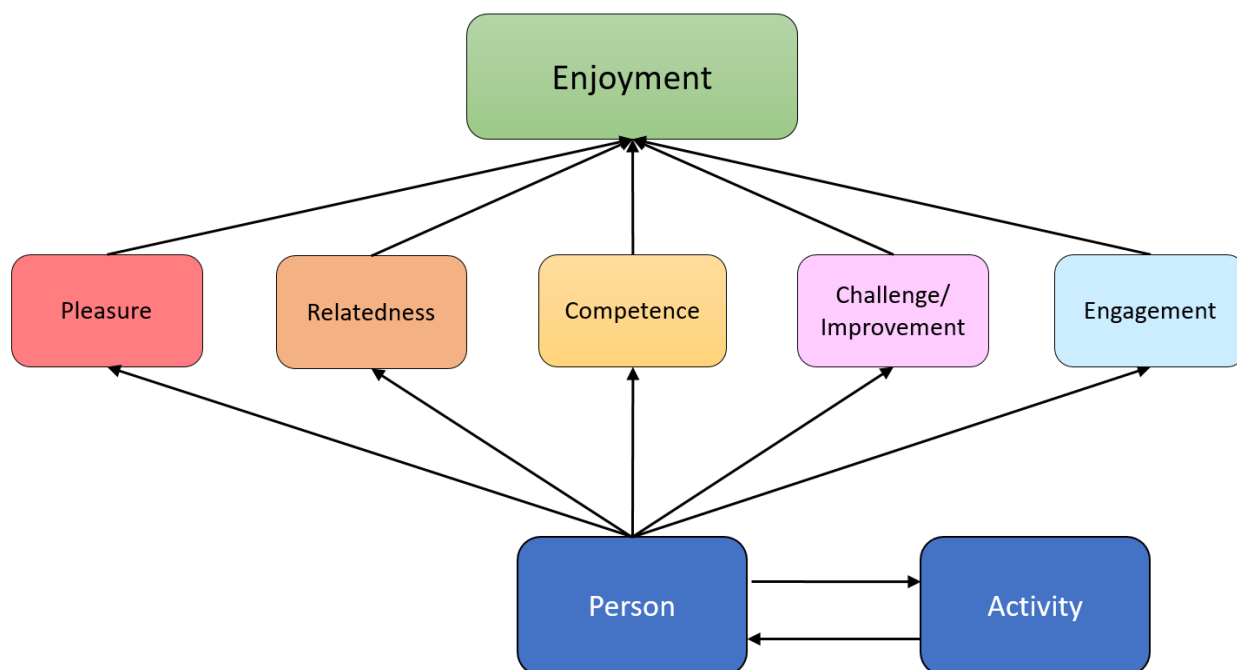
Figure 30. Updated multi-dimensional model of enjoyment

Due to the change in the multi-dimensional model of enjoyment, the definition of enjoyment offered earlier in the dissertation was updated as well. This new definition aimed for simplicity and brevity, and is as follows:

a positive feeling, when engaged in a pleasurable and challenging activity, which allows for skill improvement, makes you feel connected to others, and makes you feel proficient with the activity.

This definition offers a more complete definition of enjoyment based on the multi-dimensionality found during the scale development process. However, the definition could be put even more simply based on the amount of variance explained by each factor to:

a positive feeling, when engaged in a pleasurable activity.

While this shortened definition does only identify two out of the five factors of enjoyment within the definition, it is much easier for the layperson to understand. While the longer definition should be used in academic and high accuracy settings, the shorter simpler definition is better used when the primary concern is brevity rather than accuracy.

This new multi-dimensional model and definition of enjoyment can be applied across any activity throughout domains. The division on definitions of enjoyment can now be laid to rest, and this new definition and model can provide a starting point for related research efforts.

5.4 Future Research

This dissertation developed and validated a measure of enjoyment applicable across any activity. There are now many avenues researchers can pursue to further validate and extend the applicability of the ENJOY scale. While the present study examined the scale's reliability, content, and construct validity, it is still in need of additional validation. In particular, future studies need to assess the criterion-related validity of the ENJOY scale by comparing the scores obtained from the ENJOY scale with variables that should related to enjoyment such as: intent to recommend participation in an activity, desire to engage in the activity again, or self-reported perceptions of energy resulting from enjoyment.

While the ENJOY scale was designed with a $5^{th} - 7^{th}$ grade reading level in mind, it was only tested in populations of 18 years of age or older. If researchers are interested in administering

the ENJOY scale to younger populations, the ENJOY scale must be evaluated in those populations. Additionally, most of the activities evaluated in this research were activities respondents generally liked rather than disliked. Thus, it is not known how much the scale will be applicable to every activity, especially those that are disliked. While the scale was validated with over 600 unique activities reported, new activities evaluated can assess the true universality of the scale. Also, much more work needs to be done to determine a standard scoring for activities from each category.

Finally, the multi-dimensional model of enjoyment presented in this dissertation was only partially examined. Empirical examinations of the various relationships posed by a multi-dimensional view of enjoyment is critical for continued growth in the field. Many possible areas of the model remain open for more rigorous testing (e.g. the person/activity coupling) and this dimensional model of enjoyment would be greatly aided by careful empirical investigation.

5.5 Conclusion

With the division present in the literature on the definition and measuring of enjoyment, this dissertation provides a clear definition and tool to evaluate enjoyment across domains. The ENJOY scale was developed based on best practices in scale development and validation. The ENJOY scale was administered to two large, independent samples of over 600 respondents and over 600 unique activities. The ENJOY scale contains 25 items with 5 subscales and takes, on average, 3-5 minutes to complete. It was found to be reliable across two samples and demonstrated content and construct validity. Finally, the first steps were taken to empirically examine a new multi-dimensional model of enjoyment. The model remains open for empirical testing, further model validation would be useful in extending knowledge of how enjoyment occurs across activities and domains.

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APPENDICES

Appendix A

Item Pool Used in The Expert Review phase

Item #	Item	Dimension/Category	Source
1	I spent more time than I planned doing the activity.	Engagement	Agarwal & Karahanna (2000)
2	When I did the activity, I thought about nothing else.	Engagement	Bakker (2008)
3	I did the activity longer than I meant to.	Engagement	Brockmyer, et al. (2009)
4	I remained concentrated on the activity the last time I did it.	Engagement	Fu, Su, & Yu (2009)
5	I did the activity automatically without having to think.	Engagement	Jackson & Marsh (1996)
6	I blocked out most other distractions during the activity.	Engagement	Phan, Keebler, & Chaparro (2016)
7	I forgot what was going on around me during the activity.	Engagement	Schaufeli, et al. (2002)
8	I was determined when I did the activity.	Engagement	Watson & Clark (1999)
9	I concentrated on the activity.	Engagement	
10	I deliberately focused on the activity.	Engagement	
11	I did not feel tired while I did the activity.	Engagement	
12	I felt absorbed in the activity.	Engagement	
13	I felt deep mental involvement in the activity.	Engagement	
14	I felt engaged in the activity.	Engagement	
15	I felt engrossed by the activity.	Engagement	
16	I felt immersed in the activity.	Engagement	
17	I felt involved in the activity.	Engagement	
18	I felt like time passed faster than normal the last time I did the activity.	Engagement	
19	I lost track of time during the activity.	Engagement	

APPENDIX A (CONTINUED)

ITEM POOL USED IN THE EXPERT REVIEW PHASE

Item #	Item	Dimension/Category	Source
20	I lost track of what was going on around me during the activity.	Engagement	
21	I lost track of what was going on outside of the activity.	Engagement	
22	I participated in the activity.	Engagement	
23	I was enthralled with the activity.	Engagement	
24	It was easy for me to stay focused on the activity.	Engagement	
25	My attention was focused on the activity.	Engagement	
26	I enjoyed doing the activity.	Enjoyment	
27	I experienced enjoyment during the activity.	Enjoyment	
28	I had fun during the activity.	Enjoyment	
29	I liked doing the activity.	Enjoyment	
30	The activity was amusing.	Pleasure	Chou & Ting (2003)
31	The activity was relaxing.	Pleasure	Chou & Ting (2003)
32	The activity made me feel stimulated.	Pleasure	Frederick & Ryan (1993)
33	I felt refreshed the last time I did the activity.	Pleasure	Kendzierski & DeCarlo (1991)
34	The activity was exhilarating.	Pleasure	Kendzierski & DeCarlo (1991)
35	The activity excited my senses.	Pleasure	Peterson, Park, & Seligman (2005)
36	I felt inspired by the activity.	Pleasure	Schaufeli, et al. (2002)
37	The activity was invigorating.	Pleasure	Schaufeli, et al. (2002)
38	Doing the activity made me feel alive.	Pleasure	Stevens, et al. (2000)
39	I felt bold during the activity.	Pleasure	Watson & Clark (1999)

APPENDIX A (CONTINUED)

ITEM POOL USED IN THE EXPERT REVIEW PHASE

Item #	Item	Dimension/Category	Source
40	I felt confident during the activity.	Pleasure	Watson & Clark (1999)
41	I felt daring during the activity.	Pleasure	Watson & Clark (1999)
42	I felt fearless during the activity.	Pleasure	Watson & Clark (1999)
43	I felt lively during the activity.	Pleasure	Watson & Clark (1999)
44	I felt strong during the activity.	Pleasure	Watson & Clark (1999)
45	Doing the activity made me feel joyful.	Pleasure	
46	I enthusiastically did the activity.	Pleasure	
47	I felt cheerful the last time I did the activity.	Pleasure	
48	I felt comfortable the last time I did the activity.	Pleasure	
49	I felt content during the activity.	Pleasure	
50	I felt delighted when I did the activity.	Pleasure	
51	I felt excited the last time I did the activity.	Pleasure	
52	I felt glad the last time I did the activity.	Pleasure	
53	I felt good inside the last time I did the activity.	Pleasure	
54	I felt positive sensations the last time I did the activity.	Pleasure	
55	I felt proud when I did the activity.	Pleasure	
56	I felt thrilled the last time I did the activity.	Pleasure	
57	I found myself smiling during the activity.	Pleasure	
58	I was energetic the last time I did the activity.	Pleasure	
59	My body felt good the last time I did the activity.	Pleasure	
60	The activity cheered me up.	Pleasure	

Appendix A (continued)

Item Pool Used in The Expert Review phase

Item #	Item	Dimension/Category	Source
61	The activity made me feel alive.	Pleasure	
62	The activity made me feel aroused.	Pleasure	
63	The activity made me feel glee.	Pleasure	
64	The activity made me feel good.	Pleasure	
65	The activity made me feel great.	Pleasure	
66	The activity made me feel happy.	Pleasure	
67	The activity was arousing.	Pleasure	
68	The activity was enjoyable.	Pleasure	
69	The activity was fun.	Pleasure	
70	The activity was pleasurable to me.	Pleasure	
71	I felt in control of my actions during the activity.	PNS - Autonomy	Jackson & Marsh (1996)
72	The activity allowed me to do things I normally don't get to do.	PNS - Autonomy	Sherry, et al. (2006)
73	I had a choice whether or not to do the activity.	PNS - Autonomy	Sørebø & Hæhre (2012)
74	During the activity I felt in charge of my own life.	PNS - Autonomy	Wirth, Hofer, & Schramm (2012)
75	Doing the activity felt congruent with my values.	PNS - Autonomy	
76	During the activity I felt personally interested in doing it.	PNS - Autonomy	
77	How I behaved was up to me the last time I did the activity.	PNS - Autonomy	
78	I could be myself during the activity.	PNS - Autonomy	
79	I felt free to choose my actions during the activity.	PNS - Autonomy	

APPENDIX A (CONTINUED)

ITEM POOL USED IN THE EXPERT REVIEW PHASE

Item #	Item	Dimension/Category	Source
80	I felt free to choose what order I did things in during the activity.	PNS - Autonomy	
81	I felt free to express myself during the activity.	PNS - Autonomy	
82	I had the freedom to choose my actions during the activity.	PNS - Autonomy	
83	I identified with the activity.	PNS - Autonomy	
84	I initiated the activity.	PNS - Autonomy	
85	I would choose to do the activity again.	PNS - Autonomy	
86	There were many actions to choose from the last time I did the activity.	PNS - Autonomy	
87	I felt a sense of achievement when I did the activity.	PNS - Competency	Chou & Ting (2003)
88	I liked the challenge the activity provided me.	PNS - Competency	Frederick & Ryan (1993)
89	I was able to get better at doing the activity.	PNS - Competency	Frederick & Ryan (1993)
90	The activity allowed me to develop new skills the last time I did it.	PNS - Competency	Frederick & Ryan (1993)
91	I improved my knowledge when I did the activity.	PNS - Competency	Fu, Su, & Yu (2009)
92	I was able to apply my knowledge during the activity.	PNS - Competency	Fu, Su, & Yu (2009)
93	Doing the activity was rewarding.	PNS - Competency	Jackson & Marsh (1996)
94	I felt a sense of accomplishment when I did the activity.	PNS - Competency	Kendzierski & DeCarlo (1991)
95	The activity was worthwhile.	PNS - Competency	Lin, Gregor, & Ewing (2008)
96	I felt very capable during the activity.	PNS - Competency	Rigby & Ryan (2007)

APPENDIX A (CONTINUED)

ITEM POOL USED IN THE EXPERT REVIEW PHASE

Item #	Item	Dimension/Category	Source
97	I felt very effective during the activity.	PNS - Competency	Rigby & Ryan (2007)
98	I was able to reach my goal for the activity.	PNS - Competency	Wiersma (2001)
99	I am competent at performing the activity.	PNS - Competency	
100	I am good at the activity.	PNS - Competency	
101	I felt challenged, but not over-challenged, during the activity.	PNS - Competency	
102	I felt challenged, but not under-challenged, during the activity.	PNS - Competency	
103	I felt competent when I was doing the activity.	PNS - Competency	
104	I felt effective at doing the activity.	PNS - Competency	
105	I felt I was successful at completing the activity.	PNS - Competency	
106	I felt like I did a good job the last time I did the activity.	PNS - Competency	
107	I felt my ability exceeded the challenges of the activity.	PNS - Competency	
108	I felt my skill matched the challenges of the activity.	PNS - Competency	
109	I had a good sense of how well I was doing during the activity.	PNS - Competency	
110	I improved my skills the last time I did the activity.	PNS - Competency	
111	I knew what I needed to do to complete the activity.	PNS - Competency	
112	I was able to overcome challenges during the activity.	PNS - Competency	
113	I was proficient in the activity.	PNS - Competency	
114	It was easy for me to do well at the activity.	PNS - Competency	

APPENDIX A (CONTINUED)

ITEM POOL USED IN THE EXPERT REVIEW PHASE

Item #	Item	Dimension/Category	Source
115	My ability was well matched with the activity's challenges.	PNS - Competency	
116	The activity provided me feedback which indicated how well I was doing.	PNS - Competency	
117	I cooperated with others the last time I did the activity.	PNS - Relatedness	Fu, Su, & Yu (2009)
118	I felt a sense of belongingness when I did the activity.	PNS - Relatedness	Hou (2011)
119	I received support from my friends which helped me do the activity.	PNS - Relatedness	Richard et al. (1997)
120	I received support from my family which helped me do the activity.	PNS - Relatedness	Wiersma (2001)
121	I did the activity with friends.	PNS - Relatedness	
122	I felt close to others when I did the activity.	PNS - Relatedness	
123	I felt connected with others during the activity.	PNS - Relatedness	
124	I felt like I was important to others the last time I did the activity.	PNS - Relatedness	
125	I got positive feedback from others when I did the activity.	PNS - Relatedness	
126	I liked interacting with others during the activity.	PNS - Relatedness	
127	I received positive reactions from others during the activity.	PNS - Relatedness	
128	I received support from equipment which helped me do the activity.	PNS - Relatedness	
129	I used the activity to interact with others.	PNS - Relatedness	
130	I wanted to do the activity with others.	PNS - Relatedness	

Appendix A (continued)

Item Pool Used in The Expert Review phase

Item #	Item	Dimension/Category	Source
131	I was well supported by others to do the activity.	PNS - Relatedness	
132	The activity made me feel closer to my family.	PNS - Relatedness	
133	The activity made me feel closer to my friends.	PNS - Relatedness	
134	The activity was a shared effort with others.	PNS - Relatedness	
135	The relationships I have with others through the activity are fulfilling.	PNS - Relatedness	
136	The relationships I have with others through the activity are important.	PNS - Relatedness	

Note: PNS stands for Psychological Need Satisfaction. Items were placed into Dimension/Categories based on the source of the item, or intended theoretical construct for which the item was created.

APPENDIX B

EXPERT REVIEW: CONSENT FORM

Consent Form

Purpose: Since you are 18 years of age or older, you are invited to participate in a study investigating enjoyment. We hope to gather your feedback about the design of the survey so that we can improve the survey for future studies.

Participant Selection: You were selected as a possible participant in this study because you are over the age of 18 and knowledgeable about enjoyment and/or scale/questionnaire development. You are one of at least 6 participants in this study.

Explanation of Procedures: If you decide to participate, you will be asked to complete an online survey to evaluate a recent activity on a 7-point scale (1 = Strongly Disagree; 7 = Strongly Agree). Then you will be asked to scrutinize every statement on the survey, identify any problematic statements that are not effective in capturing enjoyment, and offer suggestions for improvement. Additionally, you will be asked to answer other questions related to the activity you are evaluated (e.g. how often you do the activity), and general demographics questions (e.g. age, gender). It is expected that the survey will take approximately 60-90 minutes to complete.

Discomfort/Risks: There are no expected risks or discomforts. However, you may take a break at any time, and you may skip any questions that make you feel uncomfortable.

Benefits: Your participation in this study will be beneficial in helping researchers build a universal instrument to measure enjoyment.

Confidentiality: Every effort will be made to keep your study-related information confidential. However, in order to make sure the study is done properly and safely there may be circumstances where this information must be released. By signing this form, you are giving the research team permission to share information about you with the following groups:

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- The Embry-Riddle Aeronautical University Institutional Review Board;
- The sponsor or agency supporting this study.

APPENDIX B (CONTINUED)

EXPERT REVIEW: CONSENT FORM

The researchers may publish the results of the study. If they do, they will only discuss group results. Your name will not be used in any publication or presentation about the study. We will work to make certain no one sees your survey responses without approval. But, because we are using the internet, there is a chance someone could access your online responses without permission. In some cases, this information could be used to identify you. Your data will be protected with a code to reduce the risk that other people can view the responses.

Compensation: For your participation, you will receive a $30 Amazon gift card.

Refusal/Withdrawal: Participation in this study is entirely voluntary. Your decision whether or not to participate will *not* affect your future relations with Embry-Riddle Aeronautical University. If you agree to participate in this study, you are free to withdraw from the study at any time without penalty.

Contact: If you have any questions about this research, you may contact Shayn Davidson at davidss2@my.erau.edu or you can contact Dr. Christina Frederick via e-mail at frederic@erau.edu. If you have any questions pertaining to your rights as a research subject, or about research-related injury, . You may contact the ERAU IRB with any questions or issues at (386) 226-7179 or teri.gabriel@erau.edu. ERAU's IRB is registered with the Department of Health & Human Services – Number – IORG0004370

You are under no obligation to participate in this study. By selecting the "Next>>" button below you are indicating that:

- You have read (or someone has read to you) the information provided above,
- You are aware that this is a research study,
- You have voluntarily decided to participate.

APPENDIX C

INSTRUCTIONS FOR SELECTION OF AN ACTIVITY TO EVALUATE

Instructions: In order to answer the questions on this survey, first you will choose an activity you did recently. This can be an activity you LIKED or DISLIKED. Then answer the rest of the questions regarding that experience.

Name an activity you have done in the last 5 days:

_____

APPENDIX D

QUESTIONS ABOUT EXPERIENCE WITH THE ACTIVITY

Instructions: Before you being the evaluation process, please provide us with a bit of information regarding the activity.

Briefly describe the activity. _____

How much time (hours/minutes) did you spend doing the activity the last time you did it?

      Hours (0-24):   _____

      + Minutes (0-59):   _____

How much time (hours/minutes) per week do you do the activity?

      Hours (0-24):   _____

      + Minutes (0-59):   _____

How many days per month do you do the activity?

      Days (0-31)   _____

For how long (years/months) have you been doing the activity?

      Years (0-100)   _____

      + Months (0-11):   _____

Appendix E

Expert Review: Example item screenshot

I felt absorbed in the activity.

Strongly disagree

Disagree

Somewhat disagree

Neither agree nor disagree

Somewhat agree

Agree

Strongly agree

Reviewer Comments

APPENDIX F

OVERALL ENJOYMENT OF THE ACTIVITY

Overall, how would you rate your level of enjoyment with the activity you evaluated?

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Enjoyment

APPENDIX G

EXPERT REVIEW: OTHER COMMENTS/FEEDBACK

Other Comments/Feedback

Are there any other items or content areas that you feel is important in measuring universal enjoyment, but were not included in the questionnaire? Please briefly discuss about these items or content areas.

_____

Do you have other general thoughts/comments about the questionnaire or the items on the questionnaire that you feel you didn't get the chance to discuss on the previous sections? Please briefly discuss about these thoughts/comments.

_____

APPENDIX H

EXPERT REVIEW: DEMOGRAPHICS

Demographics Info

You are almost done! Please tell us a bit about yourself.

Age:
- Under 18
- 18 - 24
- 25 - 34
- 35 - 44
- 45 - 54
- 55 - 64
- 65 - 74
- 75 - 84
- 85 or older

Gender:
- Male
- Female

Ethnicity
- White (not of Hispanic origin)
- Black or African American
- American Indian or Alaska Native
- Hispanic/Latino
- Asian or Pacific Islander
- Other
- I do not wish to answer.

Education

- Some high school
- High school graduate or GED
- Some college
- College graduate (2- and 4- year degree)
- Post-graduate degree (MA, PhD, Law, Medical, or Professional school)

APPENDIX H (CONTINUED)

EXPERT REVIEW: DEMOGRAPHICS

Do you have any experience developing questionnaires or scales?

- o Yes
- o No

(if answered "Yes")
How would you rate you experience level with questionnaire/scale development?

1 (Novice)	2	3	4 (Intermediate)	5	6	7 (Expert)

APPENDIX I

REVISED ITEM POOL AFTER EXPERT REVIEW.

Item #	Item Before Expert Review	Revised Item After Expert Review
1	I was able to get better at doing the activity.	During the activity I was able to get better at doing it.
2	The activity allowed me to develop new skills the last time I did it.	The activity allowed me to develop new skills.
3	I cooperated with others the last time I did the activity.	I cooperated with others during the activity.
4	I remained concentrated on the activity the last time I did it.	I remained concentrated on the activity.
5	I felt refreshed the last time I did the activity.	I felt refreshed after the activity.
6	Doing the activity felt congruent with my values.	The activity aligned with my values.
7	During the activity I felt personally interested in doing it.	I felt personally interested in the activity.
8	I identified with the activity.	This activity is part of my personal identity.
9	How I behaved was up to me the last time I did the activity.	I could decide my own behavior during the activity.
10	There were many actions to choose from the last time I did the activity.	There were many other activities I could've done instead of the activity.
11	My ability was well matched with the activity's challenges.	My ability to do the activity was well matched with the activity's challenges.
12	I felt my ability exceeded the challenges of the activity.	I felt my ability to do the activity exceeded the challenges of the activity.
13	It was easy for me to do well at the activity.	For me, it was easy to do well at the activity.
14	I was well supported by others to do the activity.	I was supported by others to do the activity.
15	I received positive reactions from others during the activity.	I received positive reactions from others when I did the activity.
16	I used the activity to interact with others.	I did the activity so I could interact with others.
17	I felt like I was important to others the last time I did the activity.	I felt like I was important to others during the activity.
18	I felt good inside the last time I did the activity.	I felt good inside when I did the activity.
19	My body felt good the last time I did the activity.	My body felt good when I did the activity.
20	I felt comfortable the last time I did the activity.	I felt comfortable when I did the activity
21	I felt cheerful the last time I did the activity.	I felt cheerful during the activity.
22	I was energetic the last time I did the activity.	The activity made me feel energetic.

APPENDIX I (CONTINUED)

REVISED ITEM POOL AFTER EXPERT REVIEW.

Item #	Item Before Expert Review	Revised Item After Expert Review
23	The activity was arousing.	The activity was brought out good feelings.
24	I did not feel tired while I did the activity.	I felt energized by the activity.
25	I spent more time than I planned doing the activity.	**Removed**
26	The activity was amusing.	**Removed**
27	I initiated the activity.	**Removed**
28	I knew what I needed to do to complete the activity.	**Removed**
29	I received support from equipment which helped me do the activity.	**Removed**
30	The activity made me feel aroused.	**Removed**
31	The activity made me feel glee.	**Removed**
32	I participated in the activity.	**Removed**
33	I enjoyed doing the activity.	**Removed**
34	The activity was enjoyable.	**Removed**
35	I experienced enjoyment during the activity.	**Removed**

Appendix J

EFA Study: Unique Activities Evaluated

Number	Game Title	*n*	Main Category (Sub-Category)
1	Walking	33	Exercise (Exercise)
2	Running	26	Exercise (Exercise)
3	Hiking	20	Exercise (Exercise)
4	Workout	17	Exercise (Exercise)
5	Read Book	15	Entertainment (Reading)
6	Holiday Shopping	14	Shopping (Shopping)
7	Cook Dinner	12	Food (Cooking)
8	Ride Bicycle	12	Exercise (Exercise)
9	Studying	12	School (Study)
10	Swimming	12	Exercise (Exercise)
11	Walk Dog	11	Job (Chores)
12	Yoga	11	Exercise (Exercise)
13	Buy Groceries	11	Shopping (Groceries)
14	Decorating	10	Job (Chores)
15	Clean House	9	Job (Cleaning)
16	Play Video Games	9	Entertainment (Video Games)
17	Clean Dishes	8	Job (Cleaning)
18	Cook Meal	8	Food (Cooking)
19	Driving	8	Travel (Travel)
20	Fly Plane	8	Travel (Flying)
21	Netflix	8	Entertainment (TV)
22	Survey	8	Job (Job)
23	Watch Movies	8	Entertainment (Movies)
24	Went to Work	8	Job (Job)
25	Bowling	7	Sports (Sports)
26	Lift Weights	7	Exercise (Exercise)
27	Television Shows	7	Entertainment (TV)
28	Basketball	6	Sports (Sports)
29	Knitting	6	Hobby (Hobby)
30	Play PC	6	Entertainment (Video Games)
31	Play Piano	6	Entertainment (Music)
32	Sleep	6	Other (Relaxing)
33	Soccer	6	Sports (Sports)
34	Yard Work	6	Job (Chores)
35	Laundry	5	Job (Cleaning)
36	Play Guitar	5	Entertainment (Music)
37	Sexual Intercourse	5	Entertainment (Sex)

APPENDIX J (CONTINUED)

EFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Game Title	*n*	Main Category (Sub-Category)
38	Wrap Presents	5	Event (Event)
39	Clothes Shopping	4	Shopping (Shopping)
40	Cricket	4	Sports (Sports)
41	Crochet	4	Hobby (Hobby)
42	Masturbation	4	Entertainment (Sex)
43	Babysitting	3	Job (Babysitting)
44	Bake Cake	3	Food (Cooking)
45	Casino	3	Entertainment (Gambling)
46	Christmas Lights	3	Travel (Travel)
47	Home Improvements	3	Job (Chores)
48	Listen to Music	3	Entertainment (Music)
49	Martial Arts	3	Sports (Sports)
50	Open Presents	3	Event (Event)
51	Play League of Legends	3	Entertainment (Video Games)
52	Play PS4	3	Entertainment (Video Games)
53	Programming	3	Job (Job)
54	Reading	3	Entertainment (Reading)
55	Restaurant	3	Food (Eating)
56	Shop Online	3	Shopping (Online)
57	Teaching	3	School (Teach)
58	Attend Marriage	2	Event (Event)
59	Bake Bread	2	Food (Cooking)
60	Bake Cookies	2	Food (Cooking)
61	Baking	2	Food (Cooking)
62	Bargain Shopping	2	Shopping (Shopping)
63	Buy Stuff	2	Shopping (Shopping)
64	Caretaking	2	Job (Chores)
65	Carpentry	2	Hobby (Hobby)
66	Climbing	2	Exercise (Exercise)
67	Cooking	2	Food (Cooking)
68	Dance	2	Hobby (Hobby)
69	Draw Pictures	2	Hobby (Drawing)
70	Eat Dinner	2	Food (Eating)
71	Eat Food	2	Food (Eating)
72	Golf	2	Sports (Sports)
73	Hang out	2	Other (Social)
74	Ice Skating	2	Sports (Sports)

APPENDIX J (CONTINUED)

EFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Game Title	*n*	Main Category (Sub-Category)
75	Liked	2	Entertainment (Liked)
76	Mail Package	2	Job (Errand)
77	Monopoly	2	Entertainment (Board Games)
78	Office Party	2	Event (Event)
79	Play Candy Crush	2	Entertainment (Video Games)
80	Play Pokemon	2	Entertainment (Video Games)
81	Read Internet	2	Entertainment (Reading)
82	Repair Bike	2	Job (Repairing)
83	Ride Motorcycle	2	Travel (Travel)
84	Sewing	2	Hobby (Hobby)
85	Shopping	2	Shopping (Shopping)
86	Shoveled Snow	2	Job (Chores)
87	Talking	2	Other (Social)
88	Tennis	2	Sports (Sports)
89	Vacuuming	2	Job (Chores)
90	Visit Family	2	Travel (Travel)
91	Watch Justice League	2	Entertainment (Movies)
92	Watch Netflix	2	Entertainment (Movies)
93	Weightlifting	2	Exercise (Exercise)
94	Went Fishing	2	Hobby (Fishing)
95	Work at Company	2	Job (Job)
96	Xbox One	2	Entertainment (Video Games)
97	48 Hour Shift	1	Job (Job)
98	Abstract Painting	1	Hobby (Painting)
99	Act like Farmer	1	Hobby (Hobby)
100	Arrange Program	1	School (Teach)
101	Arranged Books	1	Job (Cleaning)
102	Attend Class	1	School (Class)
103	Badminton	1	Sports (Sports)
104	Bake Pizza	1	Food (Cooking)
105	Ballet	1	Hobby (Hobby)
106	Baseball	1	Sports (Sports)
107	Bass Fishing	1	Hobby (Fishing)
108	Beach Resort	1	Travel (Travel)
109	Bingo	1	Entertainment (Board Games)
110	Bird Watching	1	Entertainment (Recreation)
111	Birthday Party	1	Event (Event)

EFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Game Title	*n*	Main Category (Sub-Category)
112	Board Games	1	Entertainment (Board Games)
113	Body Exercise	1	Exercise (Exercise)
114	Booking	1	Job (Chores)
115	Box Magazines	1	Job (Job)
116	Brush Teeth	1	Job (Chores)
117	Build Environments	1	Entertainment (Video Games)
118	Build Pond	1	Job (Construction)
119	Bungee Jumping	1	Entertainment (Recreation)
120	Buy a bed	1	Shopping (Shopping)
121	Buy Phone	1	Shopping (Shopping)
122	Buy TV	1	Shopping (Shopping)
123	Camping	1	Entertainment (Recreation)
124	Cards	1	Entertainment (Board Games)
125	Chanting	1	Other (Relaxing)
126	Charity	1	Job (Volunteer)
127	Christmas Shopping	1	Shopping (Shopping)
128	Church	1	Other (Religion)
129	Clean Bathroom	1	Job (Cleaning)
130	Clean Kitchen	1	Job (Cleaning)
131	Clean Room	1	Job (Cleaning)
132	Clean Toilets	1	Job (Cleaning)
133	Clothing Shopping	1	Shopping (Shopping)
134	College Football	1	Entertainment (TV)
135	Cook Chocolate Mousse	1	Food (Cooking)
136	Cook Lasagna	1	Food (Cooking)
137	Craft Paper	1	Hobby (Arts & Crafts)
138	Create Webpage	1	Job (Job)
139	Cutting Trees	1	Job (Chores)
140	Dancing	1	Hobby (Hobby)
141	Data Entry	1	Job (Job)
142	Deliver Newspapers	1	Job (Job)
143	Dentist	1	Job (Medical)
144	Design Livingroom	1	Job (Job)
145	Disc Golf	1	Sports (Sports)
146	DJ	1	Job (Job)
147	Dog Training	1	Job (Chores)
148	Dominion	1	Entertainment (Board Games)

APPENDIX J (CONTINUED)

EFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Game Title	*n*	Main Category (Sub-Category)
149	Donate Blood	1	Job (Volunteer)
150	Donating Plasma	1	Job (Volunteer)
151	Draw Characters	1	Hobby (Drawing)
152	Draw Comic	1	Hobby (Drawing)
153	Draw in Sketchbook	1	Hobby (Drawing)
154	Draw Portraits	1	Hobby (Drawing)
155	Draw Sketches	1	Hobby (Drawing)
156	Draw with Pencil	1	Hobby (Drawing)
157	Drawing	1	Hobby (Drawing)
158	Drink Beer	1	Food (Drinking)
159	Drinking Alcohol	1	Food (Drinking)
160	Dungeons and Dragons	1	Entertainment (Board Games)
161	Eat Cheese	1	Food (Eating)
162	Eat Curry	1	Food (Eating)
163	Eat Meal	1	Food (Eating)
164	Eat Steak	1	Food (Eating)
165	Eating	1	Food (Eating)
166	Elliptical	1	Exercise (Exercise)
167	Escape Room	1	Entertainment (Recreation)
168	Fix Server	1	Job (Repairing)
169	Fly DJI Phantom	1	Hobby (Flying)
170	Football	1	Sports (Sports)
171	Forging	1	Hobby (Hobby)
172	Friendsgiving	1	Food (Eating)
173	Fundraising	1	Job (Volunteer)
174	Funeral	1	Event (Event)
175	Furniture Restoration	1	Job (Repairing)
176	Gardening	1	Hobby (Gardening)
177	Geocaching	1	Hobby (Hobby)
178	Go to Norway	1	Travel (Travel)
179	Go to Venice	1	Travel (Travel)
180	Got Scammed	1	Job (Money)
181	Grow Plants	1	Hobby (Gardening)
182	Grow Vegetables	1	Hobby (Gardening)
183	Help Poor People	1	Job (Volunteer)
184	Helped Harmony School	1	Job (Volunteer)
185	Hide Rocks	1	Hobby (Hobby)

APPENDIX J (CONTINUED)

EFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Game Title	*n*	Main Category (Sub-Category)
186	High Intensity Workout	1	Exercise (Exercise)
187	HIIT Circuit	1	Exercise (Exercise)
188	Hockey	1	Sports (Sports)
189	House Keeping	1	Job (Cleaning)
190	Household Shopping	1	Shopping (Shopping)
191	IKEA Shopping	1	Shopping (Shopping)
192	Inline Skating	1	Sports (Sports)
193	Install Amazon Fire	1	Job (Technology)
194	Insulted Someone	1	Other (Social)
195	Interview	1	Job (Job)
196	Inventory Managing	1	Job (Job)
197	Job Application	1	Job (Job)
198	Jog	1	Exercise (Exercise)
199	Just Dance	1	Entertainment (Video Games)
200	Kayaking	1	Sports (Sports)
201	Lagoon Fishing	1	Hobby (Fishing)
202	Listen to Record	1	Entertainment (Music)
203	Load Firewood	1	Job (Job)
204	Look for a Dress	1	Shopping (Shopping)
205	Made Banana Bread	1	Food (Cooking)
206	Made Burritos	1	Food (Cooking)
207	Made Candles	1	Hobby (Arts & Crafts)
208	Made Coffee	1	Food (Cooking)
209	Made Lefsa	1	Food (Cooking)
210	Magic the Gathering	1	Entertainment (Board Games)
211	Mahjong	1	Entertainment (Board Games)
212	Maintain Plants	1	Hobby (Gardening)
213	Mancala	1	Entertainment (Board Games)
214	Marketing	1	Job (Job)
215	Meditated	1	Other (Relaxing)
216	Military	1	Job (Job)
217	Moisturize Face	1	Job (Chores)
218	Move Furniture	1	Job (Chores)
219	Mow Lawn	1	Job (Chores)
220	Museum	1	Entertainment (Recreation)
221	Needlework	1	Hobby (Hobby)
222	New Year's Party	1	Event (Event)

APPENDIX J (CONTINUED)

EFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Game Title	*n*	Main Category (Sub-Category)
223	Non-Profit Dancing	1	Job (Volunteer)
224	Organized Apartment	1	Job (Cleaning)
225	Packing	1	Job (Cleaning)
226	Packing Boxes	1	Job (Cleaning)
227	Pain Clinic	1	Job (Medical)
228	Paint Cupboards	1	Hobby (Painting)
229	Paint Garage	1	Hobby (Painting)
230	Paint Kitchen	1	Hobby (Painting)
231	Paint Modern Art	1	Hobby (Painting)
232	Paint Wall	1	Hobby (Painting)
233	Painted	1	Hobby (Painting)
234	Pandemic Legacy	1	Entertainment (Board Games)
235	Pet Cat	1	Entertainment (Play with Animal)
236	Pet Dog	1	Entertainment (Play with Animal)
237	Petting Zoo	1	Entertainment (Play with Animal)
238	Physical Therapy	1	Exercise (Exercise)
239	Pick up dog poop	1	Job (Chores)
240	Pickle Ball	1	Sports (Sports)
241	Pinball	1	Entertainment (Arcade Games)
242	Plant Tree	1	Hobby (Gardening)
243	Planting Flowers	1	Hobby (Gardening)
244	Play Animal Crossing	1	Entertainment (Video Games)
245	Play Board Games	1	Entertainment (Board Games)
246	Play Call of Duty WWII	1	Entertainment (Video Games)
247	Play Call of Duty	1	Entertainment (Video Games)
248	Play Cello	1	Entertainment (Music)
249	Play Dead by Daylight	1	Entertainment (Video Games)
250	Play Destiny 2	1	Entertainment (Video Games)
251	Play Disney Emoji Blitz	1	Entertainment (Video Games)
252	Play Dragon Age Origins	1	Entertainment (Video Games)
253	Play Elder Scrolls Online	1	Entertainment (Video Games)
254	Play Fetch	1	Entertainment (Play with Animal)
255	Play MMORPG	1	Entertainment (Video Games)
256	Play PC and Mobile	1	Entertainment (Video Games)
257	Play PC and PS4	1	Entertainment (Video Games)
258	Play Prison Architect	1	Entertainment (Video Games)
259	Play Rocket League	1	Entertainment (Video Games)

APPENDIX J (CONTINUED)

EFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Game Title	n	Main Category (Sub-Category)
260	Play Runescape	1	Entertainment (Video Games)
261	Play Simulator	1	Entertainment (Video Games)
262	Play Tag	1	Entertainment (Play with Animal)
263	Play The Legend of Zelda	1	Entertainment (Video Games)
264	Play Wordchums	1	Entertainment (Video Games)
265	Play World of Warcraft	1	Entertainment (Video Games)
266	Played KENO	1	Entertainment (Gambling)
267	Plumbing Gas Lines	1	Job (Job)
268	Pond Fishing	1	Hobby (Fishing)
269	Presentation	1	Job (Job)
270	Project	1	School (Homework)
271	Pull Weeds	1	Hobby (Gardening)
272	Read American Gods	1	Entertainment (Reading)
273	Read Anatomy Book	1	Entertainment (Reading)
274	Read Book	1	Entertainment (Reading)
275	Read Dreadnought	1	Entertainment (Reading)
276	Read eBook	1	Entertainment (Reading)
277	Read Forums	1	Entertainment (Reading)
278	Read Game of Thrones	1	Entertainment (Reading)
279	Read Kindle	1	Entertainment (Reading)
280	Read Magazine	1	Entertainment (Reading)
281	Read Manga	1	Entertainment (Reading)
282	Read Midair	1	Entertainment (Reading)
283	Read Mystery	1	Entertainment (Reading)
284	Read Romance Novel	1	Entertainment (Reading)
285	Read Sherlock Holmes	1	Entertainment (Reading)
286	Read Tablet	1	Entertainment (Reading)
287	Read Unwanteds	1	Entertainment (Reading)
288	Receipt Entry	1	Job (Job)
289	Research Electricity	1	School (Research)
290	Research Game Console	1	School (Research)
291	Research History	1	School (Research)
292	Research Pet Fish	1	School (Research)
293	Research Study	1	Job (Job)
294	Research Websites	1	School (Research)
295	Resident Advising	1	Job (Job)
296	Review Bank Accounts	1	Job (Money)

APPENDIX J (CONTINUED)

EFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Game Title	*n*	Main Category (Sub-Category)
297	Riding Horse	1	Hobby (Hobby)
298	Road Trip	1	Travel (Travel)
299	Roasted Almonds	1	Food (Cooking)
300	Roller Coaster	1	Entertainment (Recreation)
301	Roller Derby	1	Hobby (Hobby)
302	Rugby	1	Sports (Sports)
303	Scenic Painting	1	Hobby (Painting)
304	Search for Apartments	1	School (Research)
305	Search for new ideas	1	School (Research)
306	Secure Bank Loan	1	Job (Money)
307	See Doctor	1	Job (Medical)
308	Sewed Sleeping Bag	1	Job (Repairing)
309	Shampooed	1	Job (Cleaning)
310	Shop at Mall	1	Shopping (Shopping)
311	Shop at Target	1	Shopping (Shopping)
312	Shop Work	1	Shopping (Shopping)
313	Skating	1	Sports (Sports)
314	Skipping	1	Exercise (Exercise)
315	Sky Diving	1	Entertainment (Recreation)
316	Sledding	1	Entertainment (Recreation)
317	Smoke Cigar	1	Entertainment (Drugs)
318	Smoke Weeds	1	Entertainment (Drugs)
319	Snorkeling	1	Entertainment (Recreation)
320	Software Development	1	Job (Job)
321	Soup Kitchen	1	Job (Volunteer)
322	Sport Fishing	1	Hobby (Fishing)
323	Stamina Exercise	1	Exercise (Exercise)
324	Stock Freight	1	Job (Job)
325	Strategy Board Games	1	Entertainment (Board Games)
326	Strength Training	1	Exercise (Exercise)
327	Surf Internet	1	Entertainment (Reading)
328	Surfing	1	Sports (Sports)
329	Sword Fighting	1	Sports (Sports)
330	Symphony	1	Entertainment (Concert)
331	System Administration	1	Job (Job)
332	Take out Trash	1	Job (Chores)
333	Telesales Managing	1	Job (Job)

APPENDIX J (CONTINUED)

EFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Game Title	*n*	Main Category (Sub-Category)
334	Temple	1	Event (Event)
335	Thanksgiving	1	Food (Eating)
336	Took Down Christmas Tree	1	Job (Cleaning)
337	Took Pictures	1	Hobby (Photography)
338	Trailer Spotting	1	Job (Job)
339	Transcribing	1	Job (Job)
340	Trim Plants	1	Hobby (Gardening)
341	Vacuum	1	Job (Chores)
342	Volleyball	1	Sports (Sports)
343	Wash Clothes	1	Job (Cleaning)
344	Watch Anime	1	Entertainment (TV)
345	Watch Big Ban Theory	1	Entertainment (TV)
346	Watch Boku no Hero Academia	1	Entertainment (TV)
347	Watch Bollywood	1	Entertainment (Movies)
348	Watch Call my by your name	1	Entertainment (Movies)
349	Watch Choir	1	Entertainment (Concert)
350	Watch Crime Movie	1	Entertainment (Movies)
351	Watch Dunkirk	1	Entertainment (Movies)
352	Watch DVD	1	Entertainment (Movies)
353	Watch Murder on the Orient Express	1	Entertainment (TV)
354	Watch Musical	1	Entertainment (Concert)
355	Watch NFL	1	Entertainment (TV)
356	Watch Parade	1	Event (Event)
357	Watch Performance	1	Entertainment (Concert)
358	Watch Porn	1	Entertainment (Sex)
359	Watch Premier League	1	Entertainment (TV)
360	Watch Rocky Horror Picture Show	1	Entertainment (Movies)
361	Watch Star Wars	1	Entertainment (Movies)
362	Watch Thor	1	Entertainment (Movies)
363	Watch Wonder	1	Entertainment (Movies)
364	Watch Younow	1	Entertainment (TV)
365	Watercolor Art	1	Hobby (Painting)
366	Weight Lifting	1	Exercise (Exercise)
367	Went to Pharmacy	1	Job (Errand)
368	Went to store	1	Shopping (Shopping)
369	Write Book	1	Hobby (Writing)
370	Write Draft	1	Hobby (Writing)

APPENDIX J (CONTINUED)

EFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Game Title	*n*	Main Category (Sub-Category)
371	Write Short Story	1	Hobby (Writing)
372	Write Story	1	Hobby (Writing)
373	YouTube	1	Entertainment (TV)
374	Zumba	1	Exercise (Exercise)

APPENDIX K

EFA STUDY: CONSENT FORM

Consent Form

Purpose: If you are 18 years of age or older, you are invited to participate in a study investigating enjoyment. We hope to gather your feedback about the design of the survey so that we can improve the survey for future studies.

Participant Selection: You were selected as a possible participant in this study because you fit the criteria of the population we are interested in studying, namely that you are over the age of 18. You are one of at least 600 participants in this study.

Explanation of Procedures: If you decide to participate, you will be asked to complete an online survey to evaluate a recent activity on a 7-point scale (1 = Strongly Disagree; 7 = Strongly Agree). Additionally, you will be asked to answer other questions related to the activity you are evaluated (e.g. how often you do the activity), and general demographics questions (e.g. age, gender). It is expected that the survey will take approximately 30-45 minutes to complete.

Discomfort/Risks: There are no expected risks or discomforts. However, you may take a break at any time, and you may skip any questions that make you feel uncomfortable.

Benefits: Your participation in this study will be beneficial in helping researchers build a universal instrument to measure enjoyment.

Confidentiality: Every effort will be made to keep your study-related information confidential. However, in order to make sure the study is done properly and safely there may be circumstances where this information must be released. By clicking "Next >>" at the bottom of this form, you are giving the research team permission to share information about you with the following groups:

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- The Embry-Riddle Aeronautical University Institutional Review Board;
- The sponsor or agency supporting this study.

APPENDIX K (CONTINUED)

EFA STUDY: CONSENT FORM

The researchers may publish the results of the study. If they do, they will only discuss group results. Your name will not be used in any publication or presentation about the study. We will work to make certain no one sees your survey responses without approval. But, because we are using the internet, there is a chance someone could access your online responses without permission. In some cases, this information could be used to identify you. Your data will be protected with a code to reduce the risk that other people can view the responses.

All survey responses that the investigator receives will be treated confidentially and stored on a secure server. However, given that the surveys can be completed from any computer (personal, work, school, etc.), we are unable to guarantee the security of the computer on which you choose to enter your response. As a participant in this study, the investigator wants you to be aware that certain "keylogging" software programs exist that can be used to track or capture data that you enter and/or websites that you visit.

Compensation: For your participation, your name will be entered in a random drawing to win one of ten $30 Amazon gift cards.

Refusal/Withdrawal: Participation in this study is entirely voluntary. Your decision whether or not to participate will *not* affect your future relations with Embry-Riddle Aeronautical University. If you agree to participate in this study, you are free to withdraw from the study at any time without penalty.

Contact: If you have any questions about this research, you may contact Shayn Davidson at davidss2@my.erau.edu or you can contact Dr. Christina Frederick via e-mail at frederic@erau.edu. The ERAU Institutional Review Board (IRB) has approved this project. You may contact the ERAU IRB with any questions or issues at (386) 226-7179 or teri.gabriel@erau.edu. ERAU's IRB is registered with the Department of Health & Human Services – Number – IORG0004370

Consent: You are under no obligation to participate in this study. By selecting the "Next>>" button below you are indicating that:

- You have read (or someone has read to you) the information provided above,
- You are aware that this is a research study,
- You have voluntarily decided to participate.
- You are 18 years of age or older.

APPENDIX K (CONTINUED)

EFA STUDY: CONSENT FORM

If you do not wish to participate in the study, simply close the browser or click "<< Back" which will direct you out of the study.

Please print a copy of this form for your records. A copy of this form can also be requested from Shayn Davidson, davidss2@my.erau.edu.

APPENDIX L

EFA AND CFA STUDIES: QUESTIONS ON EXPERIENCE WITH ACTIVITY

Instructions: In order to answer the questions on this survey, first you will choose an activity you did recently. This can be an activity you LIKED or DISLIKED. Then answer the rest of the questions regarding that experience.

Name an activity you have done in the last 5 days:

_____

Instructions: Before you begin the evaluation process, please provide us with a bit of information regarding the activity.

Please briefly describe the activity you chose. (You chose: "activity name")

_____

How much time did you spend doing the activity?
- o Less than 30 minutes
- o 30 minutes - 1 hour
- o 1 - 3 hours
- o 4 - 6 hours
- o 6 - 8 hours
- o 8 - 10 hours
- o More than 10 hours

APPENDIX L (CONTINUED)

EFA AND CFA STUDIES: QUESTIONS ON EXPERIENCE WITH ACTIVITY

For how long have you been doing the activity?

- o Less than 1 month
- o 1 - 3 months
- o 4 - 6 months
- o 7 - 12 months
- o 1 - 2 years
- o 2 - 4 years
- O More than 5 years

How many hours in a typical week do you do the activity?

- o Less than 1 hour
- o 1 - 3 hours
- o 4 - 8 hours
- o 8 - 16 hours
- o 16 - 32 hours
- o 32 - 64 hours
- o More than 64 hours

How many days in a typical month do you do the activity?

- o 1 day
- o 2 - 3 days
- o 4 - 7 days
- o 8 - 14 days
- o 14 - 21 days
- o 21 - 31 days

Appendix M

EFA Study: Screenshot Example of Enjoyment Statement

Instructions: Next you will be answering questions about the activity. There are no correct answers, please take your time and answer honestly. When answering the following questions, please think of the specific recent instance of the activity you named. (You named: the activity).

I felt competent when I was doing the activity.

Strongly disagree

Disagree

Somewhat disagree

Neither agree nor disagree

Somewhat agree

Agree

Strongly agree

Not Applicable (N/A)

Appendix N

List of Statements used in EFA Study

Item #	Item	Dimension/Category	Source
1	When I did the activity, I thought about nothing else.	Engagement	Bakker (2008)
2	I did the activity longer than I meant to.	Engagement	Brockmyer, et al. (2009)
3	I remained concentrated on the activity.	Engagement	Fu, Su, & Yu (2009)
4	I did the activity automatically without having to think.	Engagement	Jackson & Marsh (1996)
5	I blocked out most other distractions during the activity.	Engagement	Phan, Keebler, & Chaparro (2016)
6	I forgot what was going on around me during the activity.	Engagement	Schaufeli, et al. (2002)
7	I was determined when I did the activity.	Engagement	Watson & Clark (1999)
8	I concentrated on the activity.	Engagement	
9	I deliberately focused on the activity.	Engagement	
10	I felt energized by the activity.	Engagement	
11	I felt absorbed in the activity.	Engagement	
12	I felt deep mental involvement in the activity.	Engagement	
13	I felt engaged in the activity.	Engagement	
14	I felt engrossed by the activity.	Engagement	
15	I felt immersed in the activity.	Engagement	
16	I felt involved in the activity.	Engagement	
17	I felt like time passed faster than normal the last time I did the activity.	Engagement	
18	I lost track of time during the activity.	Engagement	
19	I lost track of what was going on around me during the activity.	Engagement	
20	I lost track of what was going on outside of the activity.	Engagement	

APPENDIX N (CONTINUED)

LIST OF STATEMENTS USED IN EFA STUDY

Item #	Item	Dimension/Category	Source
21	I was enthralled with the activity.	Engagement	
22	It was easy for me to stay focused on the activity.	Engagement	
23	My attention was focused on the activity.	Engagement	
24	I had fun during the activity.	Enjoyment	
25	I liked doing the activity.	Enjoyment	
26	The activity was relaxing.	Pleasure	Chou & Ting (2003)
27	The activity made me feel stimulated.	Pleasure	Frederick & Ryan (1993)
28	I felt refreshed after the activity.	Pleasure	Kendzierski & DeCarlo (1991)
29	The activity was exhilarating.	Pleasure	Kendzierski & DeCarlo (1991)
30	The activity excited my senses.	Pleasure	Peterson, Park, & Seligman (2005)
31	I felt inspired by the activity.	Pleasure	Schaufeli, et al. (2002)
32	The activity was invigorating.	Pleasure	Schaufeli, et al. (2002)
33	Doing the activity made me feel alive.	Pleasure	Stevens, et al. (2000)
34	I felt bold during the activity.	Pleasure	Watson & Clark (1999)
35	I felt confident during the activity.	Pleasure	Watson & Clark (1999)
36	I felt daring during the activity.	Pleasure	Watson & Clark (1999)
37	I felt fearless during the activity.	Pleasure	Watson & Clark (1999)
38	I felt lively during the activity.	Pleasure	Watson & Clark (1999)
39	I felt strong during the activity.	Pleasure	Watson & Clark (1999)

Appendix N (continued)

List of Statements used in EFA Study

Item #	Item	Dimension/Category	Source
40	Doing the activity made me feel joyful.	Pleasure	
41	I enthusiastically did the activity.	Pleasure	
42	I felt cheerful during the activity.	Pleasure	
43	I felt comfortable when I did the activity	Pleasure	
44	I felt content during the activity.	Pleasure	
45	I felt delighted when I did the activity.	Pleasure	
46	I felt excited the last time I did the activity.	Pleasure	
47	I felt glad the last time I did the activity.	Pleasure	
48	I felt good inside when I did the activity.	Pleasure	
49	I felt positive sensations the last time I did the activity.	Pleasure	
50	I felt proud when I did the activity.	Pleasure	
51	I felt thrilled the last time I did the activity.	Pleasure	
52	I found myself smiling during the activity.	Pleasure	
53	The activity made me feel energetic.	Pleasure	
54	My body felt good when I did the activity.	Pleasure	
55	The activity cheered me up.	Pleasure	
56	The activity made me feel alive.	Pleasure	
57	The activity made me feel good.	Pleasure	
58	The activity made me feel great.	Pleasure	
59	The activity made me feel happy.	Pleasure	
60	The activity was brought out good feelings.	Pleasure	
61	The activity was fun.	Pleasure	

APPENDIX N (CONTINUED)

LIST OF STATEMENTS USED IN EFA STUDY

Item #	Item	Dimension/Category	Source
62	The activity was pleasurable to me.	Pleasure	
63	I felt in control of my actions during the activity.	PNS - Autonomy	Jackson & Marsh (1996)
64	The activity allowed me to do things I normally don't get to do.	PNS - Autonomy	Sherry, et al. (2006)
65	I had a choice whether or not to do the activity.	PNS - Autonomy	Sørebø & Hæhre (2012)
66	During the activity I felt in charge of my own life.	PNS - Autonomy	Wirth, Hofer, & Schramm (2012)
67	The activity aligned with my values.	PNS - Autonomy	
68	I felt personally interested in the activity.	PNS - Autonomy	
69	I could decide my own behavior during the activity.	PNS - Autonomy	
70	I could be myself during the activity.	PNS - Autonomy	
71	I felt free to choose my actions during the activity.	PNS - Autonomy	
72	I felt free to choose what order I did things in during the activity.	PNS - Autonomy	
73	I felt free to express myself during the activity.	PNS - Autonomy	
74	I had the freedom to choose my actions during the activity.	PNS - Autonomy	
75	This activity is part of my personal identity.	PNS - Autonomy	
76	I would choose to do the activity again.	PNS - Autonomy	
77	There were many other activities I could've done instead of the activity.	PNS - Autonomy	
78	I felt a sense of achievement when I did the activity.	PNS - Competency	Chou & Ting (2003)
79	I liked the challenge the activity provided me.	PNS - Competency	Frederick & Ryan (1993)
80	During the activity I was able to get better at doing it.	PNS - Competency	Frederick & Ryan (1993)
81	The activity allowed me to develop new skills.	PNS - Competency	Frederick & Ryan (1993)
82	I improved my knowledge when I did the activity.	PNS - Competency	Fu, Su, & Yu (2009)

APPENDIX N (CONTINUED)

LIST OF STATEMENTS USED IN EFA STUDY

Item #	Item	Dimension/Category	Source
83	I was able to apply my knowledge during the activity.	PNS - Competency	Fu, Su, & Yu (2009)
84	Doing the activity was rewarding.	PNS - Competency	Jackson & Marsh (1996)
85	I felt a sense of accomplishment when I did the activity.	PNS - Competency	Kendzierski & DeCarlo (1991)
86	The activity was worthwhile.	PNS - Competency	Lin, Gregor, & Ewing (2008)
87	I felt very capable during the activity.	PNS - Competency	Rigby & Ryan (2007)
88	I felt very effective during the activity.	PNS - Competency	Rigby & Ryan (2007)
89	I was able to reach my goal for the activity.	PNS - Competency	Wiersma (2001)
90	I am competent at performing the activity.	PNS - Competency	
91	I am good at the activity.	PNS - Competency	
92	I felt challenged, but not over-challenged, during the activity.	PNS - Competency	
93	I felt challenged, but not under-challenged, during the activity.	PNS - Competency	
94	I felt competent when I was doing the activity.	PNS - Competency	
95	I felt effective at doing the activity.	PNS - Competency	
96	I felt I was successful at completing the activity.	PNS - Competency	
97	I felt like I did a good job the last time I did the activity.	PNS - Competency	
98	I felt my ability to do the activity exceeded the challenges of the activity.	PNS - Competency	
99	I felt my skill matched the challenges of the activity.	PNS - Competency	
100	I had a good sense of how well I was doing during the activity.	PNS - Competency	
101	I improved my skills the last time I did the activity.	PNS - Competency	
102	I was able to overcome challenges during the activity.	PNS - Competency	

APPENDIX N (CONTINUED)

LIST OF STATEMENTS USED IN EFA STUDY

Item #	Item	Dimension/Category	Source
103	I was proficient in the activity.	PNS - Competency	
104	For me, it was easy to do well at the activity.	PNS - Competency	
105	My ability to do the activity was well matched with the activity's challenges.	PNS - Competency	
106	The activity provided me feedback which indicated how well I was doing.	PNS - Competency	
107	I cooperated with others during the activity.	PNS - Relatedness	Fu, Su, & Yu (2009)
108	I felt a sense of belongingness when I did the activity.	PNS - Relatedness	Hou (2011)
109	I received support from my friends which helped me do the activity.	PNS - Relatedness	Richard et al. (1997)
110	I received support from my family which helped me do the activity.	PNS - Relatedness	Wiersma (2001)
111	I did the activity with friends.	PNS - Relatedness	
112	I felt close to others when I did the activity.	PNS - Relatedness	
113	I felt connected with others during the activity.	PNS - Relatedness	
114	I felt like I was important to others during the activity.	PNS - Relatedness	
115	I got positive feedback from others when I did the activity.	PNS - Relatedness	
116	I liked interacting with others during the activity.	PNS - Relatedness	
117	I received positive reactions from others when I did the activity.	PNS - Relatedness	
118	I did the activity so I could interact with others.	PNS - Relatedness	
119	I wanted to do the activity with others.	PNS - Relatedness	
120	I was supported by others to do the activity.	PNS - Relatedness	
121	The activity made me feel closer to my family.	PNS - Relatedness	
122	The activity made me feel closer to my friends.	PNS - Relatedness	

APPENDIX N (CONTINUED)

LIST OF STATEMENTS USED IN EFA STUDY

Item #	Item	Dimension/Category	Source
123	The activity was a shared effort with others.	PNS - Relatedness	
124	The relationships I have with others through the activity are fulfilling	PNS - Relatedness	
125	The relationships I have with others through the activity are important.	PNS - Relatedness	

Appendix O

EFA Study: Overall enjoyment of the activity

For this specific instance of the activity you evaluated, how would you rate your level of enjoyment (from 1 - 10)? A higher number indicating higher enjoyment.

| 1 | 2 | 3 | 4 | 5 | 6 | 6 | 7 | 8 | 9 | 10 |

Enjoyment

Next >>

APPENDIX P

EFA AND CFA STUDIES: DEMOGRAPHIC QUESTIONS

Demographics Info

You are almost done! Please tell us a bit about yourself.

Age:

_____

Gender:

_____

Race:

- o   White (not of Hispanic origin)
- o   Black or African American
- o   American Indian or Alaska Native
- o   Hispanic or Latino
- o   Asian or Pacific Islander
- o   Other
- o   I do not wish to answer

Education:

- o   Some high school
- o   High school graduate or GED
- o   Some college
- o   College graduate (2- and 4-year degree)
- o   Post-graduate degree (MA, PhD, Law, Medical, or Professional school)

APPENDIX Q

EFA STUDY: SKEWNESS AND KURTOSIS

Item	N	Mean	SD	Skewness		Kurtosis	
				Value	Std. Error	Value	Std. Error
I did the activity so I could interact with others.	758	3.75	2.21	0.16	0.09	-1.49	0.18
I did the activity with friends.	753	3.91	2.35	0.02	0.09	-1.66	0.18
The activity made me feel closer to my friends.	685	4.14	2.01	-0.17	0.09	-1.23	0.19
I felt daring during the activity.	750	4.15	1.87	-0.16	0.09	-1.06	0.18
The activity was a shared effort with others.	730	4.21	2.22	-0.18	0.09	-1.52	0.18
The activity made me closer to my family.	700	4.23	2.03	-0.18	0.09	-1.26	0.19
I did the activity longer than I meant to.	788	4.34	1.94	-0.16	0.09	-1.31	0.17
I received support from my friends which helped me do the activity.	670	4.47	1.99	-0.42	0.09	-1.14	0.19
When I did the activity, I thought about nothing else.	793	4.50	1.84	-0.24	0.09	-1.17	0.17
I felt close to others when I did the activity.	719	4.54	1.95	-0.42	0.09	-1.03	0.18
I lost track of what was going on around me during the activity.	787	4.55	1.85	-0.34	0.09	-1.07	0.17
I lost track of what was going on outside of the activity.	791	4.56	1.87	-0.37	0.09	-1.06	0.17
The activity allowed me to do things I normally don't get to do.	756	4.57	1.94	-0.43	0.09	-1.04	0.18
I forgot what was going on around me during the activity.	793	4.58	1.82	-0.37	0.09	-1.02	0.17
I felt fearless during the activity.	732	4.59	1.77	-0.28	0.09	-0.90	0.18
I received support from my family which helped me do the activity.	686	4.61	1.99	-0.47	0.09	-1.00	0.19

APPENDIX Q (continued)

EFA STUDY: SKEWNESS AND KURTOSIS

Item	N	Mean	SD	Skewness		Kurtosis	
				Value	Std. Error	Value	Std. Error
I felt connected with others during the activity.	735	4.62	1.97	-0.50	0.09	-0.98	0.18
I felt like I was important to others during the activity.	705	4.65	1.86	-0.47	0.09	-0.87	0.18
The activity is associated as part of my identity.	763	4.67	1.93	-0.54	0.09	-0.88	0.18
I liked interacting with others during the activity.	706	4.73	2.02	-0.61	0.09	-0.95	0.18
I wanted to do the activity with others.	774	4.74	2.09	-0.59	0.09	-1.07	0.18
The activity allowed me to develop new skills.	757	4.76	1.85	-0.57	0.09	-0.77	0.18
I felt bold during the activity.	767	4.77	1.71	-0.50	0.09	-0.64	0.18
I felt my ability to do the activity exceeded the challenges of the activity.	738	4.86	1.63	-0.47	0.09	-0.62	0.18
I did the activity automatically without having to think.	784	4.87	1.86	-0.58	0.09	-0.91	0.17
I improved my knowledge when I did the activity.	754	4.89	1.79	-0.63	0.09	-0.59	0.18
The activity provided me feedback which indicated how well I was doing.	708	4.94	1.80	-0.78	0.09	-0.34	0.18
The relationships I have with others through the activity are important.	690	4.95	1.81	-0.71	0.09	-0.44	0.19
I was enthralled with the activity.	777	4.96	1.76	-0.73	0.09	-0.35	0.18
I cooperated with others during the activity.	687	4.96	1.95	-0.77	0.09	-0.63	0.19
The activity was exhilarating.	788	4.96	1.81	-0.70	0.09	-0.49	0.17
I felt thrilled the last time I did the activity.	780	4.99	1.82	-0.77	0.09	-0.41	0.18
I lost track of time during the activity.	793	5.01	1.97	-0.50	0.09	-0.98	0.18

APPENDIX Q (continued)

EFA STUDY: SKEWNESS AND KURTOSIS

Item	N	Mean	SD	Skewness		Kurtosis	
				Value	Std. Error	Value	Std. Error
I felt challenged, but not over-challenged, during the activity.	767	5.01	1.69	-0.88	0.09	-0.11	0.18
I felt a sense of belongingness when I did the activity.	738	5.04	1.69	-0.77	0.09	-0.14	0.18
I was supported by others to do the activity.	732	5.05	1.69	-0.83	0.09	-0.09	0.18
I felt challenged, but not under-challenged, during the activity.	757	5.11	1.64	-0.87	0.09	-0.05	0.18
The relationships I have with others through the activity are fulfilling.	669	5.12	1.68	-0.83	0.09	-0.06	0.19
The activity made me feel energetic.	790	5.13	1.78	-0.81	0.09	-0.35	0.17
I felt strong during the activity.	751	5.13	1.63	-0.76	0.09	-0.14	0.18
I felt deep mental involvement in the activity.	788	5.14	1.73	-0.88	0.09	-0.17	0.17
I improved my skills the last time I did the activity.	742	5.16	1.61	-0.83	0.09	0.03	0.18
I felt inspired by the activity.	784	5.16	1.70	-0.89	0.09	-0.03	0.17
I felt refreshed after the activity.	788	5.17	1.80	-0.88	0.09	-0.29	0.17
The activity was invigorating.	781	5.18	1.67	-0.89	0.09	0.01	0.18
I got positive feedback from others when I did the activity.	715	5.20	1.71	-1.02	0.09	0.18	0.18
The activity was relaxing.	796	5.21	1.87	-0.97	0.09	-0.18	0.17
My body felt good when I did the activity.	760	5.21	1.75	-0.83	0.09	-0.28	0.18
I felt energized by the activity.	789	5.28	1.72	-0.97	0.09	0.01	0.17
I received positive reactions from others when I did the activity.	729	5.28	1.69	-0.88	0.09	-0.11	0.18
I felt engrossed by the activity.	781	5.28	1.69	-0.77	0.09	-0.14	0.18

APPENDIX Q (continued)

EFA STUDY: SKEWNESS AND KURTOSIS

Item	N	Mean	SD	Skewness		Kurtosis	
				Value	Std. Error	Value	Std. Error
Doing the activity made me feel alive.	784	5.28	1.66	-0.99	0.09	0.24	0.17
I was able to overcome challenges during the activity.	730	5.30	1.44	-1.03	0.09	0.78	0.18
The activity excited my senses.	785	5.32	1.68	-1.01	0.09	0.18	0.17
The activity made me feel alive.	787	5.32	1.66	-1.01	0.09	0.29	0.17
I blocked out most other distractions during the activity.	795	5.33	1.58	-0.98	0.09	0.10	0.17
I felt excited the last time I did the activity.	790	5.33	1.71	-1.08	0.09	0.32	0.17
I found myself smiling during the activity.	796	5.35	1.74	-1.06	0.09	0.18	0.17
I felt lively during the activity.	787	5.36	1.62	-1.09	0.09	0.44	0.17
I felt like time passed faster than normal the last time I did the activity.	792	5.37	1.67	-0.97	0.09	0.02	0.17
During the activity I felt in charge of my own life.	765	5.41	1.50	-1.06	0.09	0.71	0.18
I liked the challenge the activity provided me.	753	5.42	1.57	-1.11	0.09	0.61	0.18
I felt delighted when I did the activity.	792	5.42	1.63	-1.18	0.09	0.69	0.17
Doing the activity made me feel joyful.	793	5.42	1.66	-1.18	0.09	0.70	0.17
I felt free to express myself during the activity.	741	5.43	1.49	-1.04	0.09	0.62	0.18
I was able to apply my knowledge during the activity.	743	5.46	1.46	-1.16	0.09	1.05	0.18
The activity aligned with my values.	725	5.46	1.41	-0.89	0.09	0.51	0.18
I felt proud when I did the activity.	775	5.46	1.66	-0.99	0.09	0.24	0.17
There were many other activities I could've done instead of the activity.	792	5.48	1.44	-1.03	0.09	0.78	0.18
During the activity I was able to get better at doing it.	740	5.50	1.68	-1.01	0.09	0.18	0.17

APPENDIX Q (continued)

EFA STUDY: SKEWNESS AND KURTOSIS

Item	N	Mean	SD	Skewness		Kurtosis	
				Value	Std. Error	Value	Std. Error
I felt free to choose what order I did things in during the activity.	758	5.52	1.64	-1.24	0.09	0.68	0.18
I felt cheerful during the activity.	794	5.53	1.54	-1.32	0.09	1.25	0.17
I felt my skills matched the challenges of the activity.	741	5.54	1.42	-1.23	0.09	1.25	0.18
the activity cheered me up.	793	5.56	1.59	-1.28	0.09	0.97	0.17
I felt very effective during the activity.	768	5.57	1.36	-1.35	0.09	1.98	0.18
the activity made me feel stimulated.	791	5.59	1.54	-1.33	0.09	1.27	0.17
I felt absorbed in the activity.	793	5.61	1.42	-1.26	0.09	1.39	0.17
For me, it was easy to do well at the activity.	776	5.61	1.42	-1.24	0.09	1.15	0.18
I enthusiastically did the activity.	791	5.62	1.54	-1.36	0.09	1.25	0.17
My ability to do the activity was well matched with the activity's challenges.	747	5.63	1.31	-1.32	0.09	1.89	0.18
The activity made me feel great.	794	5.64	1.57	-1.32	0.09	1.11	0.17
I was able to reach my goal for the activity.	754	5.66	1.29	-1.16	0.09	1.14	0.18
I felt immersed in the activity.	789	5.67	1.36	-1.35	0.09	1.84	0.17
I felt confident during the activity.	780	5.69	1.29	-1.31	0.09	1.84	0.18
I felt positive sensations the last time I did the activity.	791	5.72	1.45	-1.54	0.09	2.19	0.17
I felt content during the activity.	791	5.72	1.40	-1.46	0.09	2.00	0.17
It was easy for me to stay focused on the activity.	797	5.74	1.64	-1.24	0.09	0.68	0.18
I was proficient in the activity.	762	5.75	1.54	-1.32	0.09	1.25	0.17
The activity was fun.	796	5.75	1.42	-1.23	0.09	1.25	0.18
The activity was pleasurable to me.	796	5.76	1.59	-1.28	0.09	0.97	0.17

APPENDIX Q (continued)

EFA STUDY: SKEWNESS AND KURTOSIS

Item	N	Mean	SD	Skewness		Kurtosis	
				Value	Std. Error	Value	Std. Error
I felt free to choose my actions during the activity.	778	5.76	1.39	-1.43	0.09	1.76	0.18
The activity brought out good feelings.	796	5.76	1.45	-1.55	0.09	2.22	0.17
I had a good sense of how well I was doing during the activity.	762	5.77	1.15	-1.19	0.09	1.70	0.18
I had fun during the activity.	795	5.77	1.56	-1.51	0.09	1.69	0.17
I deliberately focused on the activity.	795	5.79	1.30	-1.51	0.09	2.50	0.17
I felt good inside when I did the activity.	797	5.80	1.38	-1.54	0.09	2.43	0.17
I had a choice whether or not to do the activity.	789	5.80	1.68	-1.59	0.09	1.52	0.17
I felt very capable during the activity.	779	5.80	1.15	-1.27	0.09	2.21	0.18
I felt effective at doing the activity.	771	5.81	1.18	-1.50	0.09	2.93	0.18
I felt competent when I was doing the activity.	773	5.81	1.20	-1.45	0.09	2.64	0.18
I felt glad the last time I did the activity.	792	5.81	1.39	-1.59	0.09	2.39	0.17
I had the freedom to choose my actions during the activity.	773	5.82	1.40	-1.55	0.09	2.00	0.18
I felt a sense of achievement when I did the activity.	781	5.82	1.32	-1.46	0.09	2.19	0.18
The activity made me feel happy.	796	5.82	1.52	-1.62	0.09	2.15	0.17
I felt a sense of accomplishment when I did the activity.	783	5.83	1.32	-1.46	0.09	2.12	0.18
I remained concentrated on the activity.	795	5.85	1.22	-1.45	0.09	2.29	0.17
I am good at the activity.	777	5.86	1.39	-1.43	0.09	1.76	0.18
I was determined when I did the activity.	767	5.87	1.45	-1.55	0.09	2.22	0.17
The activity made me feel good.	798	5.89	1.15	-1.19	0.09	1.70	0.18

APPENDIX Q (continued)

EFA STUDY: SKEWNESS AND KURTOSIS

Item	N	Mean	SD	Skewness		Kurtosis	
				Value	Std. Error	Value	Std. Error
I could decide my own behavior during the activity.	779	5.89	1.26	-1.66	0.09	3.09	0.18
I felt competent at performing the activity.	767	5.90	1.22	-1.71	0.09	3.62	0.18
I felt personally interested in the activity.	796	5.90	1.41	-1.81	0.09	3.18	0.17
I concentrated on the activity.	794	5.91	1.18	-1.49	0.09	2.56	0.17
I felt engaged in the activity.	796	5.91	1.26	-1.76	0.09	3.58	0.17
Doing the activity was rewarding.	786	5.92	1.27	-1.54	0.09	2.54	0.17
I felt comfortable doing the activity.	795	5.93	1.29	-1.77	0.09	3.23	0.17
I felt like I did a good job the last time I did the activity.	765	5.94	1.11	-1.52	0.09	2.89	0.18
I felt involved in the activity.	790	5.95	1.20	-1.54	0.09	2.66	0.17
My attention was focused on the activity.	795	5.98	1.15	-1.60	0.09	3.10	0.17
I felt in control of my actions during the activity.	784	6.00	1.11	-1.69	0.09	3.85	0.17
I liked doing the activity.	796	6.02	1.47	-1.96	0.09	3.41	0.17
I felt I was successful at completing the activity.	766	6.02	1.12	-1.65	0.09	3.66	0.18
I could be myself during the activity.	780	6.04	1.12	-1.77	0.09	4.05	0.18
The activity was worthwhile.	795	6.20	1.10	-2.10	0.09	5.75	0.17
I would choose to do the activity again.	792	6.42	1.14	-2.74	0.09	8.31	0.17

APPENDIX R

EFA STUDY: VARIABLES WITH MISSING VALUES

	Missing Values			
Item	*n*	Percent	Mean	SD
The relationships I have with others through the activity are fulfilling.	129	16.2%	5.12	1.682
I received support from my friends which helped me do the activity.	128	16.0%	4.47	1.991
The activity made me feel closer to my friends.	113	14.2%	4.14	2.012
I received support from my family which helped me do the activity.	112	14.0%	4.61	1.993
I cooperated with others during the activity.	111	13.9%	4.96	1.947
The relationships I have with others through the activity are important.	108	13.5%	4.95	1.805
The activity made me closer to my family.	98	12.3%	4.23	2.025
I felt like I was important to others during the activity.	93	11.7%	4.65	1.864
I liked interacting with others during the activity.	92	11.5%	4.73	2.017
the activity provided me feedback which indicated how well I was doing.	90	11.3%	4.94	1.804
I got positive feedback from others when I did the activity.	83	10.4%	5.20	1.705
I felt close to others when I did the activity.	79	9.9%	4.54	1.947
The activity aligned with my values.	73	9.1%	5.46	1.405
I received positive reactions from others when I did the activity.	69	8.6%	5.28	1.600
I was able to overcome challenges during the activity.	68	8.5%	5.30	1.436
the activity was a shared effort with others.	68	8.5%	4.21	2.219
I felt fearless during the activity.	66	8.3%	4.59	1.768
I was supported by others to do the activity.	66	8.3%	5.05	1.689

APPENDIX R (continued)

EFA STUDY: VARIABLES WITH MISSING VALUES

Item	Missing Values		Mean	SD
	n	Percent		
I felt connected with others during the activity.	63	7.9%	4.62	1.968
I felt a sense of belongingness when I did the activity.	60	7.5%	5.04	1.686
I felt my ability to do the activity exceeded the challenges of the activity.	60	7.5%	4.86	1.629
During the activity, I was able to get better at doing it.	58	7.3%	5.50	1.462
I felt free to express myself during the activity.	57	7.1%	5.43	1.493
I felt my skills matched the challenges of the activity.	57	7.1%	5.54	1.415
I improved my skills the last time I did the activity.	56	7.0%	5.16	1.606
I was able to apply my knowledge during the activity.	55	6.9%	5.46	1.458
My ability to do the activity was well matched with the activity's challenges.	51	6.4%	5.63	1.305
I felt daring during the activity.	48	6.0%	4.15	1.865
I felt strong during the activity.	47	5.9%	5.13	1.625
I liked the challenge the activity provided me.	45	5.6%	5.42	1.567
I did the activity with friends.	45	5.6%	3.91	2.345
I improved my knowledge when I did the activity.	44	5.5%	4.89	1.794
I was able to reach my goal for the activity.	44	5.5%	5.66	1.287
The activity allowed me to do things I normally don't get to do.	42	5.3%	4.57	1.943
The activity allowed me to develop new skills.	41	5.1%	4.76	1.849
I felt challenged, but not under-challenged, during the activity.	41	5.1%	5.11	1.640
I felt free to choose what order I did things in during the activity.	40	5.0%	5.52	1.644

APPENDIX R (continued)

EFA STUDY: VARIABLES WITH MISSING VALUES

Item	Missing Values		Mean	SD
	n	Percent		
I did the activity so I could interact with others.	40	5.0%	3.75	2.209
My body felt good when I did the activity.	38	4.8%	5.21	1.750
I was proficient in the activity.	36	4.5%	5.75	1.260
I had a good sense of how well I was doing during the activity.	36	4.5%	5.77	1.147
The activity is associated as part of my identity.	35	4.4%	4.67	1.929
During the activity I felt in charge of my own life.	33	4.1%	5.41	1.496
I felt like I did a good job the last time I did the activity.	33	4.1%	5.94	1.107
I felt I was successful at completing the activity.	32	4.0%	6.02	1.116
I felt bold during the activity.	31	3.9%	4.77	1.705
I was determined when I did the activity.	31	3.9%	5.87	1.208
I felt challenged, but not over-challenged, during the activity.	31	3.9%	5.01	1.693
I felt competent at performing the activity.	31	3.9%	5.90	1.223
I felt very effective during the activity.	30	3.8%	5.57	1.361
I felt effective at doing the activity.	27	3.4%	5.81	1.182
I had the freedom to choose my actions during the activity.	25	3.1%	5.82	1.404
I felt competent when I was doing the activity.	25	3.1%	5.81	1.196
I wanted to do the activity with others.	24	3.0%	4.74	2.090
I felt proud when I did the activity.	23	2.9%	5.46	1.467
For me, it was easy to do well at the activity.	22	2.8%	5.61	1.416
I am good at the activity.	21	2.6%	5.86	1.173
I was enthralled with the activity.	21	2.6%	4.96	1.757

APPENDIX R (continued)

EFA STUDY: VARIABLES WITH MISSING VALUES

Item	Missing Values		Mean	SD
	n	**Percent**	**Mean**	**SD**
I felt free to choose my actions during the activity.	20	2.5%	5.76	1.391
I felt very capable during the activity.	19	2.4%	5.80	1.152
I could decide my own behavior during the activity.	19	2.4%	5.89	1.264
I felt confident during the activity.	18	2.3%	5.69	1.290
I could be myself during the activity.	18	2.3%	6.04	1.121
I felt thrilled the last time I did the activity.	18	2.3%	4.99	1.815
I felt a sense of achievement when I did the activity.	17	2.1%	5.82	1.318
The activity was invigorating.	17	2.1%	5.18	1.673
I felt engrossed by the activity.	17	2.1%	5.28	1.628
I felt a sense of accomplishment when I did the activity.	15	1.9%	5.83	1.316
I felt in control of my actions during the activity.	14	1.8%	6.00	1.110
I did the activity automatically without having to think.	14	1.8%	4.87	1.856
I felt inspired by the activity.	14	1.8%	5.16	1.700
Doing the activity made me feel alive.	14	1.8%	5.28	1.664
The activity excited my senses.	13	1.6%	5.32	1.680
Doing the activity was rewarding.	12	1.5%	5.92	1.268
The activity made me feel alive.	11	1.4%	5.32	1.663
I felt lively during the activity.	11	1.4%	5.36	1.615
I lost track of what was going on around me during the activity.	11	1.4%	4.55	1.848
I did the activity longer than I meant to.	10	1.3%	4.34	1.940
I felt refreshed after the activity.	10	1.3%	5.17	1.802
The activity was exhilarating.	10	1.3%	4.96	1.807

APPENDIX R (continued)

EFA STUDY: VARIABLES WITH MISSING VALUES

Item	Missing Values		Mean	SD
	n	Percent		
I felt deep mental involvement in the activity.	10	1.3%	5.14	1.734
I had a choice whether or not to do the activity.	9	1.1%	5.80	1.683
I felt immersed in the activity.	9	1.1%	5.67	1.357
I felt energized by the activity.	9	1.1%	5.28	1.722
I felt excited the last time I did the activity.	8	1.0%	5.33	1.706
The activity made me feel energetic.	8	1.0%	5.13	1.781
I felt involved in the activity.	8	1.0%	5.95	1.201
The activity made me feel stimulated.	7	.9%	5.59	1.544
I enthusiastically did the activity.	7	.9%	5.62	1.535
I felt positive sensations the last time I did the activity.	7	.9%	5.72	1.453
I felt content during the activity.	7	.9%	5.72	1.399
I lost track of what was going on outside of the activity.	7	.9%	4.56	1.867
I would choose to do the activity again.	6	.8%	6.42	1.144
There were many other activities I could've done instead of the activity.	6	.8%	5.48	1.576
I felt delighted when I did the activity.	6	.8%	5.42	1.626
I felt glad the last time I did the activity.	6	.8%	5.81	1.393
I felt like time passed faster than normal the last time I did the activity.	6	.8%	5.37	1.669
When I did the activity, I thought about nothing else.	5	.6%	4.50	1.842
I forgot what was going on around me during the activity.	5	.6%	4.58	1.817
Doing the activity made me feel joyful.	5	.6%	5.42	1.656
The activity cheered me up.	5	.6%	5.56	1.589

APPENDIX R (continued)

EFA STUDY: VARIABLES WITH MISSING VALUES

Item	Missing Values		Mean	SD
	n	Percent		
I felt absorbed in the activity.	5	.6%	5.61	1.417
I lost track of time during the activity.	5	.6%	5.01	1.785
I felt cheerful during the activity.	4	.5%	5.53	1.543
The activity made me feel great.	4	.5%	5.64	1.569
I concentrated on the activity.	4	.5%	5.91	1.183
I remained concentrated on the activity.	3	.4%	5.85	1.221
The activity was worthwhile.	3	.4%	6.20	1.104
I blocked out most other distractions during the activity.	3	.4%	5.33	1.581
I felt comfortable doing the activity.	3	.4%	5.93	1.287
My attention was focused on the activity.	3	.4%	5.98	1.150
I deliberately focused on the activity.	3	.4%	5.79	1.302
I had fun during the activity.	3	.4%	5.77	1.562
The activity was relaxing.	2	.3%	5.21	1.874
I felt personally interested in the activity.	2	.3%	5.90	1.413
The activity was pleasurable to me.	2	.3%	5.76	1.602
The activity brought out good feelings.	2	.3%	5.76	1.446
The activity made me feel happy.	2	.3%	5.82	1.520
I found myself smiling during the activity.	2	.3%	5.35	1.735
I felt engaged in the activity.	2	.3%	5.91	1.257
I liked doing the activity.	2	.3%	6.02	1.470
The activity was fun.	2	.3%	5.75	1.666
I felt good inside when I did the activity.	1	.1%	5.80	1.384
It was easy for me to stay focused on the activity.	1	.1%	5.74	1.296
The activity made me feel good.	0	0.0%	5.89	1.402

APPENDIX S

EFA STUDY: ITEMS REMOVED

Original Item #	Item
3	I did the activity longer than I meant to.
16	Doing the activity was rewarding.
17	I did the activity automatically without having to think.
18	I felt a sense of accomplishment when I did the activity.
26	I felt very effective during the activity.
27	I felt inspired by the activity.
30	The activity allowed me to do things I normally don't get to do.
33	I felt bold during the activity.
34	I felt fearless during the activity.
38	I was determined when I did the activity.
39	I was able to reach my goal for the activity.
41	During the activity I felt in charge of my own life.
42	The activity aligned with my values.
44	I felt free to express myself during the activity.
45	I had a choice whether or not to do the activity.
46	I had the freedom to choose my actions during the activity.
47	The activity is associated as part of my identity.
49	I could decide my own behavior during the activity.
50	There were many other activities I could've done instead of the activity.
51	I felt free to choose my actions during the activity.
52	I felt free to choose what order I did things in during the activity.
53	I could be myself during the activity.
66	I felt my ability to do the activity exceeded the challenges of the activity.
68	For me, it was easy to do well at the activity.
78	I received positive reactions from others when I did the activity.
81	I got positive feedback from others when I did the activity.
88	I felt comfortable doing the activity.
113	I felt like time passed faster than normal the last time I did the activity.
114	I felt involved in the activity.
115	I felt engaged in the activity.
117	I was enthralled with the activity.
119	I felt deep mental involvement in the activity.
120	It was easy for me to stay focused on the activity.

APPENDIX T

EFA STUDY: PATTERN MATRIX LOADINGS FOR 5-FACTOR SOLUTION (N = 798)

Item	Factor Loadings for Promax Rotation				
	Factor 1	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**
The activity was pleasurable to me.	**1.00**	-0.05	-0.06	-0.14	0.03
The activity made me feel happy.	**0.95**	0.01	0.01	-0.09	-0.06
The activity was fun.	**0.94**	-0.01	-0.15	-0.12	0.10
The activity made me feel good.	**0.93**	-0.09	0.06	-0.03	-0.08
I liked doing the activity.	**0.93**	-0.03	-0.07	-0.10	0.06
The activity made me feel great.	**0.90**	-0.05	0.06	0.05	-0.09
I had fun during the activity.	**0.90**	0.09	-0.12	-0.14	0.08
Doing the activity made me feel joyful.	**0.89**	0.07	-0.03	-0.05	0.00
The activity cheered me up.	**0.88**	0.03	0.02	-0.11	0.02
I felt delighted when I did the activity.	**0.86**	0.01	0.00	-0.05	0.04
I felt cheerful during the activity.	**0.84**	0.09	0.01	-0.11	0.03
The activity brought out good feelings.	**0.84**	0.06	0.08	-0.06	-0.04
I felt glad the last time I did the activity.	**0.81**	-0.01	0.08	-0.01	-0.09
I felt excited the last time I did the activity.	**0.79**	0.07	-0.06	0.03	0.08
I felt positive sensations the last time I did the activity.	**0.79**	-0.03	0.08	0.00	0.04
The activity was relaxing.	**0.78**	-0.08	0.00	-0.21	0.06
I felt refreshed after the activity.	**0.78**	-0.09	0.06	0.02	-0.12
I felt energized by the activity.	**0.78**	-0.05	-0.06	0.19	-0.07
I enthusiastically did the activity.	**0.76**	-0.02	0.02	0.00	0.12
The activity was invigorating.	**0.76**	-0.06	-0.10	0.19	0.02
I felt content during the activity.	**0.75**	-0.03	0.18	-0.17	0.05
The activity made me feel energetic.	**0.73**	0.01	-0.03	0.24	-0.15

APPENDIX T (CONTINUED)

EFA STUDY: PATTERN MATRIX LOADINGS FOR 5-FACTOR SOLUTION (N = 798)

Item	Factor Loadings for Promax Rotation				
	Factor 1	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**
Doing the activity made me feel alive.	**0.73**	-0.01	-0.04	0.22	-0.03
My body felt good when I did the activity.	**0.73**	-0.03	0.02	0.08	-0.14
I felt good inside when I did the activity.	**0.73**	-0.03	0.14	0.11	-0.11
The activity excited my senses.	**0.72**	0.05	-0.05	0.06	0.08
I felt lively during the activity.	**0.72**	0.08	-0.01	0.15	-0.06
I felt thrilled the last time I did the activity.	**0.72**	0.09	-0.04	0.07	0.04
The activity made me feel alive.	**0.72**	-0.01	0.01	0.18	-0.03
The activity was exhilarating.	**0.69**	-0.01	-0.08	0.19	0.08
I would choose to do the activity again.	**0.68**	-0.06	0.09	-0.14	-0.06
The activity made me feel stimulated.	**0.67**	-0.05	-0.03	0.15	0.08
I found myself smiling during the activity.	**0.65**	0.29	0.01	-0.22	0.07
I felt personally interested in the activity.	**0.60**	0.00	0.07	0.03	0.14
The activity was worthwhile.	**0.41**	-0.07	0.24	0.13	-0.11
The activity was a shared effort with others.	-0.18	**0.88**	-0.01	-0.05	0.06
I liked interacting with others during the activity.	-0.01	**0.85**	0.03	-0.03	-0.04
I felt close to others when I did the activity.	0.10	**0.84**	0.00	-0.06	-0.01
I cooperated with others during the activity.	-0.21	**0.83**	0.03	0.05	0.00
I felt connected with others during the activity.	0.11	**0.82**	0.02	-0.10	0.03
I did the activity so I could interact with others.	0.05	**0.79**	-0.11	-0.04	-0.02
The activity made me feel closer to my friends.	0.19	**0.77**	-0.11	0.01	-0.03

APPENDIX T (CONTINUED)

EFA STUDY: PATTERN MATRIX LOADINGS FOR 5-FACTOR SOLUTION (N = 798)

Item	Factor Loadings for Promax Rotation				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
I wanted to do the activity with others.	0.04	**0.74**	-0.03	-0.12	0.01
I did the activity with friends.	-0.04	**0.74**	-0.13	0.06	0.09
The relationships I have with others through the activity are important.	0.00	**0.71**	0.09	0.00	-0.02
I received support from my friends which helped me do the activity.	-0.02	**0.68**	-0.11	0.22	0.03
The relationships I have with others through the activity are fulfilling.	0.14	**0.67**	0.09	0.00	-0.01
I was supported by others to do the activity.	-0.10	**0.66**	0.12	0.09	-0.07
I felt like I was important to others during the activity.	-0.20	**0.61**	0.25	0.15	0.01
The activity made me closer to my family.	0.13	**0.61**	0.04	-0.11	-0.13
I received support from my family which helped me do the activity.	-0.06	**0.55**	0.07	0.18	-0.12
I felt a sense of belongingness when I did the activity.	0.28	**0.47**	0.02	0.08	0.09
I was proficient in the activity.	-0.07	0.04	**0.84**	-0.24	0.08
I felt competent at performing the activity.	-0.01	0.00	**0.83**	-0.13	0.00
I am good at the activity.	0.02	0.02	**0.80**	-0.27	0.07
I felt very capable during the activity.	0.04	-0.03	**0.78**	-0.01	-0.03
I felt like I did a good job the last time I did the activity.	0.04	0.00	**0.75**	0.02	-0.06
I felt effective at doing the activity.	0.05	-0.02	**0.74**	0.04	-0.06
I felt competent when I was doing the activity.	-0.02	-0.02	**0.68**	0.00	0.03
I felt I was successful at completing the activity.	0.00	0.03	**0.67**	0.03	-0.06
I felt in control of my actions during the activity.	0.16	-0.02	**0.56**	-0.04	-0.10
I felt confident during the activity.	0.19	0.01	**0.55**	0.10	0.02
I felt my skills matched the challenges of the activity.	-0.10	0.07	**0.51**	0.24	-0.03

EFA STUDY: PATTERN MATRIX LOADINGS FOR 5-FACTOR SOLUTION (N = 798)

Item	Factor Loadings for Promax Rotation				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
My ability to do the activity was well matched with the activity's challenges.	-0.02	0.06	**0.48**	0.21	0.00
I had a good sense of how well I was doing during the activity.	0.14	0.03	**0.48**	0.19	-0.10
The activity allowed me to develop new skills.	-0.03	0.09	-0.23	**0.84**	0.07
I felt challenged, but not under-challenged, during the activity.	0.00	-0.09	-0.15	**0.82**	0.00
I improved my skills the last time I did the activity.	-0.03	0.01	-0.05	**0.82**	-0.01
I felt challenged, but not over-challenged, during the activity.	0.03	-0.06	-0.09	**0.68**	0.02
During the activity I was able to get better at doing it.	0.00	0.02	0.07	**0.67**	0.04
I liked the challenge the activity provided me.	0.27	-0.07	-0.05	**0.66**	0.04
I was able to overcome challenges during the activity.	-0.16	-0.01	0.15	**0.66**	0.05
I improved my knowledge when I did the activity.	-0.11	0.13	-0.13	**0.63**	0.18
I felt a sense of achievement when I did the activity.	0.03	-0.13	0.30	**0.59**	-0.12
The activity provided me feedback which indicated how well I was doing.	-0.08	0.13	0.07	**0.55**	-0.06
I felt daring during the activity.	0.19	0.08	-0.13	**0.49**	0.07
I was able to apply my knowledge during the activity.	-0.21	0.06	0.26	**0.46**	0.12
I felt proud when I did the activity.	0.20	0.04	0.23	**0.46**	-0.08
I felt strong during the activity.	0.29	0.00	0.19	**0.41**	-0.04
I lost track of what was going on outside of the activity.	-0.07	-0.02	-0.15	0.01	**0.80**
I lost track of what was going on around me during the activity.	-0.06	-0.02	-0.14	0.04	**0.78**
I forgot what was going on around me during the activity.	-0.04	-0.04	-0.17	0.10	**0.75**
I lost track of time during the activity.	0.03	0.05	-0.10	-0.06	**0.66**

APPENDIX T (CONTINUED)

EFA STUDY: PATTERN MATRIX LOADINGS FOR 5-FACTOR SOLUTION (N = 798)

Item	Factor Loadings for Promax Rotation				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
When I did the activity, I thought about nothing else.	0.07	0.05	0.00	0.04	**0.59**
I blocked out most other distractions during the activity.	0.09	-0.04	0.12	-0.03	**0.58**
My attention was focused on the activity.	0.04	-0.01	0.27	-0.03	**0.54**
I felt absorbed in the activity.	0.21	-0.07	0.10	0.06	**0.52**
I felt immersed in the activity.	0.23	-0.05	0.13	0.07	**0.51**
I concentrated on the activity.	-0.11	-0.03	0.31	0.13	**0.50**
I remained concentrated on the activity.	0.09	-0.01	0.25	0.04	**0.49**
I deliberately focused on the activity.	-0.02	-0.07	0.21	0.11	**0.47**
I felt engrossed by the activity.	0.26	0.02	0.09	0.00	**0.46**

Note: Factor loadings |.40| or above are bolded.

APPENDIX U

EFA STUDY: STRUCTURE MATRIX LOADINGS FOR 5-FACTOR SOLUTION (N = 798)

Item	Factor Loadings for Promax Rotation				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
The activity was pleasurable to me.	**0.88**	0.32	**0.41**	0.39	**0.47**
The activity made me feel happy.	**0.88**	0.38	**0.46**	**0.43**	**0.42**
The activity was fun.	**0.84**	0.34	0.34	0.38	**0.49**
The activity made me feel good.	**0.86**	0.30	**0.49**	**0.45**	**0.41**
I liked doing the activity.	**0.85**	0.33	**0.40**	**0.40**	**0.47**
The activity made me feel great.	**0.88**	0.35	**0.52**	**0.52**	**0.42**
I had fun during the activity.	**0.83**	0.41	0.35	0.37	**0.47**
Doing the activity made me feel joyful.	**0.88**	**0.43**	**0.45**	**0.47**	**0.46**
The activity cheered me up.	**0.85**	0.38	**0.46**	**0.42**	**0.46**
I felt delighted when I did the activity.	**0.87**	0.38	**0.47**	**0.47**	**0.49**
I felt cheerful during the activity.	**0.84**	**0.43**	**0.45**	**0.43**	**0.46**
The activity brought out good feelings.	**0.85**	**0.42**	**0.51**	**0.47**	**0.43**
I felt glad the last time I did the activity.	**0.80**	0.35	**0.48**	**0.45**	0.38
I felt excited the last time I did the activity.	**0.84**	**0.43**	**0.44**	**0.50**	0.51
I felt positive sensations the last time I did the activity.	**0.84**	0.35	**0.52**	**0.50**	**0.49**
The activity was relaxing.	**0.66**	0.19	0.31	0.22	0.36
I felt refreshed after the activity.	**0.72**	0.25	**0.42**	**0.40**	0.31
I felt energized by the activity.	**0.79**	0.34	**0.43**	0.55	**0.40**
I enthusiastically did the activity.	**0.83**	0.35	**0.48**	**0.49**	**0.53**
The activity was invigorating.	**0.80**	0.33	**0.41**	0.55	**0.46**
I felt content during the activity.	**0.77**	0.29	**0.51**	0.37	**0.44**
The activity made me feel energetic.	**0.78**	0.39	**0.45**	**0.58**	0.35

APPENDIX U (CONTINUED)

EFA STUDY: STRUCTURE MATRIX LOADINGS FOR 5-FACTOR SOLUTION (N = 798)

Item	Factor Loadings for Promax Rotation				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Doing the activity made me feel alive.	**0.81**	0.38	**0.47**	**0.59**	**0.44**
My body felt good when I did the activity.	**0.70**	0.30	0.40	**0.43**	0.30
I felt good inside when I did the activity.	**0.79**	0.35	**0.54**	**0.53**	0.38
The activity excited my senses.	**0.80**	**0.40**	**0.43**	**0.50**	**0.49**
I felt lively during the activity.	**0.81**	**0.45**	**0.48**	**0.57**	**0.42**
I felt thrilled the last time I did the activity.	**0.80**	**0.43**	**0.44**	**0.51**	**0.47**
The activity made me feel alive.	**0.81**	0.38	**0.49**	**0.58**	**0.44**
The activity was exhilarating.	**0.79**	0.37	**0.44**	**0.57**	**0.51**
I would choose to do the activity again.	**0.60**	0.19	0.35	0.25	0.27
The activity made me feel stimulated.	**0.75**	0.31	**0.43**	**0.52**	**0.48**
I found myself smiling during the activity.	**0.70**	**0.51**	0.36	0.31	**0.40**
I felt personally interested in the activity.	**0.73**	0.33	**0.47**	**0.47**	**0.50**
The activity was worthwhile.	**0.52**	0.20	**0.47**	**0.41**	0.25
The activity was a shared effort with others.	0.20	**0.79**	0.14	0.23	0.15
I liked interacting with others during the activity.	0.33	**0.83**	0.24	0.31	0.15
I felt close to others when I did the activity.	**0.43**	**0.86**	0.27	0.35	0.22
I cooperated with others during the activity.	0.20	**0.77**	0.19	0.30	0.13
I felt connected with others during the activity.	0.43	**0.84**	0.27	0.33	0.25
I did the activity so I could interact with others.	0.30	**0.75**	0.11	0.25	0.13
The activity made me feel closer to my friends.	**0.45**	**0.82**	0.21	0.36	0.21
I wanted to do the activity with others.	0.29	**0.71**	0.15	0.21	0.15
I did the activity with friends.	0.29	**0.73**	0.13	0.31	0.22

APPENDIX U (CONTINUED)

EFA STUDY: STRUCTURE MATRIX LOADINGS FOR 5-FACTOR SOLUTION (N = 798)

Item	Factor Loadings for Promax Rotation				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
The relationships I have with others through the activity are important.	0.36	**0.74**	0.30	0.35	0.20
I received support from my friends which helped me do the activity.	0.36	**0.74**	0.21	**0.44**	0.24
The relationships I have with others through the activity are fulfilling.	**0.48**	**0.75**	0.36	**0.41**	0.26
I was supported by others to do the activity.	0.27	**0.68**	0.28	0.35	0.13
I felt like I was important to others during the activity.	0.29	**0.66**	0.41	**0.44**	0.22
The activity made me closer to my family.	0.29	**0.60**	0.17	0.18	0.05
I received support from my family which helped me do the activity.	0.26	**0.60**	0.26	0.37	0.10
I felt a sense of belongingness when I did the activity.	**0.58**	**0.65**	0.39	**0.48**	**0.40**
I was proficient in the activity.	0.31	0.17	**0.70**	0.24	0.28
I felt competent at performing the activity.	0.37	0.18	**0.75**	0.33	0.27
I am good at the activity.	0.35	0.17	**0.69**	0.23	0.29
I felt very capable during the activity.	**0.43**	0.21	**0.78**	**0.42**	0.30
I felt like I did a good job the last time I did the activity.	**0.43**	0.23	**0.76**	**0.44**	0.28
I felt effective at doing the activity.	**0.43**	0.22	**0.75**	**0.45**	0.28
I felt competent when I was doing the activity.	0.37	0.18	**0.68**	0.38	0.30
I felt I was successful at completing the activity.	0.36	0.22	**0.67**	0.39	0.23
I felt in control of my actions during the activity.	0.38	0.18	**0.58**	0.32	0.19
I felt confident during the activity.	**0.57**	0.31	**0.73**	**0.54**	**0.40**
I felt my skills matched the challenges of the activity.	0.32	0.26	**0.59**	**0.48**	0.25
My ability to do the activity was well matched with the activity's challenges.	0.38	0.28	**0.60**	**0.49**	0.29
I had a good sense of how well I was doing during the activity.	**0.47**	0.29	**0.63**	**0.51**	0.27
The activity allowed me to develop new skills.	**0.40**	0.38	0.28	**0.76**	0.37

APPENDIX U (CONTINUED)

EFA STUDY: STRUCTURE MATRIX LOADINGS FOR 5-FACTOR SOLUTION (N = 798)

Item	Factor Loadings for Promax Rotation				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
I felt challenged, but not under-challenged, during the activity.	0.34	0.21	0.28	**0.70**	0.30
I improved my skills the last time I did the activity.	**0.40**	0.32	0.39	**0.77**	0.33
I felt challenged, but not over-challenged, during the activity.	0.35	0.22	0.30	**0.63**	0.30
During the activity I was able to get better at doing it.	**0.44**	0.33	**0.47**	**0.73**	0.38
I liked the challenge the activity provided me.	**0.61**	0.32	**0.47**	**0.77**	**0.45**
I was able to overcome challenges during the activity.	0.32	0.25	**0.45**	**0.67**	0.33
I improved my knowledge when I did the activity.	0.33	0.36	0.28	**0.64**	0.39
I felt a sense of achievement when I did the activity.	**0.40**	0.19	**0.56**	**0.67**	0.26
The activity provided me feedback which indicated how well I was doing.	0.30	0.33	0.35	**0.57**	0.21
I felt daring during the activity.	**0.47**	0.35	0.30	**0.59**	0.37
I was able to apply my knowledge during the activity.	0.28	0.26	**0.47**	**0.57**	0.34
I felt proud when I did the activity.	**0.55**	0.36	**0.57**	**0.68**	0.34
I felt strong during the activity.	**0.60**	0.34	**0.56**	**0.66**	0.38
I lost track of what was going on outside of the activity.	0.28	0.10	0.14	0.25	**0.70**
I lost track of what was going on around me during the activity.	0.30	0.12	0.16	0.28	**0.70**
I forgot what was going on around me during the activity.	0.31	0.11	0.16	0.31	**0.70**
I lost track of time during the activity.	0.32	0.17	0.17	0.23	**0.63**
When I did the activity, I thought about nothing else.	**0.43**	0.24	0.32	0.37	**0.66**
I blocked out most other distractions during the activity.	**0.43**	0.16	0.37	0.34	**0.65**
My attention was focused on the activity.	**0.46**	0.21	**0.50**	**0.40**	**0.66**
I felt absorbed in the activity.	**0.55**	0.20	**0.44**	**0.45**	**0.69**
I felt immersed in the activity.	**0.59**	0.24	**0.49**	**0.49**	**0.71**

APPENDIX U (CONTINUED)

EFA STUDY: STRUCTURE MATRIX LOADINGS FOR 5-FACTOR SOLUTION (N = 798)

Item	Factor Loadings for Promax Rotation				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
I concentrated on the activity.	0.39	0.18	**0.52**	**0.46**	**0.62**
I remained concentrated on the activity.	**0.51**	0.24	**0.52**	**0.45**	**0.65**
I deliberately focused on the activity.	0.37	0.14	**0.43**	**0.40**	**0.57**
I felt engrossed by the activity.	**0.56**	0.27	**0.42**	**0.41**	**0.64**

Note: Factor loadings |.40| or above are bolded.

APPENDIX V

EFA STUDY: SUMMARY OF ITEMS FOR SHORT VERSION OF 5-FACTOR SOLUTION (N = 798)

Item	Factor	Mean	SD	Factor Loadings Pattern	Factor Loadings Structure	h^2
The activity was pleasurable to me.	Pleasure	5.76	1.60	0.95	0.92	0.85
The activity made me feel happy.	Pleasure	5.82	1.52	0.93	0.91	0.78
The activity was fun.	Pleasure	5.75	1.67	0.89	0.88	0.77
The activity made me feel good.	Pleasure	5.89	1.40	0.86	0.87	0.70
I liked doing the activity.	Pleasure	6.01	1.48	0.78	0.83	0.84
The activity was a shared effort with others.	Relatedness	4.14	2.18	0.85	0.86	0.66
I liked interacting with others during the activity.	Relatedness	4.56	2.01	0.84	0.85	0.72
I felt close to others when I did the activity.	Relatedness	4.43	1.93	0.82	0.84	0.72
I cooperated with others during the activity.	Relatedness	4.81	1.92	0.82	0.80	0.66
I felt connected with others during the activity.	Relatedness	4.54	1.96	0.80	0.80	0.75
I was proficient in the activity.	Competence	5.72	1.26	0.80	0.77	0.57
I felt competent at performing the activity.	Competence	5.89	1.22	0.79	0.77	0.60
I am good at the activity.	Competence	5.85	1.17	0.78	0.76	0.60
I felt very capable during the activity.	Competence	5.79	1.17	0.73	0.75	0.60
I felt like I did a good job the last time I did the activity.	Competence	5.92	1.11	0.68	0.73	0.55
The activity allowed me to develop new skills.	Improvement	4.73	1.84	0.81	0.80	0.61
I felt challenged, but not under-challenged, during the activity.	Improvement	5.05	1.65	0.75	0.77	0.51
I improved my skills the last time I did the activity.	Improvement	5.10	1.61	0.75	0.75	0.65
I felt challenged, but not over-challenged, during the activity.	Improvement	4.97	1.69	0.69	0.71	0.47
During the activity I was able to get better at doing it.	Improvement	5.42	1.48	0.69	0.69	0.59
I lost track of what was going on outside of the activity.	Engagement	4.56	1.86	0.86	0.84	0.69
I lost track of what was going on around me during the activity.	Engagement	4.55	1.84	0.85	0.83	0.70

Note: Pattern = Pattern Matrix, Structure = Structure Matrix, and h^2 = Communality Coefficient

APPENDIX V (CONTINUED)

EFA STUDY: SUMMARY OF ITEMS FOR SHORT VERSION OF 5-FACTOR SOLUTION (N = 798)

Item	Factor	Mean	SD	Factor Loadings		h^2
				Pattern	Structure	
I forgot what was going on around me during the activity.	Engagement	4.58	1.81	0.80	0.80	0.65
I lost track of time during the activity.	Engagement	5.01	1.78	0.64	0.66	0.44
When I did the activity, I thought about nothing else.	Engagement	4.49	1.84	0.43	0.53	0.34

Note: Pattern = Pattern Matrix, Structure = Structure Matrix, and h^2 = Communality Coefficient

APPENDIX W

CFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Activity	*n*	Main Category (Sub-Category)
1	Read Book	36	Entertainment (Reading)
2	Grocery Shopping	19	Shopping (Groceries)
3	Walking	19	Exercise (Walking)
4	Worked Out	17	School (Homework)
5	Running	14	Exercise (Running)
6	Ride Bike	12	Exercise (Bicycling)
7	Jogging	10	Exercise (Running)
8	Clean House	9	Jobs (Cleaning)
9	Hiking	9	Exercise (Travel)
10	Basketball	8	Sports (Exercise)
11	Drive Car	8	Travel (Driving)
12	Play Video Game	8	Entertainment (Video Games)
13	Cook Meal	7	Food (Cooking)
14	Watch Movie	7	Entertainment (Movies)
15	Weight Lifting	7	Exercise (Gym)
16	Cook Food	6	Food (Cooking)
17	Swimming	6	Exercise (Swimming)
18	Walk Dog	6	Exercise (Walking)
19	Wash Dishes	6	Jobs (Cleaning)
20	Watch TV	6	Entertainment (TV)
21	Work Job	6	Jobs (Job)
22	Cook Dinner	5	Food (Cooking)
23	Sleep	5	Other (Relaxing)
24	Wash Laundry	5	Jobs (Cleaning)
25	Watch Netflix	5	Entertainment (TV)
26	Lift Weights	4	Exercise (Gym)
27	Read Textbook	4	School (Reading)
28	Went to Gym	4	Other (Religion)
29	Bake Bread	3	Food (Cooking)
30	Bargain Shopping	3	Shopping (Bargain)
31	Bowling	3	Sports (Recreation)
32	Clean Kitchen	3	Jobs (Cleaning)
33	Clothes Shopping	3	Shopping (Clothes)
34	Cooking	3	Food (Cooking)
35	Dancing	3	Entertainment (Exercise)

APPENDIX W (CONTINUED)

CFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Activity	n	Main Category (Sub-Category)
36	Fly Plane	3	Travel (Flying)
37	Golf	3	Sports (Exercise)
38	Knit Blanket	3	Hobbies (Knitting)
39	Listen to Music	3	Entertainment (Music)
40	Play Overwatch	3	Entertainment (Video Games)
41	Play with Children	3	Entertainment (Babysitting)
42	Run on Treadmill	3	Exercise (Running)
43	Sex	3	Entertainment (Sex)
44	Shopping	3	Shopping (Shopping)
45	Shoveled Snow	3	Jobs (Chores)
46	Survey	3	Jobs (Online)
47	Walk in Park	3	Exercise (Walking)
48	Went to Movies	3	Exercise (Gym)
49	Zumba	3	Exercise (Yoga)
50	Badminton	2	Sports (Exercise)
51	Bake Cake	2	Food (Cooking)
52	Bake Cookies	2	Food (Cooking)
53	Cricket	2	Sports (Exercise)
54	Crocheted Rug	2	Hobbies (Crocheting)
55	Cross Stitching	2	Hobbies (Cross Stitching)
56	Driving	2	Travel (Driving)
57	Eat Food	2	Food (Eating)
58	Exercise	2	Exercise (Exercise)
59	Genealogy	2	Hobbies (Genealogy)
60	Horseback Riding	2	Hobbies (Riding)
61	Play Games	2	Entertainment (Games)
62	Play Guitar	2	Hobbies (Instruments)
63	Play Mobile Game	2	Entertainment (Video Games)
64	Play PC	2	Entertainment (Video Games)
65	Play Stardew Valley	2	Entertainment (Video Games)
66	Play Texas Holdem	2	Entertainment (Gambling)
67	Played Video Games	2	Entertainment (Video Games)
68	Read eBook	2	Entertainment (Reading)
69	Reading	2	Entertainment (Reading)
70	Research Online	2	Jobs (Study)
71	Shopping at Mall	2	Shopping (Mall)
72	Shopping at Target	2	Shopping (Shopping)

APPENDIX W (CONTINUED)

CFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Activity	*n*	Main Category (Sub-Category)
73	Study	2	School (Study)
74	Teach Class	2	School (Teaching)
75	Visit Family	2	Event (Social)
76	Walk in Mall	2	Exercise (Walking)
77	Watch Hulu	2	Entertainment (TV)
78	Went Fishing	2	Hobbies (Fishing)
79	Went to Restaurant	2	Event (Social)
80	Woodworking	2	Shopping (Shopping)
81	Acupuncture	1	Other (Relaxing)
82	Aerobics	1	Exercise (Aerobics)
83	Assembled Model	1	Hobbies (Models)
84	Baby Time at Library	1	Event (Singing)
85	Bake Muffins	1	Food (Cooking)
86	Band Practice	1	Hobbies (Music)
87	Bartending Party	1	Event (Job)
88	Baseball	1	Sports (Exercise)
89	Bingo	1	Entertainment (Board Games)
90	Biology Lab	1	School (Homework)
91	Birthday Party	1	Event (Painting)
92	Blogged	1	Jobs (Online)
93	Book Flight	1	Jobs (Travel)
94	Boxing	1	Sports (Exercise)
95	Breastfeeding Baby	1	Jobs (Childcare)
96	Build Driveway	1	Jobs (Construction)
97	Build Snooker Table	1	Jobs (Job)
98	Build Website	1	Jobs (Job)
99	Burn Wood	1	Hobbies (Pyrography)
100	Cardio Workout	1	Exercise (Exercise)
101	Childcare	1	Jobs (Childcare)
102	Classical Dancing	1	Hobbies (Exercise)
103	Clean Car	1	Jobs (Cleaning)
104	Clean Carpet	1	Jobs (Cleaning)
105	Clean Chicken Coop	1	Jobs (Cleaning)
106	Clean Dog Poop	1	Jobs (Cleaning)
107	Clean Room	1	Jobs (Cleaning)
108	Cleaned Closet	1	Jobs (Cleaning)
109	Coach Roller Derby	1	Hobbies (Recreation)

APPENDIX W (CONTINUED)

CFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Activity	*n*	Main Category (Sub-Category)
110	Conditioned Leather	1	Jobs (Cleaning)
111	Company Picnic	1	Event (Social)
112	Cook Biriyani	1	Food (Cooking)
113	Cook Chicken Cutlets	1	Food (Cooking)
114	Cook Chocolate Dessert	1	Food (Cooking)
115	Cook Chow Mein	1	Food (Cooking)
116	Cook Ribs and Chicken	1	Food (Cooking)
117	Cook Scrambled Eggs	1	Food (Cooking)
118	Cooked Potato Soup	1	Food (Cooking)
119	Crafts	1	Hobbies (Arts & Crafts)
120	Crochet	1	Hobbies (Crocheting)
121	Crochet Blanket	1	Hobbies (Crocheting)
122	Crocheted Afghan	1	Hobbies (Crocheting)
123	Crocheted Baby Blanket	1	Hobbies (Crocheting)
124	Crocheted Clothes	1	Hobbies (Crocheting)
125	Crocheted Stuffed Animal	1	Hobbies (Crocheting)
126	Crossword Puzzles	1	Entertainment (Games)
127	Cuddle with Dog	1	Entertainment (Animals)
128	Curling	1	Sports (Exercise)
129	Cut Coupons	1	Hobbies (Shopping)
130	Cut Fabric for Quilting	1	Hobbies (Sewing)
131	Cut Hair	1	Jobs (Job)
132	Dance at Reception	1	Entertainment (Exercise)
133	Dance Club	1	Entertainment (Exercise)
134	Dance to Music	1	Exercise (Social)
135	Danced with Kids	1	Entertainment (Exercise)
136	Detailed Vehicle	1	Jobs (Cleaning)
137	Dirt Bike Riding	1	Sports (Recreation)
138	Drank Beer	1	Food (Drinking)
139	Draw Art	1	Hobbies (Drawing)
140	Draw Portrait	1	Hobbies (Drawing)
141	Draw Weather	1	Hobbies (Drawing)
142	Drew on Chalkboard	1	Hobbies (Drawing)
143	Drive Home	1	Travel (Driving)
144	Drive to Farm	1	Travel (Driving)
145	Drive to Office	1	Travel (Driving)
146	Drive to Store	1	Travel (Driving)

APPENDIX W (CONTINUED)

CFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Activity	n	Main Category (Sub-Category)
147	Drive to Work	1	Travel (Driving)
148	Eat Lunch	1	Food (Eating)
149	Elliptical Step Climber	1	Exercise (Gym)
150	Exercise at Home	1	Exercise (Gym)
151	Family Time	1	Entertainment (Social)
152	Fed Horse	1	Jobs (Chores)
153	Fiddle	1	Hobbies (Instruments)
154	Fishing	1	Hobbies (Recreation)
155	Fitness Class	1	Exercise (Class)
156	Fix Car	1	Jobs (Repairing)
157	Flying Lessons	1	School (Training)
158	Football	1	Sports (Exercise)
159	Gardening	1	Hobbies (Gardening)
160	Geocaching	1	Hobbies (Geocaching)
161	Get Breakfast at Bazar	1	Food (Eating)
162	Go to Restaurant	1	Food (Eating)
163	Grow Trees	1	Hobbies (Gardening)
164	Gymnastics Meet	1	Sports (Exercise)
165	Hangout with Friends	1	Entertainment (Social)
166	Home Repair	1	Jobs (Chores)
167	Hula Hooped	1	Entertainment (Exercise)
168	Interview Employees	1	Jobs (Job)
169	Jigsaw Puzzle	1	Entertainment (Board Games)
170	Jiu-Jitsu	1	Exercise (Martial Arts)
171	Job Searching	1	Jobs (Job)
172	Kickboxing	1	Exercise (Gym)
173	Kill Fleas	1	Jobs (Cleaning)
174	Knit Clothing	1	Hobbies (Knitting)
175	Knitted Outfit	1	Hobbies (Knitting)
176	Knitted Pair of Socks	1	Hobbies (Knitting)
177	Knitted Red Shawl	1	Hobbies (Knitting)
178	Krav Maga	1	Sports (Exercise)
179	Learn Freelancing Online	1	School (Study)
180	Learning Crochet	1	Hobbies (Training)
181	Learning German	1	School (Study)
182	License Plate Inventory	1	Jobs (Job)
183	Listen to Audiobook	1	Entertainment (Listening)

APPENDIX W (CONTINUED)

CFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Activity	*n*	Main Category (Sub-Category)
184	Local Solo Flight	1	School (Training)
185	Longboarding	1	Travel (Exercise)
186	Look for Job	1	Jobs (Job)
187	Made Jam	1	Food (Cooking)
188	Make Brochure	1	School (Homework)
189	Make Spreadsheet	1	Jobs (Job)
190	Math Homework	1	School (Homework)
191	Minipreps	1	Jobs (Job)
192	Mountain Camping	1	Entertainment (Recreation)
193	Nail Salon	1	Jobs (Errands)
194	New Year Celebration	1	Entertainment (Social)
195	Pack up House	1	Jobs (Packing)
196	Paint Digital Art	1	Hobbies (Painting)
197	Paint Flowers on Canvas	1	Hobbies (Painting)
198	Paint House	1	Jobs (Painting)
199	Paint Women	1	Hobbies (Painting)
200	Painted Rocks	1	Hobbies (Painting)
201	Pencil Art	1	Hobbies (Drawing)
202	Picnic	1	Food (Recreation)
203	Pilates	1	Exercise (Gym)
204	Plant Garlic	1	Hobbies (Gardening)
205	Plant Vegetables	1	Hobbies (Gardening)
206	Play 3DS	1	Entertainment (Video Games)
207	Play Apples to Apples	1	Entertainment (Board Games)
208	Play Board Games	1	Entertainment (Board Games)
209	Play Bubble Witch	1	Entertainment (Video Games)
210	Play Call of Duty	1	Entertainment (Video Games)
211	Play Catch	1	Entertainment (Recreation)
212	Play Chess	1	Entertainment (Board Games)
213	Play Enter the Gungeon	1	Entertainment (Video Games)
214	Play Fetch with Dog	1	Entertainment (Animals)
215	Play Fortnite	1	Entertainment (Video Games)
216	Play League of Legends	1	Entertainment (Video Games)
217	Play Magic the Gathering	1	Entertainment (Board Games)
218	Play Mario Odyssey	1	Entertainment (Video Games)
219	Play MLB	1	Entertainment (Video Games)
220	Play MMO	1	Entertainment (Video Games)

APPENDIX W (CONTINUED)

CFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Activity	n	Main Category (Sub-Category)
221	Play Online Game	1	Entertainment (Video Games)
222	Play Piano	1	Hobbies (Instruments)
223	Play Pipe Organ	1	School (Instruments)
224	Play Pokémon Go	1	Entertainment (Video Games)
225	Play Poker	1	Entertainment (Gambling)
226	Play PS4	1	Entertainment (Video Games)
227	Play Puzzle Game	1	Entertainment (Video Games)
228	Play Rainbow Six: Siege	1	Entertainment (Video Games)
229	Play Roleplaying Game	1	Entertainment (Video Games)
230	Play Runescape	1	Entertainment (Video Games)
231	Play Secret Santa	1	Entertainment (Social)
232	Play Shooter	1	Entertainment (Video Games)
233	Play Sims 3	1	Entertainment (Video Games)
234	Play Sims 4	1	Entertainment (Video Games)
235	Play Smash Up	1	Entertainment (Board Games)
236	Play Terraria	1	Entertainment (Video Games)
237	Play Tetris	1	Entertainment (Video Games)
238	Play Trivia Game	1	Entertainment (Video Games)
239	Play Ukulele	1	Hobbies (Instruments)
240	Play Witcher 3	1	Entertainment (Video Games)
241	Play with Teddy Bear	1	Entertainment (Games)
242	Play World of Warcraft	1	Entertainment (Video Games)
243	Played Dice Online	1	Entertainment (Gambling)
244	Played Hogwarts Battle	1	Entertainment (Video Games)
245	Played Online Games	1	Entertainment (Video Games)
246	Played PC	1	Entertainment (Video Games)
247	Pool	1	Entertainment (Billiards)
248	Pooped	1	Other (Bathroom)
249	Potty Training	1	Jobs (Childcare)
250	Practice Comedy	1	School (Class)
251	Practice Music	1	Jobs (Training)
252	Practice Typing	1	School (Study)
253	Preach Sermon	1	Other (Religion)
254	Prepare Food	1	Food (Cooking)
255	Program in Python	1	School (Homework)
256	Program Traffic Controller	1	Jobs (Job)
257	Put on Makeup	1	Jobs (Chores)

APPENDIX W (CONTINUED)

CFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Activity	*n*	Main Category (Sub-Category)
258	Quilt Blankets	1	Hobbies (Sewing)
259	Read Age of Reason	1	Entertainment (Reading)
260	Read Articles	1	Entertainment (Reading)
261	Read Fiction Books	1	Entertainment (Reading)
262	Read Forums	1	Entertainment (Reading)
263	Read Hyperian Chronicles	1	Entertainment (Reading)
264	Read Kanji Book	1	School (Reading)
265	Read Mystery Novel	1	Entertainment (Reading)
266	Read Poems	1	Entertainment (Reading)
267	Read Romance Novel	1	Entertainment (Reading)
268	Read Short Stories	1	Entertainment (Reading)
269	Read The Alchemist	1	Entertainment (Reading)
270	Read The Gunslinger	1	Entertainment (Reading)
271	Remove Decorations	1	Jobs (Chores)
272	Report Integration	1	Jobs (Job)
273	Research Amazon Web Services	1	Jobs (Reading)
274	Reserve Hotel Room	1	Jobs (Job)
275	Road Trip to California	1	Travel (Driving)
276	Roller Skating	1	Exercise (Roller Skating)
277	Run with Dog	1	Exercise (Running)
278	Scuba Diving	1	Hobbies (Recreation)
279	Search Online	1	School (Reading)
280	Sew Quilt	1	Hobbies (Sewing)
281	Sewing	1	Hobbies (Sewing)
282	Sewing Quilt	1	Hobbies (Sewing)
283	Sewing Sequins	1	Hobbies (Sewing)
284	Sexual Intercourse	1	Entertainment (Sex)
285	Shooting	1	Hobbies (Shooting)
286	Shop for Jeans	1	Shopping (Clothes)
287	Shopped at Sprouts	1	Shopping (Groceries)
288	Shopping at Store	1	Shopping (Shopping)
289	Shopping at Walmart	1	Shopping (Shopping)
290	Shopping on Amazon	1	Shopping (Online)
291	Shopping Online	1	Shopping (Shopping)
292	Show Shopping	1	Shopping (Shoes)
293	Shuttle Board	1	Sports (Recreation)
294	Sing Karaoke	1	Event (Social)

APPENDIX W (CONTINUED)

CFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Activity	*n*	Main Category (Sub-Category)
295	Singing in Choir	1	School (Singing)
296	Skiing	1	Sports (Exercise)
297	Sledding with Family	1	Entertainment (Social)
298	Sledding with Friends	1	Entertainment (Social)
299	Soccer	1	Sports (Exercise)
300	Soccer Practice	1	Sports (Training)
301	Softball	1	Sports (Sports)
302	Sorority Events	1	Event (Social)
303	Spin Class	1	Exercise (Gym)
304	Sports Shopping	1	Shopping (Sports)
305	Stationary Cycling	1	Exercise (Gym)
306	Strength Training	1	Exercise (Gym)
307	Study Notes	1	School (Study)
308	Study Russian	1	School (Study)
309	Surfing	1	Sports (Recreation)
310	Swim Class	1	School (Exercise)
311	Swim Meet	1	Sports (Swimming)
312	Taekwondo	1	Sports (Martial Arts)
313	Take Birthday Pictures	1	Event (Photography)
314	Take Calls	1	Jobs (Job)
315	Take Photos	1	Hobbies (Photography)
316	Take Shower	1	Jobs (Chores)
317	Tattooing	1	Jobs (Tattooing)
318	Teach Middle School	1	School (Teaching)
319	Tennis	1	Sports (Exercise)
320	Test Malware	1	Hobbies (Programming)
321	Track and Field	1	Exercise (Track)
322	Travel	1	Travel (Travel)
323	Travel to Denver	1	Travel (Flying)
324	Travel to Festival	1	Travel (Driving)
325	Travel to Laos	1	Travel (Flying)
326	Travel to New Orleans	1	Travel (Driving)
327	Travel to Tiruphati	1	Travel (Driving)
328	Typing at Office	1	Jobs (Job)
329	Used Coach App to Train	1	Exercise (Running)
330	Vacuum Floors	1	Jobs (Cleaning)
331	Visit Friends	1	Entertainment (Social)

APPENDIX W (CONTINUED)

CFA STUDY: UNIQUE ACTIVITIES EVALUATED

Number	Activity	n	Main Category (Sub-Category)
332	Visit Museum	1	Entertainment (Recreation)
333	Visit the Beach	1	Travel (Recreation)
334	Walking on Treadmill	1	Exercise (Walking)
335	Watch Anime	1	Entertainment (TV)
336	Watch Basketball	1	Entertainment (TV)
337	Watch Big Love	1	Entertainment (TV)
338	Watch Drama Show	1	Entertainment (TV)
339	Watch Game (1997)	1	Entertainment (Movies)
340	Watch Lectures	1	School (Class)
341	Watch Lion King	1	Entertainment (Movies)
342	Watch Once Upon A Time	1	Entertainment (TV)
343	Watch Rocket Launch	1	Event (Event)
344	Watch Rolex 24	1	Entertainment (Racing)
345	Watch Stanford Prison Experiment	1	School (Movies)
346	Watch Youtube	1	Entertainment (Online)
347	Watched The Office	1	Entertainment (TV)
348	Went to Chilis	1	Hobbies (Fishing)
349	Went to Church	1	Food (Eating)
350	Went to Party	1	Entertainment (Movies)
351	Went to Spa	1	Food (Eating)
352	Window Shopping	1	Event (Relaxing)
353	Work as Cashier	1	Hobbies (Woodworking)
354	Work at Hospital	1	Jobs (Job)
355	Work at Mail Center	1	Jobs (Medical)
356	Work at Office	1	Jobs (Job)
357	Work on Car	1	Jobs (Job)
358	Work on Computer	1	Jobs (Repairing)
359	Work on Papers	1	Jobs (Job)
360	Workout	1	Exercise (Gym)
361	Workout on Treadmill	1	Exercise (Gym)
362	Write in Journal	1	Exercise (Gym)
363	Write Paper	1	Hobbies (Writing)
364	Yardwork	1	School (Homework)
365	Yoga	1	Jobs (Chores)

APPENDIX X

CFA STUDY: CONSENT FORM

Consent Form

Purpose: If you are 18 years of age or older, you are invited to participate in a study investigating enjoyment. We hope to gather your feedback about the design of the survey so that we can improve the survey for future studies.

Participant Selection: You were selected as a possible participant in this study because you fit the criteria of the population we are interested in studying, namely that you are over the age of 18. You are one of at least 600 participants in this study.

Explanation of Procedures: If you decide to participate, you will be asked to complete an online survey to evaluate a recent activity on a 7-point scale (1 = Strongly Disagree; 7 = Strongly Agree). Additionally, you will be asked to answer other questions related to the activity you are evaluated (e.g. how often you do the activity), and general demographics questions (e.g. age, gender). It is expected that the survey will take approximately 20-30 minutes to complete.

Discomfort/Risks: There are no expected risks or discomforts. However, you may take a break at any time, and you may skip any questions that make you feel uncomfortable.

Benefits: Your participation in this study will be beneficial in helping researchers build a universal instrument to measure enjoyment.

Confidentiality: Every effort will be made to keep your study-related information confidential. However, in order to make sure the study is done properly and safely there may be circumstances where this information must be released. By clicking "Next >>" at the bottom of this form, you are giving the research team permission to share information about you with the following groups:

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- The Embry-Riddle Aeronautical University Institutional Review Board;
- The sponsor or agency supporting this study.

APPENDIX X (CONTINUED)

CFA STUDY: CONSENT FORM

The researchers may publish the results of the study. If they do, they will only discuss group results. Your name will not be used in any publication or presentation about the study. We will work to make certain no one sees your survey responses without approval. But, because we are using the internet, there is a chance someone could access your online responses without permission. In some cases, this information could be used to identify you. Your data will be protected with a code to reduce the risk that other people can view the responses.

All survey responses that the investigator receives will be treated confidentially and stored on a secure server. However, given that the surveys can be completed from any computer (personal, work, school, etc.), we are unable to guarantee the security of the computer on which you choose to enter your response. As a participant in this study, the investigator wants you to be aware that certain "keylogging" software programs exist that can be used to track or capture data that you enter and/or websites that you visit.

Compensation: For your participation, your name will be entered in a random drawing to win one of ten $30 Amazon gift cards.

Refusal/Withdrawal: Participation in this study is entirely voluntary. Your decision whether or not to participate will *not* affect your future relations with Embry-Riddle Aeronautical University. If you agree to participate in this study, you are free to withdraw from the study at any time without penalty.

Contact: If you have any questions about this research, you may contact Shayn Davidson at davidss2@my.erau.edu or you can contact Dr. Christina Frederick via e-mail at frederic@erau.edu. The ERAU Institutional Review Board (IRB) has approved this project. You may contact the ERAU IRB with any questions or issues at (386) 226-7179 or teri.gabriel@erau.edu. ERAU's IRB is registered with the Department of Health & Human Services – Number – IORG0004370

Consent: You are under no obligation to participate in this study. By selecting the "Next>>" button below you are indicating that:

- You have read (or someone has read to you) the information provided above,
- You are aware that this is a research study,
- You have voluntarily decided to participate.
- You are 18 years of age or older.

Appendix X (continued)

CFA Study: Consent Form

If you do not wish to participate in the study, simply close the browser or click "<< Back" which will direct you out of the study.

Please print a copy of this form for your records. A copy of this form can also be requested from Shayn Davidson, davidss2@my.erau.edu.

APPENDIX Y

CFA STUDY: SKEWNESS AND KURTOSIS

Item	N	Mean	SD	Skewness		Kurtosis	
				Value	Std. Error	Value	Std. Error
When I did the activity, I thought about nothing else.	666	4.37	1.89	-0.19	0.09	-1.23	0.19
I felt a sense of belongingness when I did the activity.	627	4.90	1.80	-0.67	0.10	-0.47	0.19
I felt a sense of achievement when I did the activity.	654	5.87	1.35	-1.61	0.10	2.58	0.19
The activity was relaxing.	667	5.23	1.83	-1.01	0.09	-0.07	0.19
I liked the challenge the activity provided me.	634	5.48	1.63	-1.22	0.10	0.77	0.19
During the activity I was able to get better at doing it.	615	5.59	1.40	-1.16	0.10	1.05	0.20
The activity allowed me to develop new skills.	633	4.83	1.87	-0.61	0.10	-0.81	0.19
The activity made me feel stimulated.	659	5.56	1.50	-1.40	0.10	1.58	0.19
I was able to apply my knowledge during the activity.	634	5.46	1.58	-1.25	0.10	1.02	0.19
I improved my knowledge when I did the activity.	630	4.95	1.80	-0.70	0.10	-0.58	0.19
I cooperated with others during the activity.	556	4.79	2.07	-0.68	0.10	-0.93	0.21
I remained concentrated on the activity.	663	5.76	1.30	-1.50	0.09	2.30	0.19
I felt in control of my actions during the activity.	659	6.05	1.14	-1.89	0.10	4.35	0.19
I felt refreshed after the activity.	660	5.23	1.76	-0.93	0.10	-0.19	0.19
The activity was exhilarating.	660	4.87	1.76	-0.67	0.10	-0.50	0.19
The activity was worthwhile.	665	6.23	1.07	-2.17	0.09	6.28	0.19
The activity excited my senses.	661	5.26	1.69	-1.00	0.10	0.17	0.19
I blocked out most other distractions during the activity.	662	5.27	1.58	-0.95	0.09	0.15	0.19
The activity made me feel closer to my friends.	579	3.99	2.04	-0.09	0.10	-1.32	0.20
I felt very capable during the activity.	648	5.88	1.24	-1.61	0.10	2.96	0.19
The activity was invigorating.	657	5.11	1.70	-0.78	0.10	-0.28	0.19

APPENDIX Y (CONTINUED)

CFA STUDY: SKEWNESS AND KURTOSIS

Item	N	Mean	SD	Skewness		Kurtosis	
				Value	Std. Error	Value	Std. Error
I forgot what was going on around me during the activity.	660	4.57	1.86	-0.37	0.10	-1.06	0.19
The activity made me feel alive.	657	5.21	1.65	-0.89	0.10	-0.01	0.19
I felt lively during the activity.	661	5.27	1.63	-0.96	0.10	0.12	0.19
I felt strong during the activity.	630	5.15	1.68	-0.80	0.10	-0.18	0.19
I felt daring during the activity.	626	3.88	1.91	0.04	0.10	-1.17	0.20
I felt confident during the activity.	653	5.74	1.29	-1.44	0.10	2.31	0.19
The activity made me closer to my family.	584	4.06	1.97	-0.06	0.10	-1.15	0.20
I felt personally interested in the activity.	665	6.02	1.36	-1.93	0.09	3.70	0.19
I would choose to do the activity again.	665	6.49	1.10	-3.11	0.09	10.64	0.19
I was proficient in the activity.	650	5.84	1.25	-1.49	0.10	2.61	0.19
I felt effective at doing the activity.	643	5.88	1.23	-1.68	0.10	3.38	0.19
I felt challenged, but not over-challenged, during the activity.	643	5.03	1.65	-0.84	0.10	-0.19	0.19
I felt challenged, but not under-challenged, during the activity.	633	5.19	1.58	-0.99	0.10	0.35	0.19
I felt competent at performing the activity.	648	5.97	1.17	-1.55	0.10	2.97	0.19
I felt like I did a good job the last time I did the activity.	644	5.93	1.13	-1.50	0.10	2.95	0.19
I improved my skills the last time I did the activity.	627	5.12	1.65	-0.83	0.10	-0.12	0.19
I had a good sense of how well I was doing during the activity.	637	5.81	1.19	-1.46	0.10	2.65	0.19
My ability to do the activity was well matched with the activity's challenges.	626	5.68	1.33	-1.37	0.10	1.83	0.20
I am good at the activity.	655	5.93	1.24	-1.45	0.10	2.23	0.19
I felt competent when I was doing the activity.	645	5.86	1.24	-1.53	0.10	2.77	0.19
I felt my skills matched the challenges of the activity.	624	5.72	1.32	-1.43	0.10	2.08	0.20

APPENDIX Y (CONTINUED)

CFA STUDY: SKEWNESS AND KURTOSIS

Item	N	Mean	SD	Skewness		Kurtosis	
				Value	Std. Error	Value	Std. Error
I was able to overcome challenges during the activity.	606	5.24	1.50	-0.96	0.10	0.49	0.20
I felt I was successful at completing the activity.	654	6.08	1.13	-1.91	0.10	4.67	0.19
The activity provided me feedback which indicated how well I was doing.	571	4.82	1.87	-0.67	0.10	-0.66	0.20
I felt connected with others during the activity.	617	4.44	1.99	-0.32	0.10	-1.18	0.20
I wanted to do the activity with others.	646	4.61	2.13	-0.50	0.10	-1.20	0.19
I liked interacting with others during the activity.	580	4.63	2.03	-0.55	0.10	-1.04	0.20
I did the activity with friends.	615	3.77	2.37	0.14	0.10	-1.66	0.20
I received support from my family which helped me do the activity.	564	4.52	2.02	-0.46	0.10	-1.07	0.21
I received support from my friends which helped me do the activity.	562	4.35	2.05	-0.32	0.10	-1.23	0.21
I was supported by others to do the activity.	613	5.03	1.81	-0.80	0.10	-0.40	0.20
I felt close to others when I did the activity.	603	4.28	1.94	-0.25	0.10	-1.13	0.20
I did the activity so I could interact with others.	636	3.55	2.14	0.29	0.10	-1.37	0.19
The relationships I have with others through the activity are important.	581	4.90	1.82	-0.67	0.10	-0.60	0.20
The relationships I have with others through the activity are fulfilling.	559	5.00	1.82	-0.79	0.10	-0.34	0.21
I felt like I was important to others during the activity.	611	4.45	1.91	-0.38	0.10	-1.01	0.20
The activity was a shared effort with others.	613	3.97	2.19	-0.04	0.10	-1.49	0.20
I felt good inside when I did the activity.	666	5.89	1.36	-1.77	0.09	3.36	0.19
My body felt good when I did the activity.	630	5.16	1.72	-0.81	0.10	-0.23	0.19
The activity was pleasurable to me.	665	5.83	1.56	-1.72	0.09	2.40	0.19
I felt excited the last time I did the activity.	660	5.30	1.70	-1.02	0.10	0.15	0.19
I enthusiastically did the activity.	664	5.60	1.57	-1.34	0.09	1.09	0.19

APPENDIX Y (CONTINUED)

CFA STUDY: SKEWNESS AND KURTOSIS

Item	N	Mean	SD	Skewness		Kurtosis	
				Value	Std. Error	Value	Std. Error
Doing the activity made me feel joyful.	661	5.48	1.60	-1.24	0.10	0.93	0.19
Doing the activity made me feel alive.	656	5.24	1.60	-0.91	0.10	0.11	0.19
I felt cheerful during the activity.	662	5.50	1.52	-1.24	0.09	1.17	0.19
The activity made me feel energetic.	663	5.11	1.78	-0.76	0.09	-0.54	0.19
The activity brought out good feelings.	665	5.79	1.43	-1.66	0.09	2.59	0.19
The activity cheered me up.	661	5.60	1.57	-1.42	0.10	1.51	0.19
The activity made me feel happy.	666	5.79	1.48	-1.68	0.09	2.52	0.19
The activity made me feel good.	666	5.94	1.35	-2.01	0.09	4.30	0.19
The activity made me feel great.	666	5.67	1.49	-1.37	0.09	1.54	0.19
I felt positive sensations the last time I did the activity.	663	5.67	1.46	-1.49	0.09	1.96	0.19
I felt delighted when I did the activity.	665	5.47	1.60	-1.28	0.09	1.02	0.19
I felt glad the last time I did the activity.	664	5.86	1.34	-1.74	0.09	3.27	0.19
I felt proud when I did the activity.	653	5.55	1.44	-1.09	0.10	0.95	0.19
I found myself smiling during the activity.	664	5.30	1.74	-1.03	0.09	0.14	0.19
I felt content during the activity.	665	5.77	1.35	-1.63	0.09	2.84	0.19
I felt thrilled the last time I did the activity.	659	4.91	1.80	-0.69	0.10	-0.58	0.19
I concentrated on the activity.	659	5.97	1.23	-1.85	0.10	4.06	0.19
My attention was focused on the activity.	668	5.97	1.15	-1.60	0.09	3.08	0.19
I felt absorbed in the activity.	664	5.62	1.44	-1.25	0.09	1.23	0.19
I felt immersed in the activity.	662	5.66	1.39	-1.27	0.09	1.39	0.19
I lost track of time during the activity.	662	5.03	1.88	-0.77	0.09	-0.65	0.19

APPENDIX Y (CONTINUED)

CFA STUDY: SKEWNESS AND KURTOSIS

Item	N	Mean	SD	Skewness		Kurtosis	
				Value	Std. Error	Value	Std. Error
I felt engrossed by the activity.	657	5.36	1.55	-0.99	0.10	0.43	0.19
I deliberately focused on the activity.	663	5.78	1.32	-1.54	0.09	2.56	0.19
I felt energized by the activity.	659	5.23	1.75	-0.87	0.10	-0.29	0.19
I lost track of what was going on around me during the activity.	662	4.62	1.86	-0.39	0.09	-1.03	0.19
I lost track of what was going on outside of the activity.	659	4.70	1.86	-0.48	0.10	-0.95	0.19
I liked doing the activity.	668	6.02	1.49	-1.96	0.09	3.29	0.19
The activity was fun.	667	5.75	1.60	-1.56	0.09	1.73	0.19
I had fun during the activity.	663	5.74	1.57	-1.55	0.09	1.78	0.19

APPENDIX Z

CFA STUDY: VARIABLES WITH MISSING VALUES

Item	Missing Values		Mean	SD
	n	**Percent**		
I cooperated with others during the activity.	112	16.8%	4.79	2.07
The relationships I have with others through the activity are fulfilling.	109	16.3%	5.00	1.82
I received support from my friends which helped me do the activity.	106	15.9%	4.35	2.05
I received support from my family which helped me do the activity.	104	15.6%	4.52	2.02
The activity provided me feedback which indicated how well I was doing.	97	14.5%	4.82	1.87
The activity made me feel closer to my friends.	89	13.3%	3.99	2.04
I liked interacting with others during the activity.	88	13.2%	4.63	2.03
The relationships I have with others through the activity are important.	87	13.0%	4.90	1.82
The activity made me closer to my family.	84	12.6%	4.06	1.97
I felt close to others when I did the activity.	65	9.7%	4.28	1.94
I was able to overcome challenges during the activity.	62	9.3%	5.24	1.50
I felt like I was important to others during the activity.	57	8.5%	4.45	1.91
I was supported by others to do the activity.	55	8.2%	5.03	1.81
The activity was a shared effort with others.	55	8.2%	3.97	2.19
During the activity I was able to get better at doing it.	53	7.9%	5.59	1.40
I did the activity with friends.	53	7.9%	3.77	2.37
I felt connected with others during the activity.	51	7.6%	4.44	1.99
I felt my skills matched the challenges of the activity.	44	6.6%	5.72	1.32
I felt daring during the activity.	42	6.3%	3.88	1.91
My ability to do the activity was well matched with the activity's challenges.	42	6.3%	5.68	1.33
I felt a sense of belongingness when I did the activity.	41	6.1%	4.90	1.80
I improved my skills the last time I did the activity.	41	6.1%	5.12	1.65
I improved my knowledge when I did the activity.	38	5.7%	4.95	1.80
I felt strong during the activity.	38	5.7%	5.15	1.68
My body felt good when I did the activity.	38	5.7%	5.16	1.72
The activity allowed me to develop new skills.	35	5.2%	4.83	1.87
I felt challenged, but not under-challenged, during the activity.	35	5.2%	5.19	1.58
I liked the challenge the activity provided me.	34	5.1%	5.48	1.63
I was able to apply my knowledge during the activity.	34	5.1%	5.46	1.58

APPENDIX Z (CONTINUED)

CFA STUDY: VARIABLES WITH MISSING VALUES

	Missing Values			
Item	*n*	Percent	Mean	SD
I did the activity so I could interact with others.	32	4.8%	3.55	2.14
I had a good sense of how well I was doing during the activity.	31	4.6%	5.81	1.19
I felt effective at doing the activity.	25	3.7%	5.88	1.23
I felt challenged, but not over-challenged, during the activity.	25	3.7%	5.03	1.65
I felt like I did a good job the last time I did the activity.	24	3.6%	5.93	1.13
I felt competent when I was doing the activity.	23	3.4%	5.86	1.24
I wanted to do the activity with others.	22	3.3%	4.61	2.13
I felt very capable during the activity.	20	3.0%	5.88	1.24
I felt competent at performing the activity.	20	3.0%	5.97	1.17
I was proficient in the activity.	18	2.7%	5.84	1.25
I felt confident during the activity.	15	2.2%	5.74	1.29
I felt proud when I did the activity.	15	2.2%	5.55	1.44
I felt a sense of achievement when I did the activity.	14	2.1%	5.87	1.35
I felt I was successful at completing the activity.	14	2.1%	6.08	1.13
I am good at the activity.	13	1.9%	5.93	1.24
Doing the activity made me feel alive.	12	1.8%	5.24	1.60
The activity was invigorating.	11	1.6%	5.11	1.70
The activity made me feel alive.	11	1.6%	5.21	1.65
I felt engrossed by the activity.	11	1.6%	5.36	1.55
The activity made me feel stimulated.	9	1.3%	5.56	1.50
I felt in control of my actions during the activity.	9	1.3%	6.05	1.14
I felt thrilled the last time I did the activity.	9	1.3%	4.91	1.80
I concentrated on the activity.	9	1.3%	5.97	1.23
I felt energized by the activity.	9	1.3%	5.23	1.75
I lost track of what was going on outside of the activity.	9	1.3%	4.70	1.86
I felt refreshed after the activity.	8	1.2%	5.23	1.76
The activity was exhilarating.	8	1.2%	4.87	1.76
I forgot what was going on around me during the activity.	8	1.2%	4.57	1.86
I felt excited the last time I did the activity.	8	1.2%	5.30	1.70
The activity excited my senses.	7	1.0%	5.26	1.69
I felt lively during the activity.	7	1.0%	5.27	1.63
Doing the activity made me feel joyful.	7	1.0%	5.48	1.60

APPENDIX Z (CONTINUED)

CFA STUDY: VARIABLES WITH MISSING VALUES

Item	Missing Values		Mean	SD
	n	Percent		
The activity cheered me up.	7	1.0%	5.60	1.57
I blocked out most other distractions during the activity.	6	0.9%	5.27	1.58
I felt cheerful during the activity.	6	0.9%	5.50	1.52
I felt immersed in the activity.	6	0.9%	5.66	1.39
I lost track of time during the activity.	6	0.9%	5.03	1.88
I lost track of what was going on around me during the activity.	6	0.9%	4.62	1.86
I remained concentrated on the activity.	5	0.7%	5.76	1.30
The activity made me feel energetic.	5	0.7%	5.11	1.78
I felt positive sensations the last time I did the activity.	5	0.7%	5.67	1.46
I deliberately focused on the activity.	5	0.7%	5.78	1.32
I had fun during the activity.	5	0.7%	5.74	1.57
I enthusiastically did the activity.	4	0.6%	5.60	1.57
I felt glad the last time I did the activity.	4	0.6%	5.86	1.34
I found myself smiling during the activity.	4	0.6%	5.30	1.74
I felt absorbed in the activity.	4	0.6%	5.62	1.44
The activity was worthwhile.	3	0.4%	6.23	1.07
I felt personally interested in the activity.	3	0.4%	6.02	1.36
I would choose to do the activity again.	3	0.4%	6.49	1.10
The activity was pleasurable to me.	3	0.4%	5.83	1.56
The activity brought out good feelings.	3	0.4%	5.79	1.43
I felt delighted when I did the activity.	3	0.4%	5.47	1.60
I felt content during the activity.	3	0.4%	5.77	1.35
When I did the activity, I thought about nothing else.	2	0.3%	4.37	1.89
I felt good inside when I did the activity.	2	0.3%	5.89	1.36
The activity made me feel happy.	2	0.3%	5.79	1.48
The activity made me feel good.	2	0.3%	5.94	1.35
The activity made me feel great.	2	0.3%	5.67	1.49
The activity was relaxing.	1	0.1%	5.23	1.83
The activity was fun.	1	0.1%	5.75	1.60
My attention was focused on the activity.	0	0.0%	5.97	1.15
I liked doing the activity.	0	0.0%	6.02	1.49

APPENDIX AA

EXPLORATORY HIGHER-ORDER MODEL ANALYSIS

Chi-square and CFI fit indices across models (N = 668)

Model	χ^2	CFI
5 factors (short)	$\chi^2(265, N = 668) = 911.87, p < .001$	0.937
2nd-order factor (short)	$\chi^2(265, N = 668) = 930.24, p < .001$	0.936

Main fit indices across models (N = 668)

Model	RMSEA (90% CI)	SRMR	Hoelter's .05; .01	EVCI (90% CI)
2nd-order Factor	0.061 (.065, .067)	0.07	222; 235	1.63 (1.50, 1.78)
5 factors (short)	0.06 (.056, .065)	0.06	223; 236	1.62 (1.49, 1.77)
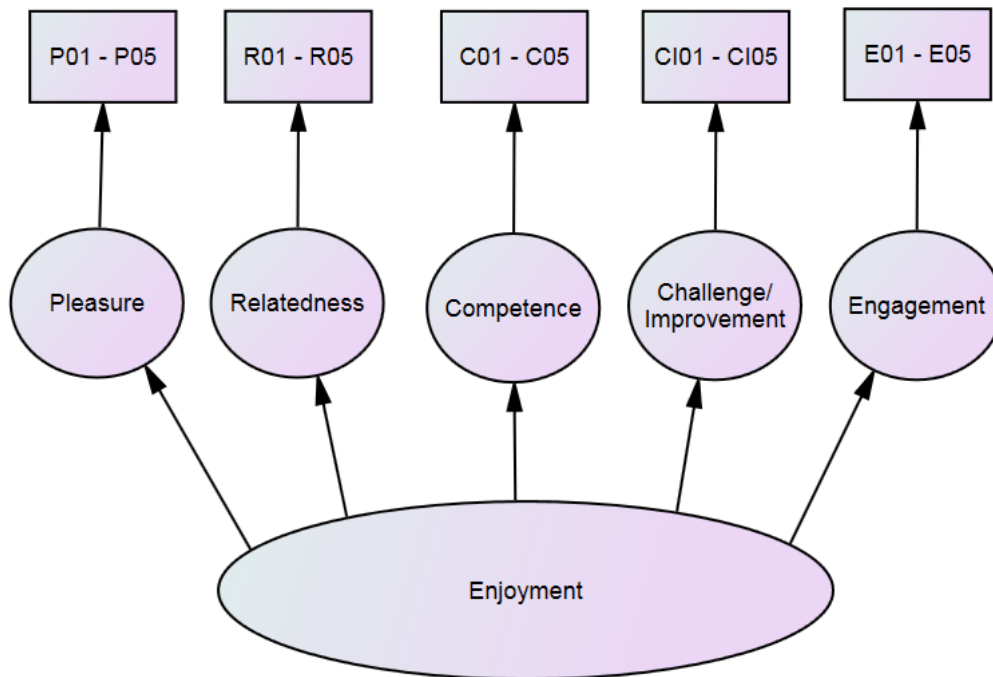
Higher-order factor analysis visualization: CFA

Appendix ENJOY

The ENJOY Scale

The ENJOY scale is a psychometrically validated measure of enjoyment with 5 subscales and 25 items in total. The five subscales include: Pleasure, Relatedness, Competence, Challenge/Improvement, and Engagement. It has been developed and validated across over 600 unique activities categorized from entertainment to work. It should take no more than 3-5 minutes to complete, and can be applied to the evaluation of enjoyment or any activity. It can be used as a tool to compare enjoyment between people or within people across different activities.

For further questions or inquiries, contact **Shayn Davidson, Ph.D.** at shaynsavage@gmail.com.

Appendix ENJOY (continued)

The ENJOY Scale

Instructions: Please rate the following statements on a scale from "Strongly Disagree" to "Strongly Agree". If a statement does not apply, select "N/A".

	Statement	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree	N/A
1	The activity allowed me to develop new skills.								
2	The activity was pleasurable to me.								
3	I lost track of what was going on outside of the activity.								
4	I felt connected with others during the activity.								
5	The activity made me feel happy.								
6	I felt very capable during the activity.								
7	I felt challenged, but not over-challenged, during the activity.								

APPENDIX ENJOY (CONTINUED)

THE ENJOY SCALE

	Statement	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree	N/A
8	I liked interacting with others during the activity.								
9	The activity was fun.								
10	I improved my skills the last time I did the activity.								
11	I am good at the activity.								
12	I forgot what was going on around me during the activity.								
13	I lost track of time during the activity.								
14	When I did the activity, I thought about nothing else.								

APPENDIX ENJOY (CONTINUED)

THE ENJOY SCALE

	Statement	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree	N/A
15	During the activity I was able to get better at doing it.								
16	I cooperated with others during the activity.								
17	I liked doing the activity.								
18	I felt challenged, but not under-challenged, during the activity.								
19	The activity was a shared effort with others.								
20	I lost track of what was going on around me during the activity.								
21	I felt close to others when I did the activity.								

APPENDIX ENJOY (CONTINUED)

THE ENJOY SCALE

	Statement	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree	N/A
22	I felt like I did a good job the last time I did the activity.								
23	I was proficient in the activity.								
24	I felt competent at performing the activity.								
25	The activity made me feel good.								

APPENDIX ENJOY (CONTINUED)

THE ENJOY SCALE

Scoring Guidelines

The ENJOY scale is based on a seven-point Likert scale with a response anchor at every rating point (e.g. 1 = Strongly Disagree, 5 = Somewhat Agree, 7 = Strongly Agree). The order of statements can be presented as is or randomized per respondent. For online questionnaires, it is recommended that the statements on the scale be separated into 5-7 statements per page to minimize scrolling. "The activity" can be replaced by a specified activity or left blank for respondents to fill.

The ratings (from 1-7) of all items on the same dimension should be <u>averaged</u> to obtain subscale scores for each respondent. The composite score of enjoyment can be obtained by summing the averages of each subscale together. For the composite score, the minimum value is 5 and the maximum value is 35. Alternatively, an average score of all items can be used as an overall score of enjoyment.

Scoring Guidelines per Dimension/Subscale

Pleasure (5 items)

2. The activity was pleasurable to me.

5. The activity made me feel happy.

9. The activity was fun.

17. I liked doing the activity.

25. The activity made me feel good.

Relatedness (5 items)

4. I felt connected with others during the activity.

8. I liked interacting with others during the activity.

16. I cooperated with others during the activity.

19. The activity was a shared effort with others.

21. I felt close to others when I did the activity.

Appendix ENJOY (continued)

The ENJOY Scale

Competence (5 items)

6. I felt very capable during the activity.

11. I am good at the activity.

22. I felt like I did a good job the last time I did the activity.

23. I was proficient in the activity.

24. I felt competent at performing the activity.

Challenge/Improvement (5 items)

1. The activity allowed me to develop new skills.

7. I felt challenged, but not over-challenged, during the activity.

10. I improved my skills the last time I did the activity.

15. During the activity I could get better at doing it.

18. I felt challenged, but not under-challenged, during the activity.

Engagement (5 items)

3. I lost track of what was going on outside of the activity.

12. I forgot what was going on around me during the activity.

13. I lost track of time during the activity.

14. When I did the activity, I thought about nothing else.

20. I lost track of what was going on around me during the activity.