

# University of Alberta

Psychologically Deep Experiences in Nature

by

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## **Dedication**

It goes with and without saying: this one's for you, Mom. There will be no more, I promise. Thanks for believing in me and getting excited for each new adventure, even the 'dangerous' ones.

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## Abstract

Mannell (1996) describes psychologically deep experiences (PDEs) “as special, out-of-the-ordinary, or meaningful” experiences that typically involve altered perceptions of time, self, and surroundings (p. 405). This dissertation focuses on four PDEs— Turner’s (1969) *Communitas*, Kaplan and Kaplan’s (1989) *Fascination*, Csikszentmihalyi’s (1975) *Flow*, and *Spiritual* experiences (i.e., the ‘Big Four’). Experiences of the ‘Big Four’ are integral to health and wellness; benefits such as increased self-esteem and reduced irritability have been well documented. This study examines the triggers for, and lived conscious experience of, the ‘Big Four’ to compare and contrast the experiences. A scale was developed to measure the ‘Big Four’ based on a literature review of existing scales, in-depth interviews ( $n = 12$ ), and expert review ( $n = 5$ ). After feedback was incorporated, the newly developed comprehensive PDE scale was placed online ( $n = 431$ ). The resulting survey data was randomly split into two groups to create a test sample and a cross validation sample and was analyzed using confirmatory factor analysis (CFA) to confirm that the items for each of the ‘Big Four’ were related to their respective factor. A structural equation model (SEM) was implemented to discover the relationships among the factors. Descriptive results indicate that: (a) there is empirical support for the presence of all of the ‘Big Four’ experiences, although *Fascination* was by far the most frequently experienced PDE; and (b) triggers for the ‘Big Four’ included, to varying degrees, scenery, social interaction, and recreational activity, corroborating Watson, Williams, Roggenbuck and Daigle’s (1992) nature experience modes. CFA indicated (a) a good overall fit (e.g. RMSEA = 0.047 and 0.038, NFI = 0.94 and 0.94) and (b)

one potentially problematic item that measures Fascination, 'Effortless Attention'. With the item dropped there was little change in fit statistics, except for a drop in ECVI (3.85 to 3.63 and 5.45 to 4.40). The hypothesized structural equation model showed poor model fit (RMSEA = 0.14 and NFI = 0.79). Once a problematic item measuring Communitas was dropped, fit statistics were acceptable (RMSEA = 0.087 and NFI = 0.93) but with only one significant relationship – the impact of Communitas on who people were with. Findings support the current nature based urban restoration movement and indicates the benefits of PDEs, particularly when it is possible for individuals to cognitively induce these altered mind states through the active negotiation of challenge and skill, the emotional labour of connection to others, and intentional openness to experience.

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## Chapter One: Introduction

*“It was on a dogsledding trip, and it was evening on the last night of our expedition. We were in the arctic oven, and I had to use the bathroom, so I got out of the tent and I walked along the lakeshore. Then something came over me all of a sudden. It was like someone somebody just put their hands on my shoulders and pushed me down. I don’t know how long I sat there for, my guess would be probably twenty minutes, but I had no concept of time at all. I was very calm. And, it wasn’t that I was emotionless, but it was kind of that there was no human emotion that I could connect to, like it was the purest of joy but if you were to smile or laugh it wouldn’t really be enough to describe it. It was deeper than human emotion is. I remember seeing the trees and it was almost a little out of body experience like I was looking at myself sitting there looking at the trees and kind of thinking about how I can feel now that I am a part of all of this even though I knew it before, but I didn’t really know it. And I really literally felt like I was a part of every single tree every flake of snow, the sky, everything. It’s something I’ve never felt before and it felt like I understood or tapped into something deeper that I didn’t know was there, that there is so much more potential for who I am as a human being and my connection to the greater universe. Like I felt maybe I tapped into that for just maybe a brief moment.” (Angela, personal communication, 2011)*

Roger Mannell (1996), a social psychology of leisure researcher, would define the event described above as a psychologically deep experience (PDE).

PDEs are what people “label as special, out-of-the-ordinary, or meaningful” and typically involve altered perceptions of time, self, and surroundings (p. 405). The specific types of PDEs Mannell identifies are “aesthetic, absorbing, flow, peak, leisure, tourism, mystical, spiritual, religious, transcendental, nature, and wilderness experiences” (p. 405). In this dissertation, I will examine two of the PDEs identified by Mannell—Flow experiences and Spiritual experiences—as well as two experiences—Fascination and Communitas—I believe are types of PDEs that Mannell overlooks. For parsimony’s sake, I often refer to these four experiences simply as the ‘Big Four’.

Briefly stated, *Flow* is an experience of deep concentration, in which a person becomes absorbed in the moment and loses track of time (Csikszentmihalyi, 1990). The most well researched flow antecedent or ‘trigger’ is the challenge/skill balance; that is, the skill of the individual is well suited to the challenge presented by the activity. *Spiritual experiences* are more intense and the person involved typically feels connected to a higher power (Hood, Morris, & Watson, 1993). Individuals may also experience strong feelings of wonder and peace, and a sense of timelessness and ineffability (Fredrickson & Anderson, 1999). *Fascination* involves effortless attention that is triggered by nature spaces, typically after his or her concentration is depleted (S. Kaplan, 1995). Finally, *Communitas* is an intense, magical, and synergistic connection to other people (V. Turner, 1982) and is characterized by sharing, harmony, and a sense of belonging (McGinnis, Gentry, & Gao, 2008). The impact of experiencing PDEs can be described in terms of health and wellness. For example, research has shown that the experience of Flow positively influences self-esteem (Csikszentmihalyi,

1990), Fascination reduces irritability (Kuo & Sullivan, 2001), Communitas increases sense of community (Arnould & Price, 1993), and Spiritual experiences re-establish connections to the divine (Fredrickson & Anderson, 1999).

Social scientists remain unclear on the commonalities and differences among psychologically deep experiences that people have in natural settings (McDonald & Schreyer, 1991). As Knopf (1987) states, “the literature on people-nature relations is largely intuitive” (p. 784). It is possible, however, to empirically study these ephemeral psychological experiences (Mannell, 1996). Previous nature-based research on memorable nature experiences and the ‘Big Four’ includes studies that focus on Communitas (Sharpe, 2005a; Sharpe, 2005b), Fascination (Hartig, Evans, Jamner, Davis, & Garling, 2003), Flow (Jones, Hollenhurst, Perna, & Selin, 2000), and Spiritual experiences (Fredrickson & Anderson, 1999; Heintzman, 2010b). Flow is the most well researched PDE, and while there has been some research on all of the ‘Big Four’ in nature contexts, Fascination is a concept that is inherently based on nature settings. This dissertation will add to the research on the ‘Big Four’ in nature contexts and address the research gaps in several ways. Much previous research does not make any attempt to differentiate between antecedents and the immediate conscious experience of PDEs (e.g., Kim, Ritchie, & McCormick, 2012; Stringer & McAvoy, 1992). Additionally, many studies that explore memorable experiences in nature settings do so from the perspective of a single PDE, for example Spiritual experiences (e.g., Fredrickson & Anderson, 1999), or Fascination (e.g., Hartig et al., 2003). This is the first study of its kind to bring together four different theories from the disciplines of anthropology, environmental

psychology, psychology, and religious studies (i.e., *Communitas*, *Fascination*, *Flow*, and *Spiritual*) to compare and contrast their antecedents and lived conscious experience within a nature setting. Additionally, this study addresses a gap in the literature identified by Heintzman (2010b), in that researchers need to consider urban nature and use quantitative methodologies.

### **Research Questions**

In this dissertation, I address the aforementioned research gap by the following four research questions:

*RQ1*: What kinds of PDEs occur in nature and how are they similar and different?

*RQ2*: How frequently do nature-based PDEs occur, and are they more or less common in wild or urban natural spaces?

*RQ3*: What proximal triggers<sup>1</sup> result in a nature-based PDE occurring?

*RQ4*: What is the immediate conscious experience of a nature-based PDE?

To address these questions, the following projects will be undertaken: (a) a literature review of PDEs, in particular focusing on each of the Big Four's antecedents and immediate conscious experience, to provide a typology of these PDEs', (b) the development of a single comprehensive PDE scale that is based on current but separate PDE scales, (c) face-to-face semi-structured interviews with individuals on their recollections of PDEs in nature in order to fill in missing information on the antecedents and immediate conscious experience of PDEs, as well as to receive feedback on the comprehensive PDE scale, (d) expert review of

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<sup>1</sup> Proximal triggers are those situational triggers that are necessary for the PDE to unfold. Distal triggers, such as personality, will not be discussed.

the comprehensive PDE scale, and, (e) inclusion of the newly developed comprehensive PDE scale in a post-nature experience survey. This will be followed by data analysis using confirmatory factor analysis and structural equation modeling to determine similarities and differences among PDEs and to hypothesize causal effect. The above projects can be summarized succinctly as three studies. The order in which they were completed was as follows: (a) face-to-face semi-structured interviews, (b) expert review of the comprehensive PDE scale, and (c) an online, convenience sample, survey.

Researchers are often asked “so what?” after describing what they intend to do or have already done (Kleiber, Walker, & Mannell, 2010). In response to this question, I address below the possible implications of my work in terms of both research and practice.

### **Research Implications**

Current meta-analyses of PDEs only provide overviews of a single experience (e.g. Heintzman, 2010), or two or three experiences (e.g. Privette, 1983), or do not attempt to provide topography of the immediate conscious experience (e.g. Heintzman, 2010). In contrast, my proposed research will develop a typology and taxonomy (Bailey, 1994) composed of four PDEs. Typologies, Bailey (1994) asserts, are conceptual in nature. I present an example of a typology in my literature review when I use empirical and theoretical data to speculate on the relationships between PDEs across frequency, intensity, effort, and mode (i.e., is the PDE inherently based on the activity, place, or social elements?). Closely related to the typology is the taxonomy, differentiated by the use of empirical data. Bailey proposes that the benefits of classification systems

such as typologies and taxonomies are, to name but a few: description, reduction of complexity, and identification of similarities and differences. All of the previously listed benefits will potentially assist leisure researchers who are interested in psychologically deep experiences in nature.

In particular, researchers have identified a theoretical need to compare and contrast PDEs. For example, Jackson, Martin, and Eklund (2008) contend that, although the flow concept is well researched, they recommend development of a scale that measures “a diverse range of constructs [that] could be compared with flow” (p. 583). Based on the above, I will develop a comprehensive PDE scale; use confirmatory factor analysis (CFA) to examine its construct and criterion validity (Messick, 1989); and identify triggers for, and determine relationships among, the ‘Big Four’ PDEs.

### **Practical Implications**

Research that more carefully reveals the relationship between nature-based triggers and the immediate conscious experience are of interest to national and provincial parks services. For example, Parks Canada’s mandate is “to facilitate *memorable experiences* [italics added] in a way that ensures the protection of the ecological integrity of national parks” (Parks, 2008). If PDEs are those that are “label[led] as special, out-of-the-ordinary, or meaningful” (Mannell, 1996, p.405), then by providing theoretically sound and well-researched principles about their antecedents and immediate conscious experience characteristics, Parks Canada could potentially offer more memorable experiences to visitors.

It is also possible that by using the results of these studies to educate the public, more people will become open to such experiences and various benefits

will accrue. For example, in Morita's et al. (2007) study, they mention that *Shinrin-yoku* (i.e., walking and/or staying in forests to maintain health) was slowly embraced by the Japanese people beginning in the 1980's, via a government education program. Additionally, research that strengthens a connection between PDEs and natural spaces can support government legislation that promotes architecturally 'green' built and non-built environments in urban settings, as well as support for incorporating environmental education across the curriculum in public schools. Finally, this research has implications in terms of Louv's (2005) concept of nature deficit disorder; a phenomenon he suggests is caused by individuals, especially children, lacking an intimate connection to nature. If the 'Big Four' are experiences that do occur during nature-based recreation, then potentially the benefits of *Communitas*, *Fascination*, *Flow*, and *Spiritual* experiences could be used to help advocate for increased access to nature spaces.

My research can also inform other disciplines. Marketing research currently endorses a change in the way that traditional products are offered. Chuck E. Cheese's, Niketown, DisneyWorld, and Starbucks are examples of spaces in which not only goods and services are offered, but also where memorable experiences are at the pinnacle of the offering: "People have become relatively immune to messages targeted *at* them. The way to reach your customers is to create an experience *within* them" (Gilmore & Pine, 2002, p.3). Alberta Tourism currently has a marketing campaign that capitalizes on this concept through their "Remember to Breathe" campaign. The photos and complementary videos show expansive landscapes and individuals experiencing joy and fun

through physical and cultural activities in the outdoors. Although the expansive landscape photography shows the intuitive understanding of the importance of scenery to the nature experience, this research can implicate other important factors such as *Communitas*.

The following chapters will address the literature review, methods and methodology, scale creation, and the results of the three studies (i.e., interviews, expert review, and an online survey). More specifically: (a) chapter 2 outlines the literature review that compares and contrasts PDEs, (b) chapter 3 outlines the methods and methodology section of this dissertation, the post-positivist lens that informs my overall research program, and the interdisciplinary methods that mobilize each project (i.e., the expert review of the comprehensive PDE scale, semi-structured interviews, and the development of a comprehensive PDE scale that is based on pre-existing scales), (d) chapter 4 outlines the results of the interviews, (e) chapter 5 delineates the results of the expert review, (f) chapter 6 describes the results of the survey, and (g) chapter 7 concludes this dissertation by summarizing key findings, describing theoretical and practical implications, outlining project limitations, and providing a list of research recommendations.

## Chapter Two: Literature Review

The purpose of this dissertation is to explore nature-based PDEs, specifically the “Big Four”: Communitas, Fascination, Flow, and Spiritual experiences. In this chapter I will lay the groundwork for the “Big Four” being the theoretical foundation that underpins my work, review and analyze the extant literature, and provide a justification for my research questions. Before doing so, however, I begin by outlining the rationale for my research focus.

As stated in the previous chapter, psychologically deep experiences (PDEs) are “psychological experiences that people experience and label as special, out-of-the-ordinary, or meaningful” (Mannell, 1996, p.405) and typically involve altered perceptions of time, self, and surroundings. The specific types of PDEs Mannell identifies are “aesthetic, absorbing, Flow, peak, leisure, tourism, mystical, spiritual, religious, transcendental, nature, and wilderness experiences” (p. 405). Of these 12 PDEs I will focus on two—Flow and Spiritual—and I will outline my reasons for excluding or subsuming the other 10 shortly. I will also include two other experiences—Communitas and Fascination—I believe are PDEs but that Mannell overlooks. I will hereafter refer to these four experiences as the ‘Big Four’.

Although Mannell (1996) includes tourism, leisure, nature, and wilderness in his PDE inventory, I consider these experiences to be “containers” (K. Henderson, 1990) for PDEs, in that they are physical or temporal spaces with the potential to house the experience of a PDE, rather than PDEs in and of themselves. To further illustrate this point, leisure:

has been characterized as specific types of activity (e.g., attending a movie); as time free from obligations (e.g., the amount of time not spent in paid employment and taking care of home, family and oneself); as meaningful and satisfying experience (e.g., satisfaction, fun, excitement, awe, belonging); or as some combination of activity, time and experience” (Mannell & Kleiber, 1997, p. 7).

This quotation indicates that leisure can be a temporal space, an experience, or an activity. Due to this broad definition, leisure is thus what Henderson (1990) calls a ‘container’ that allows for the possibility of many psychosocial experiences. Tourism, nature, and wilderness can also be critiqued in the same way and therefore I have not included them in the “Big Four”. Other experiences that Mannell has in his list of PDEs that I have not included in my study include aesthetic experience, absorption, and peak experiences. The aesthetic experience is typically associated with human-produced works of art (e.g., poetry, paintings) and some research suggests that the aesthetic experience is in fact a type of Flow experience (Csikszentmihalyi & Robinson, 1990). As Flow is the most well researched construct of all of Mannell’s (1996) PDEs, to avoid redundancy, aesthetic experience are not included in my dissertation. Although Roche and McConkey (1990) have refined the construct of absorption since Tellegen and Atkinson’s (1974) inaugural work, no additional research has been conducted on this experience in over two decades. Moreover, absorption has many similarities with Flow. Thus, it is excluded from this study as well. Finally, also excluded are peak experiences. Maslow (1964) defines a peak experience as a “poignantly emotional, climactic, autonomic response to the miraculous” (p. xiv).

Cleary (1996) describes peak experiences as being passive, of short duration, and as “beat[ing] their way in upon the organism, flooding it as music does” (p. 183). Peak experiences are involuntary and can be experienced by all, although they are quite rare (Maslow, 1964). In terms of measuring peak experiences, MacDonald, LeClair, Holland, Alter and Friedman (1995) report good reliability and adequate validity for Mathes, Zevon, Roter, and Joerger’s (1982) Peak Scale. This scale is based directly on Maslow’s (1964) description of peak experiences (see Appendix A of *Religions, Values and Peak-Experiences*). However, there are no studies of the Peak Scale’s factorial validity. In short, peak experience was not examined in this study because of its infrequency of occurrence (Maslow, 1964), the lack of clarity concerning the factor validity of its measurement scale (MacDonald et al., 1995), as well as the length of the scale (i.e., over 70 items). Additionally, similarities between peak experience and intense Spiritual experiences are considerable and therefore including peak experience would be redundant.

Two experiences that Mannell (1996) does not identify as psychologically deep experiences—Communitas (V. Turner, 1969, 1982) and Fascination (Kaplan & Kaplan, 1989)—will be examined in this study. The experience of Communitas, a synergistic connection between individuals, is included to: (a) attempt to alleviate the perceived psychological bias of psycho-social research (For a discussion of this bias, see Iso-Ahola, 1999; Mannell & Kleiber, 1997), and (b) recognize the importance of the social realm as motivation for, and a potential trigger of, beneficial nature experiences (Driver, Tinsley, & Manfreda, 1991; Mannell & Iso-Ahola, 1987). In fact, much nature-based leisure occurs with other people present (Ching-hua et al., 2005). Fascination is included because it fits

Mannell's (1996) definition of a PDE and it is the only PDE that was developed within a nature-based leisure context, although this research is found mostly outside of leisure-specific journals. Additionally, the inclusion of these four experiences addresses D. R. Williams (1988) concept of mode, or the components of nature-based leisure that includes the place they are in, the social elements, and the activity. The concept of mode and the relationship to PDEs is more thoroughly explained later.

Mannell and Iso-Ahola (1987) offer an excellent framework that I will use to help situate my project. They state that leisure can be studied using three main approaches: by definition (or the situational triggers that lead to a leisure experience), immediate conscious experience (which considers the internal subjective environment), and post-hoc satisfaction. As described above, I use the definition of leisure as a "container" that includes time, space, and activity – all distal antecedents or situational triggers for PDEs. PDEs themselves occur within the "container" of leisure. Therefore, a focus on the study of the internal subjective experience within leisure via immediate conscious experience is called for in my projects. Mannell and Kleiber (1997) define the immediate conscious experience (ICE) as an "interest in the anatomy of the experience, its evaluative components (e.g., moods, emotions, feelings), cognitive components (e.g., thoughts, images), intensity, and duration" (p. 83). In essence, ICE focuses on the experience of a PDE as it happens.

Additionally, I contextualize this study within the realm of leisure studies, although tourism studies also inform my work. Because leisure and tourism are closely related concepts (Hinch, Jackson, Hudson, & Walker, 2005) that can be

potentially difficult to differentiate (Mannell & Iso-Ahola, 1987), a brief definition of the two is necessary. Tourism can be defined as “the travel of non-residents to destination areas as long as their sojourn does not become a permanent residence” (Hinch et al., 2005, p.143) and includes travel that is eighty kilometres or more outside of the ‘usual’ environment (Smith, 2007). Tourism is also a much broader concept and encompasses business, personal, and leisure travel. In comparison, leisure is “that portion of an individual’s time that is not directly devoted to work or work-connected responsibilities or to other obligated forms of maintenance or self-care” (Hinch et al., 2005, p.148) and takes place close to home. While both leisure and tourism are motivated by escaping routine and seeking inter/intrapersonal relationships, the difference between leisure and tourism is that leisure is sandwiched between moments of busyness at home and tourism is infrequent and takes place over an extended period of time (Mannell & Iso-Ahola, 1987).

Recently, Heintzman (2010b) recommended that future research in the realm of PDE’s move beyond solely considering remote nature contexts; and remote nature contexts would fall under the definition of tourism. Because my work intends to address some of the limitations of previous work, I use leisure as the foundation for my work, as nature experiences in leisure contexts include those nature experiences that happen in the backyard and at local parks. It is also important to note that some of the work in the area of PDEs in nature uses the term recreation rather than leisure. Throughout the dissertation I will use the terms recreation or leisure, depending on the context. Practitioners tend to use ‘recreation’ to mean a program or a facility, or an activity that takes place in

public spaces, while scholars tend to use the word 'leisure' to refer to the broader field.

### **Nature-based research**

Nature-based research spans many topics and methodologies. This vast and varied body of work includes explorations such as: how emotional attachment develops in specific places over time (Brooks, Wallace, & Williams, 2006), or the effect of time spent in nature on pro-environmental behaviours (Haluza-Delay, 2001; Nisbet, Zelenski, & Murphy, 2009). Researchers that detail the benefits of nature experiences outline sociopsychological characteristics such as escape, challenge and survival, new opportunities, natural awe and beauty, and solitude (Pohl, Borrie, & Patterson, 2000), more immediate post-experience benefits such as physiological stress reduction (Orsega-Smith, Mowen, Payne, & Godbey, 2004; R. S. Ulrich, 2002), and psychological benefits such as attention restoration (S. Kaplan, 1995). For example, early research on stress reduction theory revealed that nature pictures have a rapid calming effect on psychophysiology and that this effect is more pronounced than with urban pictures (Ulrich et al., 1991; Ulrich, 1981). More recent research reveals that exposure to natural contexts positively influences physiological measures such as blood pressure and heart rate (Hull & Michael, 1995; Orsega-Smith et al., 2004; Ulrich et al., 1991) and psychological stress (Hansmann, Hug, & Seeland, 2007; Morita et al., 2007; Wells & Evans, 2003).

A small body of research within the leisure literature and in other fields explores memorable, transcendent, and extraordinary experiences in nature (Arnould & Price, 1993; Farber & Hall, 2007; K. Williams & Harvey, 2001) and

two studies contribute research on memorable experiences in general (Jefferies & Lepp, 2012; Kim et al., 2012). Although the majority of this work (with the exception of (K. Williams & Harvey, 2001) does not attempt to differentiate between different types of memorable experiences, there is merit to their findings for my work.

Much of the tourism literature approaches the study of memorable experiences as a way to increase the marketability of destinations, experiences, and services with the resulting increase in revenue. Two recent studies in the tourism literature are notable for their emphasis on memorable experiences that do not necessarily occur in a natural environment. Kim, Ritchie, and McCormick (2012) developed a memorable experiences scale by asking sixty two college students to recall their most memorable tourism experience and list five words to describe this experience. Some of the themes developed from the students (e.g. social interaction, relaxation, and challenge) lend credence to exploring the immediate conscious experience of *Communitas* (i.e., social interaction), *Fascination* (i.e., relaxation) and *Flow* (i.e., challenge). A major difficulty with this study is that the researchers did not indicate where participants' experiences occurred or describe what kinds of experiences they had.

Jefferies and Lepp (2012) asked undergraduate students studying abroad in China and Uganda to reflect on memorable experiences within an everyday familiar college setting. Based on eighty nine extraordinary experiences, a content analysis revealed that important facilitators of these experiences included: (a) challenging activities that lead to the accomplishment of meaningful goals, (b) activities that reaffirm and strengthen social bonds, (c) spontaneity, and (d) and

being outside (important for 4% of respondents). In fact, the outdoor settings often involved challenge, “and produced intense emotions including awe” (p. 45). This study further supports a focus on *Communitas*, *Flow*, *Fascination* (i.e., being outside) and *Spiritual experiences* (i.e., the experience of “awe”) as components of memorable experiences.

Arnould and Price’s (1993) work is an oft-cited study outside the leisure literature that emphasizes nature-based recreation. These researchers use a variety of qualitative methods (e.g., in depth interviews, participant observations, focus groups, and surveys) over a two-year period to explore themes related to what they term ‘extraordinary’ or intensely positive nature experiences. Although Arnould and Price have marketing and consumer research backgrounds, their research focused on the experience of clients rafting down the Colorado River. The experiences they studied involved three themes: communion with nature (e.g., water, geology, and wildlife), *Communitas*, and the extension and renewal of self (e.g., through knowledge of how to dress, rafting-oriented language, and water skills that contribute to “a sense of mastery and enhanced agency”). Because the research process represented in this article is extremely complex, it is difficult if not impossible to comment on the rigor and representative categories of this research. However, criticisms of this work include that the sample sizes were small (e.g., the post-trip customer surveys  $n = 43$ ). What Arnould and Price’s work does achieve, however, is support for including *Communitas* in the proposed comprehensive PDE scale via one of their three themes.

Williams and Harvey’s (2001) paper is also often cited in nature-based research. While outside of the leisure realm, this paper is particularly interesting

to this dissertation as the 131 respondents in the study who recalled a transcendent experience lived in, worked in, *or* visited forest environments, while previous work has focused solely on individuals who have temporarily traveled through remote wilderness spaces (Fredrickson & Anderson, 1999; Schmidt & Little, 2007; Stringer & McAvoy, 1992). Williams and Harvey (2001) asked their participants to respond to a statement based on Maslow's (1964) description of a peak experience: "describe a forest experience...Try to recall the most wonderful experience you have had in a forest: the happiest moment, the most ecstatic moment, a moment of rapture or a natural 'high'. It may be a time of intense feeling, or an experience in which you saw the forest in a new way" (p. 251). The respondents answered this open-ended question and also responded to quantitative items, including eight items from Hood's (1975) mysticism scale, as well as items about overcoming limits, sense of new meaning, sense of oneness, timelessness, and ineffability. What is problematic for this work is that no rationale is provided for why Williams and Harvey (2001) chose some parts of Hood's M scale but not others. The researchers also choose to (a) name the factors differently, and (b) include different or substantially changed items from the M scale, also with no explanation. For example, the researchers use the factor 'Overcoming Limits' to encompass two items: 'the forest and the things happening in it felt perfect' and 'the feeling seemed like a new or higher way of looking at the world'. In the original scale, these would be classified under separate factors, 'Positive Affect' and 'Noetic,' and worded differently.

An additional 15 items were subsequently added to the above scale that addressed psychological theories of cognitive appraisal (De Rivera, 1977; Fitness

& Fletcher, 1993). Principal component analysis conducted on Williams and Harvey's (2001) 15 cognitive appraisal items revealed three factors that accounted for 43% of the variance in transcendent experiences (e.g., those experiences with a high tally on the sum of all of Hood's eight items), including: (a) *fascination*: intense emotional involvement, a feeling of being overwhelmed and fascinated by the forest; belief that the experience was caused by the forest; acute awareness of feelings in body and mind; and descriptions of the environment as complex, full of variety and change; (b) *novelty*: level of familiarity of the environment and, (c) a sense of *compatibility and ease*: a sense of belonging in the environment; goals achievement; the forest is open and easy to move through; and a feeling of power over the forest.

Using the three factors outlined above and the means of Hood's items, the researchers identified six different classes of transcendental experiences via cluster analysis. However, Williams and Harvey (2001) posit that there are really only two distinct transcendental experiences: diminutive and deep Flow. Both involve what they call high fascination (i.e., intense emotional involvement) and moderate to high novelty, but diminutive experiences are characterized by low compatibility (i.e., the environment is difficult to move through, as in a thick boreal forest), while deep Flow has high compatibility (see Table 1).

*Table 1. Diminutive and Deep Flow*

	Diminutive	Deep Flow
Fascination	High	High
Novelty	High	Moderate
Compatibility	Low	High

Diminutive experiences are more passive, have a strong single focus (i.e., hard fascination), and are less relaxing. In contrast, deep Flow has soft fascination, or the ability to reflect and be absorbed at the same time, and is more relaxing. Interestingly, the researchers define the Novelty factor outlined in Table 4 as a category of familiarity, suggesting that those who live or work in forest environments have transcendent experiences, rather than just those who seek out and spend time in novel environments. This contradicts studies that have used the Recreation Experience Preference scales and found that escape and novelty are major components of nature-based recreation (Manfredo & Driver, 1996).

Most interesting about this work is that it attempts to distinguish between different types and intensities of experiences, an aspect missing from work in the leisure field that investigates spiritual experiences. However, Williams and Harvey (2001) describe deep Flow as a type of effortless attention, perhaps leading to a misnomer of this category, in that Csikszentmihalyi (1975a) indicates that Flow requires intense and effortful attention. Effortless attention would be similar to Kaplan and Kaplan's (1989) Fascination. Williams and Harvey also posit that the shared Fascination component between Diminutive and deep Flow requires further research – although by Fascination they mean intense emotional involvement. This is a problem, as by improperly labelling their factors based on existing literature, Williams and Harvey do not inspire confidence in the reader. Additionally, they conceptualize the concept of Fascination to mean so many things that it is hard to understand what it is.

In Farber and Hall's (2007) study, they asked drivers who stopped at an information centre along the Dalton highway in Alaska to describe "one very

special experience” in as much detail as possible. Antecedent themes included social interaction, novelty, scenery, recreation and wildlife encounters; however, wildlife encounters and scenery outweighed the three other antecedents in terms of importance for extraordinary experiences. Scenery included descriptions of mountains, tundra, water bodies, weather, midnight sun, colours, light, clouds, contrast, or the changing variety of sights. In fact, twenty two percent of scenery descriptions mentioned mountains; and no other setting type was described by more than fifteen percent of people. As well, fifty percent of participants indicated wildlife as an antecedent. The researchers also asked participants to rate positive and negative emotions based on a five-point scale. The most mentioned positive emotions included pleasure (31%), awe (26%), excitement (28%), peace (5.7%), and humility (3.8%). Fear or anxiety, the most frequently mentioned negative emotion, was only expressed by 3.3% of respondents, an important finding considering that Heintzman (2010b) calls for more focus on negative triggers and experiences.

Critiques of the above literature include that not all the memorable, extraordinary, and transcendent experiences research is specifically nature-based work (Jefferies & Lepp, 2012; Kim et al., 2012) although it is difficult to ascertain exactly *where* the experiences in this research occurred. Additionally, the work relies on college students as the sample, meaning that the samples are homogenous. Although there is no attempt to differentiate between different kinds of experiences, with the exception of Williams and Harvey (2001), the different experiences of the ‘Big Four’ are implicitly revealed in the findings as important elements of memorable, extraordinary, and transcendent experiences.

## **The “Big Four”**

In this section I review the theoretical and empirical literature on each of the “Big Four” in the following order: Communitas, Fascination, Flow, and Spiritual. At the conclusion of this section I compare and contrast these experiences using a typological classification scheme.

### **Communitas**

Communitas’ origins are grounded in anthropology. The concept was first identified by French ethnographer Arnold van Gennep (1960) as he explored ceremonial rituals across different cultures. van Gennep proposed that there are three phases in the ritual process: separation, limen (or margin), and aggregation. In the first and second phases the subject is marginalized from regular routine and then immersed in a ritual that is counter to the typical social structure. Finally, the individual is reintegrated into society. Victor Turner (1982) more thoroughly explored van Gennep’s concept of limen and introduced the related and consequential concept of Communitas in the 1960’s and 1970’s based on his fieldwork in continental Africa.

Turner (1982) describes liminality as a state of mind. It is the psychological space between structure (e.g., roles and status) and anti-structure. It is a space of ambiguity, yet potentiality, and it is often found on the ‘margins’ of society. One may attain liminality through ritual that is outside of normal cultural routine (the liminal, e.g., religious ceremony) and modern day experimentation and play (the liminoid, e.g., sport and theatre). To further clarify, the liminal “is serious, obligatory, cyclical, and repetitive” (Yarnal, 2006, p.54) and often incurs

suffering or humiliation. It is sacred and references mystical powers. In contrast, the liminoid “takes place in modern settings; it is entertaining, voluntary, and varied in form and function” (p. 54). It is also often commoditized, as Sharpe’s (2005a; 2005b) study of guides on wilderness trips (described more fully shortly), exemplifies. Lastly, the liminal and the liminoid are precursors to the experience of *Communitas*.

Turner (1982) describes *Communitas* as a fleeting, effortless, but magical state of mind that occurs when people connect on a synchronistic and sympathetic level. It relies on what Turner calls ‘anti-structure’, or liminality, where individuals are “free from the culturally defined encumbrances of his [*sic*] role, status, reputation, class, caste, sex or other structural niche” (V. Turner, 1982, p.48). *Communitas* can happen in three ways: spontaneous, ideological, and normative. Spontaneous *Communitas* is the focus of this work. It is the unfolding of a subjective experience between two or more people that is “a flash of lucid mutual understanding on the existential level” (p. 48). The psychological state of *Communitas* includes an experience of unity between two people, although separate identities are still maintained, and a feeling of endless power. It is inclusive, while simultaneously snobbish and exclusive: “one wants to make the Others, We” (p. 51). *Communitas* is pleasurable and “profoundly communal and shared” (Turner, 1969, p.138).

Ideological *Communitas* is the attempt to outline how to live in the state of *Communitas*, while normative *Communitas* is the attempt to create a society or lifestyle of perpetual *Communitas*. Turner (1982) spent much of his time exploring normative *Communitas* in what he calls “pre-industrial” (i.e., tribal

Africa) and “industrial” (i.e., North American) societies. He cautions that *Communitas* “is more a matter of grace than law” (p. 49). He also maintains that *Communitas* is difficult to sustain as rules and norms are quickly established that counteract the possibility of spontaneous group functioning (Turner, 1969).

Current research on *Communitas* can be found not only in anthropology (Jencson, 2001; Olaveson, 2001) but also in sociology and religion (Spencer, Hersch, Aldridge, Anderson, & Ulbrich, 2001; Tramacchi, 2000), and tourism (Kim, 2004; Lugosi, 2007, 2008; Wallace, 2006). Leisure scholars study the liminoid via such topics as play (Yarnal, 2006), sport (Ingham & McDonald, 2003; Kemp, 1999; L. P. McGinnis et al., 2008), and nature based excursions (Sharpe, 2005). Some of this work is theoretical (Ingham & McDonald, 2003; Kemp, 1999) while most of the empirical research is grounded in interpretive frameworks (Sharpe, 2005; Yarnal, 2006). Interpretive leisure research on *Communitas* explores such themes as how older women use play to create liminality and experience *Communitas* (Yarnal, 2006), how river guides construct the experience of *Communitas* in wilderness excursions (Sharpe, 2005), and how *Communitas* relates to golfers long term commitment to their sport (McGinnis et al., 2008).

For example, Yarnal (2006) interviewed 23 women about their experiences in the Red Hat Society, an association whose only mission is to “play and be silly” (p. 53). Women must be over 50 to join and they must also conform to the dress code of red and purple clothing, complete with feathers and boas. The groups’ outings illustrate the concept of liminality through anti-structure in that participants escape from the stereotypes of older women and the expectations of

family, and focus on hilarity, goofiness, and bonding. Yarnal's results suggest that the women join and stay members of the Red Hat Society to develop friendships (new and old), have fun, be silly, and gain social support. Many women stated that they experienced acceptance in the group. They also valued the fact that the activities they participated in were varied and emphasized different strengths and weaknesses: everyone had an opportunity to shine. Yarnal added that "the triad of 'lack of obligation,' 'no rules,' and 'no commitment' was not only one of the most satisfying aspects of Red Hat Society membership, it also differentiated the Red Hat Society from other social or volunteer memberships" (p. 62).

Yarnal's (2006) work indicates that the experience of *Communitas* does not need the antecedent suffering and humiliation, and she critiques this aspect of Turner's (1969) conceptualization. However, her work is based on the liminoid, and is more about entertainment and creating a sense of belonging rather than a physically demanding ritual. In contrast, Jencson (2001) explores *Communitas* in local residents who experienced the 1997 Red River flood, determining that suffering (e.g., lack of sleep and physical exertion from sandbagging) was an important precursor to the *Communitas* experience. Other researchers critique Turner's (1969) conceptualization of *Communitas* in different ways. Logosi (2008) believes that Turner "overstates the ecstatic nature of human experience" (p. 143). Instead, Logosi (2007) proposes the psychological experience of *communitisque*. *Communitisque* is closely related to *Communitas* in that there are "traces of existential abandonment, but [it] is more sober [than *Communitas* and]...may challenge, soften, negotiate and disrupt socially constructed statuses without completely abandoning them" (p. 143). The example that Logosi (2008)

uses is a group of people spontaneously gathering around a piano and singing together. Turner (1982) potentially addresses these concerns by differentiating liminality, with its focus on play and fun (i.e., the liminoid) from demanding ritual (i.e., the liminal) that leads to bonding between people. Specifically, studies that conceptualize Communitas triggers as liminal (i.e., ritualistic and repetitive) include such triggers as very physical dancing and drugs (Gavanas, 2008; St John, 2004; Tramacchi, 2000) whereas triggers of the liminoid are less extreme.

In one such study of the liminoid, Sharpe (2005) examined Communitas in a wilderness setting. She investigated adventure wilderness guides' intentional actions and emotional labour as they attempted to authentically create Communitas to manifest positive and memorable experiences for clients. In this way, she posits that the wilderness experience is a form of anti-structure with the potential for liminality and Communitas. Sharpe (2005) suggests that the role of adventure guides is to create Communitas via manipulation of the experience – and that the group's resulting experience of Communitas defines a trip's success. Via ethnography (i.e., observations and interviews with river guides), she discovers what factors need to be present in order for the experience of Communitas to unfold in a guided wilderness context. In sum, guides and the organization (in this case, Wilderness Inquiry) must undertake the following: (a) Establish the mission (e.g., “Wilderness Inquiry began to position its trips to specifically address social problems related to social inequality and discrimination” p. 264). (b) Select and train trip leaders (e.g., staff trainings taught the mission of the organization) (c) Set the tone (e.g., guides role modeled expected behaviour by being open and telling stories about themselves that are

perceived as spontaneous by the clients). (d) Maximize the guide's authority (e.g., via the gear talk, safety talk and paddle talk), and (e) Guide interpretations (e.g., at the end of the trip, the guests want to know where their group stands in the grand context of the guides' experience of groups, as in "This is the best group ever!"). Also, Sharpe adds, guides can to some degree control reactions to dangerous or difficult experiences (e.g., rain, thunder) by reacting calmly. In effect, calm reactions to more difficult situations inherently allow for more of a focus on the social bond, rather than the environmental situation.

In the quantitative realm, McGinnis, Gentry, and Tao (2008) use a Flow, Communitas, and Enduring Involvement scale in order to assess whether the internal psychological experience of Flow or the social experience of Communitas is more important for 760 golfers, and if either of these two experiences affects Enduring Involvement. Results indicate that Flow is more important than Communitas in Enduring Involvement. Construct validity was attained through exploratory factor analysis that indicated that the items for Communitas were correlated with Communitas, with factor scores between 0.51 and 0.77. Confirmatory factor analysis also indicated a moderate to good fit for the factors (e.g. RMSEA 0.08 and Goodness of Fit 0.93), suggesting that the Communitas items were differentiated from the items measuring Flow (Hu & Bentler, 1999; Kelloway, 1998). Flow and Communitas were moderately and positively correlated (0.60).

Scale conceptualization was based on Belk, Wallendorf, and Sherry's (1989) study, which explored the ritualization of consumption. The rationale for using this article as a foundation seems to stem more from a desire to place their

research within the consumer literature rather than basing the scale on Turner's (1969, 1982) work. This rationale becomes clearer when we compare the literature review on the immediate conscious experience of Turner's *Communitas* (i.e., *Communitas* as fleeting, magical, a mutual understanding, feelings of power, connection to others). The only items that represent Turner's (1969) original work in the scales is 'connection to others' by items representing belonging, sharing, and harmony with others. Oddly, the items measuring Flow in this study are not based on the well-established and well-tested scales developed by Jackson and Eklund (2004). Additionally, the researchers do not clearly outline their methods as they completed an exploratory factor analysis and two confirmatory factor analyses on the data without indicating how and if they split the sample. The limitations of this study reveal questionable content validity for the scale, as the scale development was not based on Turner's (1969) original work (Messick, 1989).

As we have seen, previous empirical research on *Communitas* in the leisure discipline is limited. Important characteristics of *Communitas* are described as a voluntary experience, spontaneity, goofiness, equality between people, trained leaders that facilitate positive and sympathetic relationships, a space between structure and anti-structure, camaraderie, and a connection to others through sharing, harmony, and belonging (McGinnis et al., 2008; Sharpe, 2005; Yarnal, 2006). In this small pool of work none of the researchers offer information on the ethnicity of their participants so it remains difficult to ascertain whom the work is serving. Due to the cost of participating in guided remote wilderness trips the median income of participants in McGinnis' (2004) study was

\$60,000 to \$100,000; the research therefore over-represents the middle to upper class. Additionally, this small pool of research does not clearly differentiate between the characteristics of the liminoid, *Communitas*, and the benefits of the experience of *Communitas*. As will be clear shortly, the element of *Communitas* is the weakest link in the empirical foundation for an exploration of the “Big Four”. As such, there is great potential to add to the literature through an exploration of the experience of *Communitas*, the relationship of *Communitas* to nature-based recreation, and in comparison with other PDEs.

### **Fascination**

Two perspectives of nature experiences as restorative dominate the psychophysiological literature: Kaplan and Kaplan’s (1989) attention restoration theory (ART) and Ulrich’s (1981) psychophysiological stress reduction framework. The two lines of research are, at times, inextricably connected and there is ongoing debate as to whether the experience of attention depletion causes stress, stress causes attention depletion, or if they are even the same process. For example: “some researchers have discussed attention fatigue as an after-effect of stress and others have treated it as a condition that increases susceptibility to stress” (Hartig et al., 2003, p.110). As such, some nature restoration studies measure both stress and attention. The relative timing of each phenomenon, however, may give a clue as to their distinctiveness. The effects of stress on physiology, for example, happen quickly, as heart rate and blood pressure decrease within five minutes of a stressor, but concentration performance after a stressor may not be affected for as long as 15-20 minutes (Berto, 2005; Hartig et

al., 2003). In conjunction, recent research with older adults suggests a significant relationship between spending one hour in a garden setting and improved attention capacity, yet no significant relationship between this same garden setting with stress reduction (measured through heart rate and blood pressure)(Grahn & Ottoson, 2013), perhaps further distinguishing the two concepts.

This dissertation is based on a sociopsychological framework and will therefore focus on attention restoration theory. Kaplan (1995) proposes that we have two types of attention: direct and indirect. After periods of intense concentration it is possible to exhaust direct attention, and indirect or effortless attention allows for the restoration of our ability to concentrate. Direct attention is when we deliberately and intensely focus on something—it is deep concentration. It is susceptible to a kind of fatigue that is not necessarily related to needing sleep. For example, when a student is finished working hard on an assignment or paper that has consumed their attention, they will feel mentally exhausted and have a hard time concentrating (Taylor, Kuo, & Sullivan, 2001). The result of this incapacity to engage in direct attention is an inability to concentrate (Kaplan & Kaplan, 1989), irritability (Kaplan & Kaplan, 1989), impaired perception (S. Kaplan, 1995), inability to self-discipline (Taylor, Kuo, & Sullivan, 2002), and even violence and aggression (Kuo & Sullivan, 2001; Sullivan & Kuo, 1996). Kaplan's (1995) theoretical work is based on James' (1892) concept of voluntary attention, where attention is effortful and wilful.

Kaplan (1995) further develops his framework by proposing that nature innately triggers a kind of effortless attention that restores direct attention through a concept he calls Fascination. Fascination may be of two types: soft fascination

and hard fascination. Soft fascination allows for reflection to happen at the same time as effortless attention—watching clouds pass by, for example. In contrast, watching television is an example of hard fascination where attention is completely absorbed. Kaplan (1995) proposes that this activity does not also have the reflective quality to complement the absorbed attention. In this project I will be using the concept of soft fascination, the type of Fascination induced by nature experiences, henceforth referred to simply as *Fascination*.

Kaplan (1995) proposes that Fascination is a necessary but not sufficient condition for the recovery of directed attention; it is only one component of his Attention Restoration Theory model. Other components necessary for restoration include being away from normal routine, extent (i.e., the space must be able to occupy the mind), and compatibility (i.e., the environment must support the activity you are doing). Interestingly, the compatibility element of Attention Restoration Theory (ART) is similar to Csikszentmihalyi's (1975a) challenge/skill balance, which is an antecedent for Flow. Theorists of ART propose that urban scenarios promote bottom up processing – a focus on stimuli that includes such events as cars honking, avoiding traffic and ignoring advertising – while nature spaces allow for restoration via top down processing, which improves attention and memory processing capacities (Berman, Jonides, & Kaplan, 2008).

Current research in ART relies heavily on the use of laboratory photographs or slides to indicate a preference for natural landscapes over urban landscapes or to indicate a process of attention restoration by viewing scenes of nature. In the latter case, researchers often use a test to exhaust attention, intervene with nature slides, and then test attention again. For example, Berto

(2005) administered the Sustained Attention to Response Test (SART) to 32 undergraduates. The students were then split into two groups to view either restorative or non-restorative nature scenes. These nature pictures had previously been categorized into restorative and non-restorative using the Perceived Restoration Scale (PRS) by a similar demographic of students. Finally, the SART was administered again. Results indicate that the group that viewed the restorative pictures experienced significant effects on changes in reaction time and correct responses on the SART. Other studies also use an attention test as a measure of fatigue and restoration (Berman et al., 2008), while some have used imagined fatigue (Felsten, 2009).

Much of the research on ART involves the use of the Perceived Restoration Scale (PRS) to discover people's affinity for nature spaces as well as to distinguish preferences between urban and nature spaces (Chang, Hammitt, Chen, Machnik, & Su, 2008; Felsten, 2009; Han, 2007; Hartig, Kaiser, & Bowler, 1997; Hartig, Korpela, Evans, & Garling., 1997; Korpela, Hartig, Kaiser, & Fuhrer, 2001; Purcell, Peron, & Berto, 2001). The PRS was developed by Hartig, Korpela, Evans, and Garling (1997) and further validated by Hartig, Kaiser, and Bowler (1997).

Hartig, Korpela, Evans, and Garling (1997) selected eight different sites according to a two by two by two matrix of: natural versus built, outdoor versus indoor, and hypothesized high restorativeness versus low restorativeness. In small groups, 118 university undergraduates were led to the eight different sites. A second study was repeated with different students viewing videos of the same eight sites. Student reactions were measured by the 16 PRS items, as well as by

Kuller's semantic scale (i.e., to what extent a word describes the setting) and the ZIPRS (i.e., emotional states). Results of the studies indicate acceptable internal consistency and reliability with Cronbachs alpha of 0.75. An initial exploratory factor analysis specified four factors based on theoretical concerns, but the data indicated a better two-factor solution with a general PRS factor (i.e., being away, Fascination, and compatibility) and a coherence factor. Few significant correlations were found between descriptors of the Kuller semantic scale, while moderate positive correlations were indicated between the general PRS factor and the positive effect of the ZIPRS. The general PRS factor was able to differentiate restorativeness based on site-specific differences along the expected continuum of natural outdoor high restorativeness and built indoor low restorativeness. There were no significant differences in scores between the hikers and those who watched the video.

Hartig, Kaiser, and Bowler (1997) further tested the PRS on 313 undergraduates who were in a marsh or a lecture hall. They used the previous 16 items and added 15 more items. Confirmatory factor analysis illustrated that the revised PRS loaded best on a four-factor model, with fit statistics of  $\chi^2 = 21.20$ ,  $df = 14$ , and  $p = 0.097$ , NNFI = 0.99, RMSEA = 0.04. The subscales being away, Fascination, and coherence were highly correlated, between 0.74 and 0.79. Further work has been done on the PRS, including confirmatory factor analysis and development of a short version of the scale.

For example, Purcell, Peron, and Berto (2001), asked 100 undergraduates to evaluate five different scene types (i.e., industrial zone, houses, city streets,

hills, and lakes). Although this sample size was too small to do factor analysis (Kelloway, 1998), their results were similar to Hartig, Kaiser, and Bowler's (1997). One factor (i.e., being away, Fascination, extent) accounted for 40% of the variance while a second factor (i.e., coherence) contributed 2.1% of the variance. Cronbach's alpha for the Fascination items was 0.90.

Researchers have also used a short version of the PRS composed of only one item per theoretical domain (Berto, 2005; Felsten, 2009). Cronbach's alpha of this short version scale in a study by Berto (2005) was acceptable at 0.79, but lower than the 0.94 of the original version (Hartig, Kaiser, et al., 1997), which makes sense given the single indicator. Felsten (2009) also uses a modified PRS, with one item representing each of the four theoretical constructs and the overall mean as a single PRS score, albeit without providing statistical evidence for reliability and validity of this scale. However, the reported benefit of using this scale was that participants could expediently rate over 70 slides according to preference.

While most of the research on ART shows that nature spaces do indeed influence the restoration of concentration through the effortless attention of Fascination, there are some issues with this body of work. One important issue is whether the natural environment causes these restorative benefits or whether the leisure experience itself causes them. In other words, does going for a run or spending time contemplating life have the same benefits whether it occurs in a natural or urban context? Some research has tried, unsuccessfully, to answer these types of questions (Hull & Michael, 1995; Hull, Michael, Walker, & Roggenbuck, 1996), while other research shows evidence of nature spaces being more

restorative than urban contexts even when taking into account the moderating effect of physical activity (Hartig et al., 2003).

Particular to the development of the PRS, the primary difficulties with much of this work are: (a) small sample sizes (Berman et al., 2008; Berto, 2005; Chang et al., 2008; Hartig, Korpela, et al., 1997; Korpela et al., 2001; Purcell et al., 2001); (b) arbitrary inclusion or exclusion of scale items and factors (Berto, 2005; Han, 2007) as well as the unexplained inclusion of more than six items per construct (Hartig, Kaiser, et al., 1997); and (c) a lack of work detailing the validity and reliability of the scale.

While there are many limitations with the previous research, ART is the only concept in this project that is based entirely on nature as a distal trigger, while proximal triggers and simultaneous experiences for Fascination include extent, being away, and coherence. This dissertation intends to address some of the limitations of the previous research that relies heavily on slides and lecture halls as the medium and undergraduate students as the sample by using residents of Edmonton and memory of previous nature events.

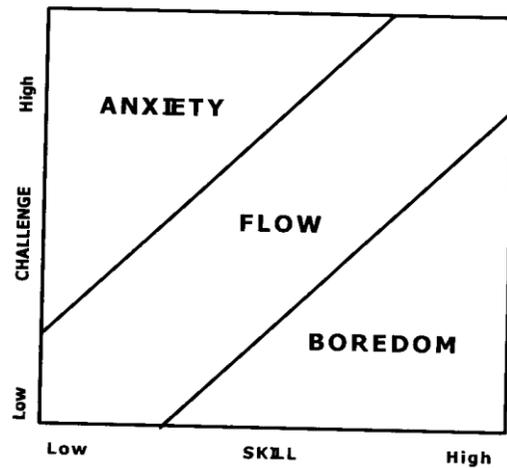
## **Flow**

Flow is the most well researched PDE in terms of empirical and theoretical work that details the antecedents and immediate conscious experience. Csikszentmihalyi began researching the experience of Flow in the early 1970's by interviewing chess players, surgeons, and climbers. Flow is an experience of deep concentration, in which we become absorbed in the moment and lose track of time (Csikszentmihalyi, 1990). Theoretical and empirical research on the concept of

Flow has subsequently expanded to many other disciplines, including but not limited to consumer online experiences (Mathwick & Rigdon, 2004; Novak, Hoffman, & Duhachek, 2003; Novak, Hoffman, & Yung, 2000), education and learning (Bakker, 2008; Csikszentmihalyi, 1997; Custadoro, 1998; Rathunde & Csikszentmihalyi, 2005; Shernoff, Csikszentmihalyi, Shneider, & Shernoff, 2003; Turner & Meyer, 2004), marketing (Drenger, Gaus, & Jahn, 2007), being musical (Custadoro, 2002; Kraus, 2003), the work environment (Bason & Frase, 2004; Bryce & Haworth, 2002; Eisenberger, Jason, Stinglhamber, Shanock, & Randall, 2005; Quinn, 2005; Salanova, Bakker, & Llorens, 2006) and sport, exercise and leisure (Jackson, 1992, 1995; Jackson, Kimiecik, Ford, & Marsh, 1998; Mannell, Zuzanek, & Larson, 1988; Schuler & Brunner, 2009; Voelkl & Ellis, 1998; Whitmore & Borrie, 2009). In this dissertation I will focus largely on studies of Flow in the recreation, leisure, and sport disciplines.

Traditionally, Flow researchers thought the experience was caused by a match between the challenge of the activity and skill of the individual. If there was too much challenge in the activity and not enough skill, then the individual experienced anxiety; too little challenge and too much skill, and boredom resulted, as outlined in the original Flow Model (Figure 1).

*Figure 1. The Original Three-Channel Flow Model*



Further research by (Csikszentmihalyi & Csikszentmihalyi, 1988) concluded that Flow is a match between challenge and skill that exceeds an individual's normal daily average. Researchers also explored a four-channel model that included Flow, apathy, boredom, and anxiety (see Figure 2) (Asakawa, 2004; Jones et al., 2000; Voelkl & Ellis, 1998); an eight-channel model (Carli, DelleFave, & Massimini, 1988; Csikszentmihalyi & Nakamura, 1989; Massimini & Carli, 1988)(see Figure 3) that additionally included arousal, control, relaxation and worry; and a sixteen-channel model (Massimini & Carli, 1988). Regardless of the channel model chosen for analysis, the challenge/skill balance remains the central tenet of the Flow experience (Csikszentmihalyi & Csikszentmihalyi, 1988). Discussion of the channel models will occur momentarily.

Figure 2. The Four-Channel Model

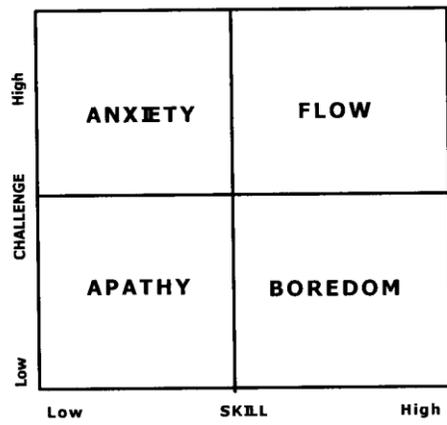
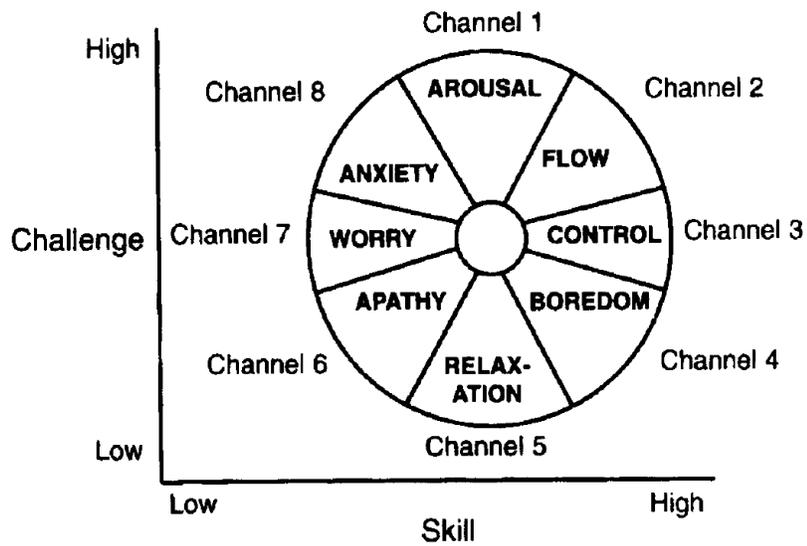


Figure 3. The Eight-Channel Flow Model



### *Methods for evaluating Flow*

In the literature, several methods have been used to evaluate participants' Flow experiences including: (a) interviews and narrative questionnaires, (b) the Experience Sampling Method, and (c) surveys.

#### *Interviews and narrative description*

Csikszentmihalyi's early work depended heavily on interviews to explore the concept of Flow (Csikszentmihalyi, 1975a, 1990); more recently Susan Jackson has also used interviews to examine elite athletes and their Flow antecedents (Jackson, 1992, 1995). Narrative tools were also used extensively along with quantitative scale items in the early questionnaires. The original Flow Q, developed by Csikszentmihalyi (1975a, 1975b), relied on three narrative summaries of Flow to determine if the participant had experienced Flow. For example, the participant read: "My mind isn't wandering. I am not thinking of something else. I am totally involved in what I am doing. My body feels good. I don't seem to hear anything. The world seems to be cut off from me. I am less aware of myself and my problems". Once the participant identified the activity in which Flow had occurred, they would then answer 12 items based on an 8-point semantic differential scale. The 12 items were based on elements related to the Flow experience, such as 'I get bored', and 'I get distracted'.

#### *Experience sampling method*

With the Experience Sampling Method (ESM), a pager or watch alarm randomly goes off approximately 5 to 7 times per day. At the signal participants

fill out the Experience Sampling Form (ESF) which is based on: (a) an open ended question that ask about the activity presently engaged in, (b) Likert-type questions about challenge level and skill level and, (c) a combination of Likert and bipolar scales that address some or all of the following: affect, arousal, self-affirmation, concentration, enjoyment, happiness, activation, satisfaction, perceived control, and perceived importance (c.f. Asakawa, 2004; Jones et al., 2000; Moneta, 2004; Voelkl & Ellis, 1998). The exact ESF format used is often not clearly defined in articles (i.e., Moneta, 2004), and it is puzzling why, if the ESF is so well-used, it is not a consistent measurement instrument. For example, each researcher arbitrarily chooses which affective items to include based on their research question, although some researchers choose to use valid scales to measure affective concepts (e.g., Moneta, 2004). Many researchers who do not use valid scales to measure the affective constructs often use one-dimensional scales, resulting in the content, construct, and external validity of their items being called into question (Ellis & Voelkl, 1994).

Finally, these results are often interpreted using within subject challenge and skill standardized scores to determine whether Flow is experienced or not (e.g., Ellis & Voelkl, 1994; Mannell et al., 1988; Massimini & Carli, 1988). For example, Flow is a high challenge and high skill scenario. A z-score above zero for both would indicate Flow for the individual. However, in the case of multiple channels, it arbitrary as to “what constitutes a ‘match’” (Ellis & Voelkl, 1994, p.343) between challenge and skills, and what indicates above average or below average challenges and skills. Also, individual fluctuations of Flow experiences are no longer taken into account. Consequently, Ellis, Voelkl, and Morris call for

the use of raw scores to eliminate this problem, and some studies have begun to use this strategy (e.g., Asakawa, 2004; Moneta, 2004).

A frequently mentioned concern in the literature is the reliability and validity of the ESM. Csikszentmihalyi and Larson (1987) claim that the ESM is ecologically valid because the method approximates real life scenarios. Although Hormuth (1986) is often cited as supporting evidence for this claim, he also holds that the main weakness of the ESM is the responsibility given to the subject in collecting subjective and objective data as well as the need to check on the timeliness of responses. In his sample, while 70% of individuals responded within three minutes, 5% of individuals responded 43 minutes after being beeped. In effect, Hormuth (1986) maintains, each individual researcher must determine the validity of her or his study, instead of relying on the method to do it for them. Few studies acknowledge this limitation, or recognize that the ESM may have limited applicability in situations where the participant cannot respond to the alarm (e.g., during an exam or athletic performance).

With the ESM, researchers often use the channel models explained previously to describe the data collected (Asakawa, 2004; Ellis & Voelkl, 1994; Massimini & Carli, 1988). More specifically, researchers will use the 4, 8, or 16 channel models to their statistical advantage to fit the theory to the data. As a result, there is contradictory evidence for the most robust channel model. Massimini and Carli (1988) outline their results by testing them against each of the 4, 8, and 16 channel models, but do not provide statistical analysis of the model that provides the best explanation of the data. However, Novak and Hoffman (1997) reanalyze Massimini and Carli's (1988) data using principal

component analysis and show support for the eight-channel model. In contrast, Ellis, Voelkl, and Morris (1994) find that the eight-channel model explains less variance than the original four channel model. Research has, however, illuminated the importance of the original and simple single channel model with a match between physical challenge and personal skill relationship in cultivating Flow experiences. In Voelkl and Ellis' (1998) study, when challenge-skill predictors were dropped, explained variance decreased from 17.6% to 14.4%, a significant difference.

### *Survey methods*

In the mid 1990's there was a shift in research focus from using the simple challenge/skill balance and unidimensional scales to the development of a valid and reliable Flow scale based on numerous dimensions. The most current is the Flow State Scale-2 (Jackson & Eklund, 2004) and it is based on Csikszentmihalyi (1990) and Csikszentmihalyi and Csikszentmihalyi's (1988) nine characteristics of Flow: perceived challenge/skill balance, a sense of control, clear goals, intrinsic motivation, a merging of action and awareness, deep concentration, loss of self-consciousness, transformation of time, and unambiguous feedback. Historically, these nine characteristics are most often cited as being derived from Csikszentmihalyi's early works, *Between boredom and anxiety* (1975a) and *Flow: The psychology of optimal experience* (1990). Many others have also validated these nine characteristics through both statistical methods and qualitative means (Jackson, 1992, 1995; Jackson & Marsh, 1996; Jackson, Martin, & Eklund, 2008; Kawabata, Mallett, & Jackson, 2008).

The Flow State Scale (FSS) and the Dispositional Flow Scale (DFS) were developed by Jackson and Marsh (1996) and further refined by Jackson and Eklund (2002) as the Flow State Scale 2 (FSS-2) and the Dispositional Flow Scale 2 (DFS-2). The FSS-2 is composed of 36 items, measuring nine domains, and using a five-point Likert scale (i.e., where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree). The Flow State Scale-2 (FSS-2) is usually completed at the end of an activity or at the request of a researcher (Jackson et al., 2008). This is often done in conjunction with valid and reliable scales that measure affect, motivational state, or cognitive involvement (i.e., level of concentration) that are based on unipolar scales (Jackson et al., 1998), instead of the bipolar scales typically used in the early ESF work. This practice is less mentally taxing for the participant as they only need to assess along one dimension (Dillman, 2000).

According to Messick (1989), scales can be assessed for content validity (i.e., the items as representative yet parsimonious of the domains), criterion-validity (i.e., comparing test scores to one or more external variables) and construct validity (i.e., the qualities a test measures). Content validity encompasses all the above forms of validity and is accounted for if “the degree of fit of the information with the theoretical rationale underlying score interpretation is explicitly evaluated” (p. 17). In the case of the FSS, the development of the scale using Csikszentmihalyi’s extensive qualitative work (Csikszentmihalyi, 1975a, 1990, 2000) and expert judges are ways of assessing content validity, whereas the use of EFA and CFA (Jackson & Marsh, 1996) are ways of assessing construct validity. While criterion validity is assessed by the comparison of scales

to external measures, the development of a psychometrically sound FSS in Japanese provides an example of this kind of validity (Kawabata et al., 2008). Criterion validity has also been assessed with the scales via correlational comparison to other scales where a positive relationship is assumed. Results indicate that for the DFS-2, perceived competency, anxiety, and intrinsic motivation are correlated, while for the FSS-2, autotelic personality, positive well-being, and intrinsic motivation are correlated.

For example, Kowal and Fortier (1999) employ self-determination theory and intrinsic motivation with the FSS. Questionnaires were administered to 203 swimmers. The researchers discovered that Flow is significantly and positively related to intrinsic motivation ( $r = .60, p < .01$ ), self-determined extrinsic motivation ( $r = .44, p < .01$ ), and that the three motivational determinants of self-determination theory (i.e., autonomy, competence, relatedness) are also positively correlated.

The FSS has been shown to be a reliable scale via coefficient alpha estimates of reliability for all factors (e.g., .72 to .91) (Jackson & Marsh, 1996), and the FSS-2 even more so (e.g., .80 to .90) (Jackson & Eklund, 2002). Construct validity for the FSS-2 as a nine first order factor model was attained at more than acceptable levels through a test sample and cross validation sample, with the confirmatory factor analysis results of above 0.9 for NNFI and below 0.53 for RMSEA (Jackson & Eklund, 2002). Additionally, NNFI and RMSEA suggest a good fit for nine first order factors and one second order factor. However, factor loadings do indicate some problematic issues, mainly that transformation of time does not consistently load on its latent factor (Vlachopoulos, Karageorghis, &

Terry, 2000). Jackson, Kimiecik, Ford, and Marsh (1992) used canonical correlation analysis and found that transformation of time, loss of self-consciousness, and a merging of action and awareness may have less effect on the experience of Flow than the other six characteristics. However, all of these characteristics continue to be included in the various versions of the Flow State Scale (Jackson & Marsh, 1996; Jackson et al., 2008; Kawabata et al., 2008). While Jackson, Martin, and Eklund (2008) recommend using factor level scores rather than a single global Flow score to signify Flow, they also indicate there are studies that use the global Flow score (Jackson & Eklund, 2002; Jackson & Marsh, 1996; Marsh & Jackson, 1999) and have reasonable CFA support.

### *Research on the antecedents of Flow experiences*

In a brief theoretically-focused chapter in *The Science of Optimism and Hope*, Csikszentmihalyi (Csikszentmihalyi, 2000) posits differentiating the nine Flow characteristics between the conditions necessary for the experience to occur and the characteristics of the lived experience itself. He holds that the triggers for Flow are a perceived challenge/skill balance, a sense of control, clear goals, and intrinsic motivation, whereas the immediate conscious experience of Flow includes a merging of action and awareness, deep concentration, loss of self-consciousness, transformation of time, and unambiguous feedback (Csikszentmihalyi, 2000). Other researchers in the area of sport, recreation, and leisure have also explored possible antecedents of Flow including intrinsic motivation (Csikszentmihalyi & Nakamura, 1989; Jackson et al., 1998; Keller & Bless, 2008; Kowal & Fortier, 1999; Mannell et al., 1988; Schuler & Brunner, 2009), and personality disposition (Asakawa, 2004; Jackson et al., 1998). Most, but not all, of this research focuses on athletes in structured competitive events. This information may seem limiting for nature-based leisure experiences, however, it is applicable for two reasons: (a) many individuals who participate in leisure in parks do so because they are training for competitive events or are engaging in mobile activities, and, (b) the Flow State Scales I will be using were developed for recreational as well as elite athletes.

Congruent with the above, after Jackson (1995) interviewed twenty-eight elite athletes she was able to identify factors that help, hinder, and disrupt the Flow experience during an athletic event. Athletes were also asked if they felt that

they could control these factors in order to induce the Flow state. Overall, 79% of athletes believed Flow to be controllable, indicating that athletes are able to effortfully and consciously produce Flow experiences through appropriate preparation measures. In particular, factors that help produce Flow, such as motivation to perform, positive attitude, focus, physical preparation and confidence, were perceived to be controllable, while factors that prevent Flow were less likely to be perceived as controllable (e.g., lack of motivation, non-optimal arousal, not physically prepared, poor focus, lack of confidence, negative attitude, negative team play/interaction).

#### *Autotelic personality*

Jackson, Kimiecik, Ford, and Marsh (1998) tested 213 athletes at the World Masters Games in Australia for psychological correlates of Flow and Dispositional Flow (e.g., personality). Although correlations do not indicate causation, the researchers based their psychometric tests of trait Flow on possible antecedents as suggested by previous research including: intrinsic/extrinsic motivation, goal orientation (i.e., task learning and improvement), ego (i.e., winning, outperforming others), perceived sport ability and competitive trait anxiety (Jackson, 1995). Trait Flow was also examined by using the Flow State Scale, and rewording items to indicate a broader temporal context. Results indicate that 38% of the variance in trait Flow is explained by perceived ability, anxiety-concentration disruption, and intrinsic motivation. For state Flow, 27% of the variance was explained by perceived ability, intrinsic motivation, and anxiety-worry. These correlations have also been tested in other studies (Jackson et al.,

2008). When participants in Jackson, Kimiecik, Ford, and Marsh's (1998) study experienced high anxiety, it negatively affected the challenge/skill balance, clear goals, unambiguous feedback, control, and concentration of the Flow state subscales, indicating that Flow is adversely affected by negative emotions. The researchers reason that cognitive rather than psychological processes may be more closely related to the Flow experience. As indicated previously, athletes can cognitively navigate their emotions and control many of the factors required for the Flow experience (Jackson, 1995). In support of this notion, perceived sport ability was the most important factor related to state and trait Flow, rather than the actual challenge/skill balance, suggesting that if athletes believe they have high ability, this is more important than the actual challenge/skill match in terms of experiencing Flow.

Asakawa (2004) provides additional support for this notion of an autotelic personality, or a personality disposition whereby a person is more likely to experience Flow. Asakawa split his sample into four quartiles based on group means of Flow experiences. He discovered that those with autotelic personalities are more often in situations where their perceived challenges were higher than perceived skill, while non-autotelics were more often in situations where perceived skills were higher than perceived challenges. Asakawa concluded that "these findings may further indicate that the autotelic students had some competencies or meta-skills which predisposed them to entering and remaining in Flow, and to making the process evolve" (p. 149).

*Intrinsic motivation*

Mannell, Zuzanek, and Larson (1988) attempted to discern if Flow is experienced within activities that are freely chosen and intrinsically motivating. In other words, they wanted to discover the relationship between leisure and Flow. They did this by testing the key variables in Neulinger's (1974) paradigm of leisure (see Table 2).

*Table 2. Neulinger's Paradigm of Leisure*

Perceived Freedom	Motivation	
	Extrinsic	Intrinsic
Constrained	Pure job	Pure work
Free	Leisure job	Pure leisure

The researchers place their participants in two Flow conditions, high Flow and low Flow, based on their measurements of challenge and skill. They discover that higher Flow was not associated with pure leisure (intrinsically motivated and freely chosen) even though higher levels of positive affect, concentration, and a challenge/skill balance were indicated in the two leisure conditions. Unexpectedly, their results indicated that Flow was experienced while people were extrinsically motivated, leading Mannell, Zuzanek, and Larson (1988) to question whether intrinsic motivation is really an antecedent of Flow experiences. Because Flow is typically described as being intrinsically motivating, this result is particularly troubling. However, these two researchers posit that some activities that are perceived as being extrinsically motivated (such as exercising), may produce even greater challenge and therefore increases intrinsic satisfaction, leading to a Flow experience: "Given the freedom to chose, some people may

need the feeling of external compulsion, obligation to self or others, or long term commitment to overcome resistance to engagement in activities that require an investment of effort, but as a consequence produce higher levels of intrinsically satisfying Flow” (p. 302). This assertion also lends support to Csikszentmihalyi’s (1990) contention that Flow needs an investment of effort to occur.

### *Cross-cultural research on Flow experiences*

Moneta (2004) explores what he considers to be a threefold cultural bias in Flow studies: (a) Flow theory is postulated to be invariant across cultures; (b) there is a cultural bias in the definition of Flow; and (c) self-determination theory (Deci & Ryan, 1985), which is often associated with Flow experiences, is also culturally biased because it highlights satisfying the need for autonomy over satisfying the need for relatedness. Moneta attempts to demonstrate this bias by using a sample composed of U.S. high school students and Chinese university students. Using the ESM, he determines that “all simple contrasts between the Chinese and U.S. ethnic groups were significant” (p. 193). In effect, Moneta claims that collectivist cultures like the Chinese experience Flow in “mastery” situations (i.e., high skill/low challenge) instead of high challenge and high skill scenarios. However, in contrast, Asakawa’s (2004) study of Japanese students found that Flow was experienced in high challenge/high skill situations. Additionally, in Asakawa’s study, as the level of Flow increased, so too did levels of concentration, enjoyment, happiness, activation, satisfaction, perceived control of the situation, and perceived importance for the future, results that corroborate

previous Flow research. The Japanese concept “Jujitsu-kan”, meaning “a sense of fulfillment” also correlated with high Flow.

### *Flow experiences in natural settings*

Few studies exist that explore Flow in nature settings. In these, the main method used is to ask participants to reflect upon a wilderness scenario and completed a mailed questionnaire (Mills & Butler, 2005; Whitmore & Borrie, 2009). Jones, Hollenhurst, Perna, and Selin (2000) are the exception; they examine the Flow experiences of kayakers in an outdoor setting. Kayakers responded at eight predetermined intervals on the river that were strategically chosen because of the high and low challenges they presented. While these researchers used a four channel model based on individual z-scores in their analysis, their measures of Flow are a bit unorthodox because they are not completely based on the nine characteristics included in most current research (i.e., perceived challenge/skill balance, a sense of control, clear goals, intrinsic motivation, a merging of action and awareness, deep concentration, loss of self-consciousness, transformation of time, and unambiguous feedback). Instead, they used seven concepts: perception of the transformation of time, intrinsic motivation, involvement, merging of action and awareness, concentration on the task at hand, paradox of control, and lack of physical awareness. Because of the varied skill levels of the kayakers, as expected, Flow and anxiety were more common at the most difficult rapids, whereas apathy and boredom were more common at the least difficult rapids. Additionally, the four channel model explained five times more variance than the original three channel model. An

important finding from this study is that feelings of anxiety may have less to do with an imbalance between skill and challenge and more to do with an upcoming set of rapids. This corroborates Jackson, Kimiecik, Ford, and Marsh's (2005) discovery that pre-existing negative emotions and anxiety can inhibit the Flow experience.

In summary, the maturation of Flow research has led to numerous theoretical refinements and the development of multiple methods of measurement. In the beginning there was a focus on interviews and more qualitative methods to develop theoretical underpinnings. The Experience Sampling Method introduced a new way to study the developing construct of Flow in an environment as similar as possible to real life, and measured Flow using a unidimensional focus on the challenge/skill balance to predict channels of Flow, anxiety, boredom, and apathy. Current research continues to push the frontiers by testing multi-dimensional Flow measures and using qualitative and quantitative techniques to explore correlative experiences and antecedents of the Flow experience (e.g intrinsic motivation and personality).

### **Spiritual experiences**

Before discussing spiritual experiences some terminology must be defined. Spirituality and spiritual experiences need to be differentiated from religion and religious experiences. Generally, in the leisure research, theorists do not provide definitions of this sort, either assuming a reader's understanding (e.g., Heintzman, 1999), using participant contrived definitions (e.g., Stringer & McAvoy, 1992), or using the terms interchangeably (e.g., Heintzman, 2009a; Schouten,

McAlexander, & Koenig, 2007; K. Williams & Harvey, 2001). What this means for the leisure literature is that what is spiritual and what is religious are assumed to be the same. Additionally, Christian doctrine is the assumed religious tradition from which spiritual experiences are understood.

I contextualize my project by defining religion as composed of rituals and institutions that are group oriented, and spirituality as the internal and personal processing. Leisure researchers McDonald and Schreyer (1991) differentiate between the content (the 'object' of spirituality that includes behaviour systems, religion, philosophy, or culture) and the psychological process. They indicate that although the content differs widely among individuals, the actual psychological process may be the same. Empirical work also indicates the cross-cultural applicability of spiritual experiences research across religions (Hood et al., 2001). McDonald and Schreyer (1991) muse that the universal spiritual element across religions is "the relationship between 'self' and 'other'" (p. 179) (e.g., God). Theorists in other disciplines support this assertion (Stace, 1960) and empirical work indicates that in both the spiritual and the religious there is a transcendental presence or union with 'other' (e.g., God) (K. Williams & Harvey, 2001). For these reasons and the fact that there is a growing 'spiritual but not religious' culture (Fuller, 2001), my work focuses on spiritual rather than religious. Additionally, I focus on spiritual experiences rather than spirituality. Spirituality is defined as the larger spiritual life process, while spiritual experiences are "a profound state of consciousness, in which the individual transcends the bounds of normal existence" (McDonald & Schreyer, 1991, p.182). The lens with which I approach this study is through a Western Christian doctrine, for several reasons.

Firstly, my own Christian background predicates more knowledge in this area. Secondly, the leisure literature from which I draw is largely based on interpreting experiences of spirituality through a Christian lens, whether this is explicitly acknowledged or not. Heintzman (2010b) acknowledges this limitation and recommends an exploration of more faith traditions, which is a possible future direction for my work. Identifying the lens through which this study is viewed lends itself to specificity and thus critique, as “to talk about generalities is to obscure dialogue” (Haluzá-Delay, 2000, p.143).

Spiritual experiences can be difficult to define. For example, Driver, Dustin, Baltic, Elsner, and Peterson (1999) describe spiritual experiences as “the broad range of hard-to-define and hard-to-measure values and benefits that relate to the deep psychological or higher order human needs...that is derived in part from humankind’s relationship with the natural world” (p. 3). Current leisure researchers *and* study participants struggle to clearly communicate a sense of what these spiritual experiences are, as indicated by the somewhat messy and hard to follow reporting on these experiences (e.g., Stringer & McAvoy, 1992). Part of the definitional problem is the ineffability of the experience; that is, it is ostensibly difficult to articulate (Fredrickson & Anderson, 1999). A Western cultural understanding of the ineffability of spiritual experiences can be traced back to James’ (1997) early twentieth century work when he determined that this aspect was an integral characteristic. However, Jantzen (1995) critiques James’s (1997) assertion, indicating that he did not account for existing detailed mystical accounts that were indeed quite expressive. This critique can easily be extended to current leisure literature’s representation of spiritual experiences in that it does not

take into consideration the larger scholarship on spiritual, religious, or mystical experiences. Additionally, and by many accounts, many researchers' participants *are* able to articulate their experiences, although they may express that the experience itself may be difficult to understand. It may, however, be theorized that individuals who are able to express themselves well usually have either a religious lens to interpret these experiences or are older. For example, Loeffler's (2004) study focused on 18 to 21 year olds who found these experiences difficult to describe, but this may be a reflection of their age. For example, in Schmidt and Little's (2007) study with participants ranging in age from 28 to 68, emerging from the transcripts was a definition of leisure spirituality "as a connection with something 'other' [God or energy, or self]....It was simultaneously a sense of self and uniqueness and also connection with others as part of the broader world" (p. 231).

A potential problem for my project is the lack of empirical leisure research on the immediate conscious experience of nature-based spiritual experiences. Much of the leisure research focuses on the spiritual benefits of leisure (e.g., Heintzman, 2009b), camp experiences that increase youth spirituality (e.g., Griffin, 2003; Henderson et al., 2005; Sweatman & Heintzman, 2004) or work that outlines the importance of spiritual meanings for leisure (e.g., Loeffler, 2004; Parry, 2009; Schulz & Auld, 2009), nature based recreation (e.g., Behan, Richards, & Lee, 2001; Loeffler, 2004; Marsh, 2008), and tourism (e.g., Ellard, Nickerson, & Dvorak, 2009). While it is important to identify that leisure experiences and nature-based recreation have spiritual meanings for people and

that spiritual benefits are experienced, my project focuses on the characteristics of these experiences and the direct antecedents that trigger them.

There have been some qualitative studies published on the characteristics of nature-based spirituality in the leisure field (e.g., Fredrickson & Anderson, 1999; Heintzman, 2003; Loeffler, 2004; Schmidt & Little, 2007; Stringer & McAvoy, 1992). Fewer quantitative studies have been documented, particularly in terms of scale development (Heintzman, 2009b), while several theoretical meta-analysis or synthesis pieces have been produced (Driver et al., 1999; Fox, 1999; Heintzman, 2003, 2009a, 2010b; McDonald & Schreyer, 1991). Additionally, studies have been produced in other fields and within the leisure field that identify transcendental, extraordinary, and memorable nature experiences (Arnould & Price, 1993; K. Williams & Harvey, 2001).

### *Antecedents*

Leisure researchers who contextualize their work within natural settings contend that direct contact with green spaces influences the experience of, and receptivity to, spiritual experiences (Fredrickson & Anderson, 1999; Heintzman, 2009b; K. Williams & Harvey, 2001). As Heintzman and Mannell (2003) state, “there is an association between leisure, often occurring in a nature setting, and spirituality” (p. 213). Aside from the wilderness setting itself, factors that influence spiritual experiences in nature spaces include nature oriented activities. For example, Behan (2001) found that spiritual benefits were valued more by foot travelers (20%) than mountain bikers (3%), perhaps indicating an increased openness to spiritual experiences of foot travelers. Other factors include physical

challenge, time spent alone, newness or difference (i.e., novelty), and ritual or tradition (Fredrickson & Anderson, 1999; Schmidt & Little, 2007).

In Heintzman's (2010b) meta-analysis of qualitative and quantitative research on nature-based spirituality, he summarizes that nature settings, challenging *and* passive activities, and interactions with other people facilitate spiritual experiences. These antecedents are also present for Communitas, Fascination, and Flow, strengthening the case for including them in the "Big Four". Additionally, Heintzman (2010b) lists a series of recommendations based on his review: that more quantitative work be done, particularly scale development, and that researchers work to differentiate between characteristics such as activity, setting, and antecedent conditions, and find the most influential of these characteristics. Heintzman (2010b) also reveals that previous research has focused on spiritual experiences as overwhelmingly positive, and has emphasized experiences that occur in remote nature instead of urban nature. My research project will address this gap by intentionally approaching Edmonton based urban nature groups such as the Horticultural Society and the Master Naturalist group, due to the group composition of gardeners who experience urban nature. In addition, I will be asking for feedback on the negative emotions of these experiences.

### ***Immediate conscious experience (ICE)***

Oft-cited studies that illuminate the spiritual characteristics of nature-based recreation include three qualitative works (Fredrickson & Anderson, 1999; Schmidt & Little, 2007; Stringer & McAvoy, 1992). Fredrickson and Anderson

(1999) code their observations, journal entries, and interviews with twelve women who went on either a Boundary Waters canoe trip or a Grand Canyon hiking trip for the purposes of contemplation. Although the age of the participants is not mentioned, from the quotations provided it seems clear that they are all over the age of forty. Themes of spiritual experiences in this study include: ineffable, intangible, heightened sensory awareness, centering force, and timelessness. Participants also report feeling empowered, hopeful, and secure, and had a sense of wonder, awe, and humility.

Schmidt and Little (2007) conducted in-depth interviews with 13 women and 11 men, aged 28 to 68, from mostly Christian backgrounds. In their nature-based activities, they report themes of emotion and sensation, but not other cognitive characteristics such as timelessness or centering force. The emotions reported include: awe, wonder, fear, letting go, satisfaction, release, peace, alive, pain, helplessness, and gratitude. The researchers describe the negative emotion of fear as a process of experiencing the sublime, that is, it is in part an overwhelming feeling of insignificance (Budd, 1998). Letting go is explained as a process of surrendering or realizing an illusion of control. Importantly, they are also the only researchers to illuminate negative emotions to do with the experience itself, rather than ones related to environmental factors (e.g. bugs, lightning, cold, etc.).

Stringer and McAvoy's (1992) study was based on an extended wilderness canoe trip with 26 participants, half of whom had physical and mental challenges. All of these individuals were age 15 to 36. The ethnicity and religious affiliation of participants was not reported, nor was there any attempt to organize the results into themes; that is, the data are reported as is. Additionally, the results are based

on participants' definitions of spirituality and not necessarily their experience in nature. There was also little attempt to link the listed characteristics with the participant quotations, which makes it difficult to interpret the study itself and difficult to compare these results with the previous studies. In spite of this, definitions of spirituality included the cognitive components of awareness, human interconnectedness, attunement, inner feelings, connection or relation to a greater power/deity, inner or self-knowledge, faith or beliefs, inner strength, sense of wholeness, oneness, peace and/or tranquility, and shared or common spirit. Spiritual experience emotions included accomplishment, optimism, exuberance, calmness, quietness, gentleness, clarity, security, hope, curiosity, tranquility, joy, equilibrium, warmth, oneness, exhilaration, awe, peace, fear, centeredness, reverence, happiness, contentment, serenity, humbleness, empowerment, trust, majesty, excitement, and wonder. See Table 3 for a summary of the characteristics identified in these three studies.

There are a number of limitations associated with the previous studies. All of the previous studies are based on remote wilderness adventure, a problem that Heintzman (2010b) notes as well. Moreover, none of the previous studies identify the ethnicity of their participants, although due to the nature of the activities (e.g., physically challenging hiking or canoeing and extended wilderness tripping), and the ethnic background of individuals who typically participate in these types of wilderness experiences (Thapa, Graefe, & James, 2002), it would seem reasonable to assume that the majority were White Europeans with a Christian background or influence. Schmidt and Little (2007) are an exception to the above, as they do report the religious affiliation of their participants. Most participants identify as

some variation of Christian (e.g., non-church attending) while a few participants identify as Buddhist or indicate an indigenous spirituality. None of these studies, however, relate their findings to a larger religious or spiritual based literature. Additionally, the concepts of antecedents and the immediate conscious experience become fuzzy when comparing and contrasting the three articles for similarities and differences, as each researcher contextualizes this time frame differently, most likely based on how they phrased their questions and the corresponding response of the participants. Also, not all the elements of ICE are considered. Although the cognitive and evaluative components (i.e., emotion) are addressed in Stringer and McAvoy (1992) and Fredrickson and Anderson (1999), the cognitive components are missing from Stringer and McAvoy's (1992) study. Additionally, none of the studies addresses the intensity or duration of the experience.

While Williams and Harvey (2001) attempted to create a topography of transcendent experiences based on the proposition that many positive experiences have been typified as transcendent or spiritual (e.g., Csikszentmihalyi, 1975a; James, 1997; Laski, 1961; Maslow, 1964), not all research on spiritual experiences has this theoretical background. For example, instead of using theoretical frameworks, some leisure researchers investigating nature-based spirituality ask study participants to define spirituality on their own terms (e.g., Fredrickson & Anderson, 1999; Stringer & McAvoy, 1992) allowing for varying characteristics and intensities to qualify as spiritual experiences. This makes it difficult to ascertain if study results indicate intense peak experiences or daily spiritual experiences. My comprehensive Psychologically Deep Experiences scale will use items that are based on empirical research (e.g., Hood et al., 1993) and

this will allow for the items that measure Spiritual experiences to illuminate the aspects that are important for small spiritual moments as well as intense spiritual experiences. Previous research has also heavily relied on qualitative methods and small samples, thus allowing for greater in-depth understandings but at the expense of generalizability.

Finally, the theoretical overviews on nature-based spirituality (e.g., Heintzman, 2010b) do a very good job of providing a succinct overview of the literature, including outlining the methods and results of current studies. However, they generally do not compare/contrast spiritual experiences with other types of PDEs, or delineate between the qualities of the immediate conscious experience and antecedents of spiritual experiences. The leisure literature on nature-based spiritual experience is very small, indicating a need for further exploration. Although nature-based research in other disciplines can inform this paucity of work, the bulk of the overall research posits spiritual experiences as Christian, positive, and occurring in remote wilderness contexts (Heintzman, 2010b). My research aims to fill in *some* of these gaps by using Hood's (1993) theoretically based scale and adding scale items on negative emotions and attempting to reach individuals who participate in urban nature. Finally, researching Spiritual experiences in conjunction with Flow means that the characteristics of each experience can be further identified, isolated as unique, or omitted as unnecessary or redundant with some degree of validity.

My research requires a measure of the intrinsic spiritual that focuses on the lived conscious experience. As such, items that measure cognitive and evaluative domains such as the passage of time, emotion, and the relationship

between 'self' and 'God' are necessary. Within the leisure literature, Heintzman and Mannell (2002) have conducted some quantitative work to tease out the relationship between patterns of leisure behaviour and spiritual well-being. The scales they used to measure spirituality include the Mental, Physical, and Spiritual Well-Being Scale (Vella-Brodrick & Allen, 1995), the Subjective Spiritual Well-Being Scale, and the Leisure-Spiritual Processes (LSP) Scale, the latter two of which Heintzman and Mannell (2002) developed for their own study. However, the LSP scale was designed to measure "the ways in which people use leisure to achieve spiritual well-being" (p. 1) and items that measure spiritual well being focus on the overall experience, or lifestyle, of spirituality and not the lived conscious experience. Scale development of spiritual well-being and life-style oriented spirituality is prolific in various fields, including behavioural medicine, health, and psychology (Delaney, 2005; Hodge, 2003; Jagers & Smith, 1996; Ritt-Olson et al., 2004; Underwood & Teresi, 2002). For example, Peterman, Fitchett, Brady, Hernandez, and Cella (2002) measure spiritual well-being using such items as "I have a reason for living" and "My life has been productive". Lifestyle-oriented spirituality scales measure constructs such as belief systems and rituals. For example: "I believe that nature should be respected", "I meditate to gain access to my inner spirit", and "I believe that all living creatures deserve respect" (Delaney, 2005). Because of concerns about the lack of items that measure the lived conscious experience, I have chosen not to use items from the Spiritual Well-Being Scale (Peterman et al., 2002), the Intrinsic Spirituality Scale (Hodge, 2003), the Daily Spiritual Experiences Scale (Underwood & Teresi, 2002) or

various other Spirituality scales (Delaney, 2005; Jagers & Smith, 1996; Ritt-Olson et al., 2004).

For statistical and practical reasons I use Hood's (1993) M scale in my research. This scale is designed to measure the participant's experience of mysticism, particularly the cognitive and evaluative characteristics of the lived experience. For example, the M scale measures the constructs of time expansion/contraction via items such as: "I have had an experience which was both timeless and spaceless", and "I have had an experience in which I had no sense of time or space". Evaluative (i.e., emotion) is measured via "I have experienced profound joy", and the relationship to "other" is measured via "I have never had an experience in which my own self seemed to merge into something greater." Previous literature exploring the lived conscious experience of spiritual experiences in nature has also used parts of the M scale (K. Williams & Harvey, 2001).

Hood's M scale (1975) was developed based on Stace's (1960) categories of mysticism. Of the 108 original items, 32 were included in Stace's eight domains after eliminating those items that had the lowest mean responses per domain. Hood's (1975) initial factor analysis indicated two factors, the experiential components and religious interpretation components. Criterion validity was demonstrated based on correlations with other scales, such as Intrinsic Religious Orientation (Hoge, 1972), the Religious Experience Episodes Measure (Hood, 1970), and the Openness to Experience scale (Taft, 1970). Hood, Morris and Watson (1993), suspecting the existence of a third factor, analyzed new data based on the 32 item scale and confirmed a three-factor structure:

extroverted mysticism, introverted mysticism, and religious interpretation.

Introverted mysticism is when the individual is looking inward into his or her own mind with an experience of nothingness: a loss of self-consciousness, and a loss of a sense of time. Extroverted mysticism is when the individual is looking out upon the world through her or his senses with an experience of unity with the world. Hood, Ghorbani, Watson, Ghranaleki, Bing, Davison, Morris, and Williamson (2001) also confirmed a three factor structure by using confirmatory factor analysis. Their research supports the scale's multi-religiosity applicability between Muslims and Christians. Other researchers have also supported this applicability between Hindus, Muslims, and Christians (Anthony, Hermans, & Sterkins, 2010). Criticisms of the M scale are that it has not been test-retested for reliability, although this criticism is rather dated i.e., (MacDonald et al., 1995). Also, samples for studies on the M scale are exclusively comprised of undergraduate students and/or small samples (Anthony et al., 2010; Hood et al., 2001; Hood et al., 1993).

It is difficult to compare and contrast research that conceptualizes categories or coding of spiritual experiences in different ways (i.e., themes versus descriptions) and that does not well define these themes. Additionally, much of the work does not differentiate different dimensions of time (i.e., antecedent and immediate conscious experience), This is an acknowledged limitation of the upcoming synthesis of this body of literature. However, Table 3 attempts to outline similar themes between Hood's M scale (1993) and the nature-based

spiritual experiences research through the cognitive and evaluative domains of ICE.

*Table 3. Nature-based Spiritual Experiences and Hood's M Scale*

	Fredrickson	Schmidt	Stringer	Hood
Evaluative Dimensions	Wonder and awe	Wonder and awe	Wonder and awe	Positive affect (specifically wonder and awe)
	Grounded and secure		Security and centeredness	
	Hopeful		Hope	
	Humility		Humbleness	Ego quality
Cognitive Dimensions	Intangible		Intangible	Ineffable
	Centering force	Connection with God, self, other	Connection to greater power, human interconnectedness	Religious quality
	Heightened sensory awareness	Awareness	Awareness	Inner subjective quality
	Timelessness			Temporal/Spatial Noetic Unifying Quality

To summarize the main points in the above Table, profound emotions such as wonder or awe are often reported in the research literature. Common cognitive dimensions of spiritual experiences are a sense of timelessness; heightened awareness; connection to self, God, or others; and intangibility. The dimensions of spiritual experiences in nature-based recreation correlate with the items and

factors of Hood's (1993) Mysticism scale. For example, Humility correlates with Hood's 'Ego Quality', an absorption into something greater than one's self. As one of Schmidt and Little's (2007) interviewees states: "You get an overwhelming feeling...there's a little bit of helplessness like you're insignificant in this world" (p. 235). Heightened awareness correlates to Hood's (1993) 'Inner Subjective Quality', an awareness of the aliveness or consciousness of all things. For example, a participant in Fredrickson and Anderson's (2007) study states: "the setting 'came alive' when the participants were sharing their life stories" (p. 35). Two of Hood's (1993) factors, the 'Noetic' and 'Unifying Quality', are not explicitly mentioned in the previous research, yet both appear to be present in the quotations provided. For example, the 'Noetic' is an emphasis on the intuitive or non-rational as a form of knowledge. Schmidt and Little's (2007) participants "each expressed unwillingness or incapacity to clearly define something they 'knew' but that was not purely understood through language" (p. 232). 'Unifying Quality', where there is the perception that everything is united and perceived as one, was similarly present in the study. For example, a participant in Stringer and McAvoy's (1992) study states: "it's a sense of wholeness and being at one with everything that's around me" (p. 16). In short, the research on nature based spiritual experiences aligns reasonably well with Hood's M (1993) scale, and provides support for using the scale in the development of the comprehensive PDE scale.

## **Similarities and Differences Among the “Big Four” Psychologically Deep Experiences**

The following sections analyze current research on each of the “Big Four” to facilitate comparison of each experience’s immediate conscious experience and antecedent characteristics.

### ***Psychologically deep experiences and immediate conscious experience characteristics***

PDEs as a subjective state of mind are difficult to define (Mannell, 1980) and, similarly, difficult to compare in terms of their immediate conscious experience characteristics and antecedents. 4 reports the results of a content analysis of PDE characteristics that, in most cases, were cited by two or more sources. Major points of comparison include Mannell’s (1996) description of PDEs, such as changes in the experience of time, self, and surroundings but also changes in attention. The Table is divided into cognitive components (i.e., time, self, surroundings, attention) and evaluative components (i.e., emotion) of ICE.

*Table 4. Psychologically Deep Experiences and Immediate Conscious Experience Characteristics\**

	Communitas	Fascination	Flow	Spiritual
Time	Fleeting <sup>1</sup>		Transformation of time <sup>4</sup>	Sense of timelessness <sup>7, 8</sup>
Self	Connection to others <sup>1</sup> (Sharing Harmony Belonging) <sup>2</sup>		Loss of self consciousness <sup>4</sup>	Ego quality (humility) <sup>8</sup> Connection to greater power <sup>5, 6, 7, 8</sup>
Surroundings		Related to the natural surroundings	Merging of action and awareness <sup>4</sup> Unambiguous feedback <sup>4</sup> Challenge/Skill balance <sup>4</sup>	Unifying Quality <sup>8</sup>
Attention		Effortless attention Able to reflect on life at the same time <sup>3</sup>	Deep concentration <sup>4</sup>	Heightened sensory awareness <sup>5, 6, 7, 8</sup>
Evaluative	Magical <sup>1</sup> Feelings of power <sup>1</sup> Mutual understanding <sup>1</sup>			Emotionally intense (awe, wonder) <sup>5, 6, 7, 8</sup> Ineffable <sup>5, 7, 8</sup> Noetic <sup>8</sup>

1. (Turner, 1982) 2. (McGinnis et al., 2008) 3. (Berman et al., 2008; Berto, 2005; Chang et al., 2008; Felsten, 2009; Han, 2007; Hartig, Kaiser, & Bowler, 2001; Hartig, Korpela, et al., 1997; Kaplan & Kaplan, 1989; Korpela et al., 2001; Purcell et al., 2001; Taylor et al., 2002) 4. (Asakawa, 2004; Csikszentmihalyi, 1990, 2000; Jackson, 1995; Jackson & Marsh, 1996; Jackson et al., 1998; Jackson et al., 2008; Kawabata et al., 2008) 5. (Stringer & McAvoy, 1992) 6. (Schmidt & Little, 2007) 7. (Fredrickson & Anderson, 1999) 8. (Hood, 1975).

*\*Note: These characteristics are based on empirical research, with the exception of Turner (1982).*

As indicated in Table 4, both Flow and spiritual experiences involve a change in the way time is experienced—either a speeding up or slowing down, while *Communitas* is an ephemeral experience. A change in concentration or attention is shown for Flow (i.e., deep concentration), Fascination (i.e., effortless attention), and Spiritual experiences (i.e., heightened sensory awareness). For Flow and spiritual experiences, loss of self-consciousness and humility indicate alterations of sense of self, and for *Communitas*, through a connection to others. Intense positive emotions are also reported for spiritual experiences and *Communitas*.

#### *Psychologically deep experiences and proximal antecedents*

Also of interest in this dissertation is an exploration of proximal antecedents for PDEs. As reported in Table 5, Flow and *Communitas* are two PDEs where research has not specifically identified nature as a trigger. Fascination is based on the assumption that nature induces effortless attention, while research indicates that spiritual experiences can be triggered by nature (Heintzman, 2010b). Both distal and proximal antecedents are listed, however, this dissertation will focus on the latter.

*Table 5. Psychologically Deep Experiences and Antecedents\**

Communitas	Fascination	Flow	Spiritual
<i>Distal:</i> Trained leaders <sup>2</sup>	Exhausted attention <sup>4</sup> Being Away <sup>4</sup>	<i>Distal:</i> Personality <sup>5</sup> Effort <sup>6</sup>	<i>Distal:</i> Personal influences (History, Motivation, Socio demographics, Spiritual tradition) <sup>10</sup>
<i>Proximal:</i> Spontaneity <sup>1,2</sup> Voluntary <sup>1,3</sup> Liminoid (ritual outside of routine) <sup>1</sup> Goofiness <sup>3</sup> Equality <sup>3</sup>	Extent <sup>4</sup> Compatibility <sup>4</sup> Nature <sup>4</sup>	Positive attitude <sup>6</sup> Focus <sup>6</sup> Physical preparation <sup>6</sup> Confidence <sup>6</sup> <i>Proximal:</i> Challenge/skill balance <sup>7</sup> Sense of control <sup>7</sup> Clear goals <sup>7</sup> Intrinsic motivation <sup>7,8</sup>	<i>Proximal:</i> Receptivity <sup>9</sup> Solitude <sup>9,10,11,12</sup> Nature <sup>9,14,15</sup> Being away <sup>10,11,16</sup> Group experiences <sup>10,11,13,16</sup> Sense of service <sup>11</sup> Stress/challenge/ adventure <sup>15,17,18</sup> Meditation <sup>15</sup> Familiarity or novelty <sup>14,15</sup>

1.(Turner, 1982) 2. (Sharpe, 2005) 3. (Yarnal, 2006) 4. (Berman et al., 2008; Berto, 2005; Chang et al., 2008; Felsten, 2009; Han, 2007; Hartig et al., 2001; Hartig, Korpela, et al., 1997; Kaplan & Kaplan, 1989; Korpela et al., 2001; Purcell et al., 2001; Taylor et al., 2002) 5. (Asakawa, 2004; Jackson et al., 1998) 6. (Jackson, 1995) 7. (Csikszentmihalyi, 1990, 2000; Jackson & Marsh, 1996; Jackson et al., 2008; Kawabata et al., 2008) 8. (Csikszentmihalyi & LeFevre, 1989; Jackson et al., 1998) (Keller & Bless, 2008; Kowal & Fortier, 1999; Mannell et al., 1988; Schuler & Brunner, 2009) 9. (Heintzman, 1999) 10. (Heintzman, 2010b) 11. (Stringer & McAvoy, 1992) 12. (Heintzman, 2003) 13. (Fredrickson & Anderson, 1999) 14. (K. Williams & Harvey, 2001) 15. (Schmidt & Little, 2007) 16. (Arnould & Price, 1993) 17. (Hinde, 1999; Hood, 1978) (Rosegrant, 1976) 18. (Marsh, 2008). \*Note: Antecedents listed are based on empirical research, with the exception of Turner's (1982) Liminoid.

### ***Comparing and contrasting PDEs***

Comparing and contrasting PDEs is difficult for two reasons. First, researchers often use terminology interchangeably, or use terms that are

associated with qualitatively different experiences, making the research conceptually fuzzy. For example, some researchers use fascination and absorption interchangeably to describe the essence of experiential involvement (S. Kaplan, 1995; Quarrick, 1989; Tellegen & Atkinson, 1974), and mix up Flow and peak experiences (e.g., McGinnis et al., 2008); some researchers incorrectly label experiences (K. Williams & Harvey, 2001). Second, not all researchers examine PDEs on a time continuum (i.e., antecedents and immediate conscious experience characteristics), thus making a true comparison among PDEs difficult. Third, very few researchers compare and contrast PDEs, although there are exceptions (Cleary, 1996; McGinnis et al., 2008; Privette, 1983; Schouten et al., 2007; Turner, 1982; Wild, Kuiken, & Schopflocher, 1995).

Theoretical suppositions that compare and contrast PDEs include Cleary (1996). He compares Flow and peak experiences and contends that peaks involve unusually high levels of concentration and do not rely on a challenge/skill ratio. Privette (1983) compares Flow experience, peak experience, and peak performance. Although Privette states that “detailed descriptions of the three constructs contain a baffling quantity of characteristics and semantic differences which present an immediate impression of disarray” (p. 1364), she also concludes that the main differences between Flow and peak experience are that the former is active, planned, and moderately intense, whereas the latter is receptive, spontaneous, and intense. Finally, Wild, Kuiken, and Schopflocher (1995), provide a brief comparison of different types of intrinsically rewarding experiences (i.e., peak, Flow, and aesthetic)(Table 6).

*Table 6. Comparing Peak, Aesthetic, and Flow Experiences*

	Flow	Peak Experience	Aesthetic
Effortless		X	X
Effortful	X		
Positive Affect	X	X	
Positive and Negative Affect			X
Absorption	X		X

Wild et al. (1995) contend that the quality of absorption is the key construct in differentiating among these three aforementioned PDEs. Specifically, they state that: (a) aesthetic and peak experiences happen to the individual, whereas Flow experiences are created; (b) Flow and peak experience are based on positive affect, whereas the aesthetic can include negative emotions; and (c) peak experience and Flow share the experience of absorption and invested energy.

Turner (1982) offers a theoretical comparison between *Communitas* and the Flow experience. While *Communitas* has Flow-like qualities, it does not need rules or structure in the form of nine characteristics to trigger it. In addition, Flow happens within the individual, while *Communitas* happens among individuals (Turner, 1982).

Finally, some empirical work includes an examination of the influence of Flow and *Communitas* on Enduring Involvement. McGinnis, Gentry, and Gao (2008), in their survey research on the influences of golfers' long-term involvement, state that "Flow and *Communitas* may be at odds with one another, for in order to maintain social harmony, one may not be able to attend to the intrinsic motivation and goals necessary to enact the conditions for Flow to occur" (p. 77). The results of their questionnaire based on Flow and *Communitas* indicate that Flow is more important than *Communitas* in creating long-term involvement,

except when participation frequency increases, and then *Communitas* becomes more important.

What this empirical and theoretical research suggests is that Flow requires an individualized effort to obtain the absorbed concentration that is characteristic of the experience. Peaks, which are very similar to spiritual experiences, are receptive and spontaneous yet share the same absorbed attention. Finally, while Flow and *Communitas* may be similar, the Flow experience is based on an individual's internal energetic investment, while *Communitas* is what is created among individuals. There is currently no research to date that compares Fascination with the other PDEs.

When comparing and contrasting PDEs, I found that the experiences were more easily differentiated using the constructs of frequency, intensity, and effort (see Table 7). Thus, the purpose of this Table is to differentiate the experiences and illustrate that all four (i.e., *Communitas*, Fascination, Flow, and Spiritual) are necessary for this project as they address Mannell's (1996) definition of psychologically deep experiences and, as illustrated in Table 7, are potential reasons for why individuals might engage in nature-based recreation.

*Table 7. Differentiating Among Experiences Using Frequency, Intensity, and Effort\**

	Low	Medium	High
Relative <i>Frequency</i>	Spiritual <sup>1</sup>	Communitas* Fascination*	Flow*
Relative <i>Intensity</i>		Flow <sup>3</sup> Fascination* Communitas*	Spiritual <sup>3</sup>
Personal <i>Effort</i> as a direct antecedent	Fascination <sup>2</sup> Spiritual <sup>3</sup>		Flow <sup>4</sup> Communitas <sup>5</sup>

1. (Cleary, 1996) 2. (S. Kaplan, 1995) 3. (Privette, 1983) 4. (Wild et al., 1995) 5. (Turner, 1982). \*Note: The asterisk denotes a hypothesized relationship of this researcher based on the literature review and does not directly reflect the research cited above.

The above Table considers research reviewed previously in this chapter. This review reveals that spiritual experiences are composed of intense positive emotion. Relatively, Fascination, Flow, and Communitas are less intense than spiritual experiences. Flow requires effort, either physical or mental, to sustain challenge and skill balance. Communitas also requires effort to empathize and connect with others, to be spontaneous and create fun. Fascination requires completely effortless attention—it is attention that happens to the individual. In comparison, spirituality requires a gentle receptivity to the experience and although there are a host of necessary antecedents to create spaces where spiritual experiences can happen (e.g., reflection, focus, or an open mind), these are quite distal to the personal effort that happens in the moment. While the Flow experience may vary in frequency depending on the individual, it is not unusual for it to be a daily experience. While no explicit research exists for the relative intensity of Communitas and Fascination, some conjecture is possible. For example, Communitas is created in special situations, where spontaneity and

goofiness are prevalent, and in ritual that is outside of normal routine. This would indicate a less than daily frequency. Conversely, although the exhaustion of the ability to pay attention would likely be an almost daily occurrence for most people, it would depend on the work and home environment as to whether Fascination would be possible through exposure to indoor plants, views of nature through windows, or time spent outside.

In addition to using intensity, frequency, and effort as a way to compare and contrast PDEs, the concept of mode can also help illuminate similarities and differences. Research suggests that classifications or categorizations of nature/person transactions include modes such as the activity people are engaged in (e.g., hiking), the place people are in (e.g., urban parks), and the social environment (e.g., with two close friends) (Watson, Williams, Roggenbuck, & Daigle, 1992). When the three modes are considered (i.e., activity, place, and social) as antecedents, the construct of *Communitas* is socially-based, *Fascination* is place-based, *Flow* is activity-based, while spirituality is indicated by all three (See Table 8). Previous research also asserts that these three modes are important in memorable nature based experiences (D. R. Williams, 1988).

*Table 8. Speculative Relationships Between Mode and Psychologically Deep Experiences*

Mode	Experience	
Activity	Flow	Spirituality
Place	Fascination	Spirituality
Social	Communitas	Spirituality

In summary, I contend that frequency, intensity, effort, and mode provide an excellent way to distinguish and identify similarities and differences among PDEs, as well as provide a rationale for the use of the ‘Big Four’.

To conclude this chapter, I return to Heintzman’s (2010b) series of recommendations based on his review of the literature on spiritual experiences in nature-based recreation. He contends that more quantitative work needs to be done; particularly scale development, and that researchers need to differentiate between characteristics and find the most influential ones. He also asserts that research needs to occur in urban nature contexts and address negative emotions. In conjunction with the above, Jackson, Martin, and Eklund (2008) contend that, although the Flow concept is well researched, scale development that measures “a diverse range of constructs [that] could be compared with Flow” (p. 583) would move research forward. This project intends to directly address the above recommendations by using previously developed psychological concepts (i.e., the ‘Big Four’) for the purpose of scale development and differentiating constructs. Additionally, this study moves beyond using college students as a sample by asking residents of Edmonton to participate and also attempts to garner individuals outside of the tourism realm (e.g. far away nature) and in the leisure realm (e.g. gardening). Nature-based recreation can include negative emotions and experiences (e.g., feelings of anger because of activity conflict or annoyance because of bugs) and this is an aspect that is under-researched (Heintzman, 2010b). To begin an exploration of negative emotions, in the survey I will ask participants if the experience was negative at the time of the experience and in retrospect. Finally, the inclusion of *Communitas* as one of the ‘Big Four’ as

construct has the distinct possibility of connecting with non-Europeans. Although social interaction or social bonding has been uncovered as an important aspect of nature experiences in studies that do not reveal the ethnicity of their participants (e.g., Farber & Hall, 2007; Fredrickson & Anderson, 1999; Kim et al.; Loeffler, 2004; Schmidt & Little, 2007; Stringer & McAvoy, 1992), for individuals who are of aboriginal descent “psychological components of leisure experience commonly include social bonding and a sense of communion with nature” (Wall, 2009, p.295).

### **Chapter Three: Method**

The overall research agenda I intend to use is post-positivism. Post-positivists embrace natural settings and the complexity of relationships, and may use qualitative and/or quantitative methods (Markula, Grant, & Denison, 2001). They strive to understand participant meaning as well as academic literature as the basis for theory but the result is still quantitative statistical data, a single theory to explain relationships with the data, and reliance upon internal and external validity (Markula et al.).

#### **Methods**

My methods included: (a) a literature review of psychologically deep experiences, in particular focusing on each of the Big Four's antecedents and immediate conscious experience, to provide a typology of these PDEs, (b) the development of a single comprehensive PDE scale that is based on separate PDE scales (Chapter Three), (c) face-to-face semi-structured interviews with individuals about their recollections of PDEs in nature in order to fill in missing information on the antecedents and immediate conscious experience of PDEs, as well as to receive feedback on the comprehensive PDE scale (Chapter Four), (d) expert review of the comprehensive PDE scale (Chapter Five), and (e) inclusion of the newly developed comprehensive PDE scale in a post-nature experience survey (Chapter 6). This was followed by data analysis using confirmatory factor analysis and structural equation modeling to determine similarities and differences among PDEs and to hypothesize causal effect. The above projects can be summarized succinctly as three studies. The order in which they were completed was as follows: (a) face-to-face semi-structured interviews, (b) expert review of

the comprehensive PDE scale, and (c) an online, convenience sample, survey. The rest of this methods chapter will outline the process of developing taxonomy and the scale development. Other pertinent information on methods can be found in each of the chapters on interviews, expert review, and the survey (chapter four, five, and six, respectively).

Because I asked participants to recall events that happened in the past, the recollection of these memories are susceptible to memory decay and memory failure (Tourangeau, Rips, & Rasinski, 2000). These inaccurate representations of past events will be exhibited in the data as unexplained error. However, there are ways to aid participants in their recollections. I will ask participants to recall autobiographical moments and emotionally involved and meaningful landmark events that happened within the last year; all of these requisites lend themselves to greater recall ability (Luminet & Curci, 2009). Additionally, pleasant memories are more accurately recalled than negative or neutral events (Tourangeau et al., 2000).

### **Typology**

Kluge (2000) outlines the four stages of developing taxonomy as: (a) development of relevant analyzing dimensions, (b) grouping the cases and analysis of empirical regularities, (c) analysis of meaningful relationships and type construction and, (d) characterization of the constructed types—described by their attributes and meaningful relationships. Kluge advises that the elements within a type have to be as similar as possible while the external elements have to be as different as possible.

My research involves categories that have already been identified and named (Csikszentmihalyi, 1975a). By using the existing categories and choosing to compare the types with carefully chosen attributes (i.e., intensity, frequency, effort, and mode—as delineated in Chapter Two), I can differentiate among and find commonalities between the four PDEs. For example, according to Kluge's (2000) stages, my taxonomy unfolds as follows: (a) relevant analyzing dimensions that I am using and that differentiate the Big Four based on my literature review are frequency, intensity, effort and mode. Steps 2 through 4 will take place throughout the rest of my research projects; therefore (b) using the data collected (i.e., interviews, expert review, survey) I will critically analyze if frequency, intensity, effort, and mode are corroborated as appropriate tools for distinction among PDEs; (c) the analysis of meaningful relationships among PDEs will occur during the structural equation model; and (d) the final characterization of the Big Four will occur through the confirmatory factor analysis.

### **Scale Development**

The purpose of this section is to outline the creation of a comprehensive psychologically deep experiences scale. To create this scale, I undertook a literature review of the scales available for each of the 'Big Four' (i.e., Communitas, Fascination, Flow experience, and Spiritual). Specifically, I use McGinnis, Gentry, and Gao's (2008) Flow, Communitas, and Enduring Involvement scale (for Communitas), Hartig, Kaiser, and Bowler's (1997) Perceived Restorativeness Scale (for Fascination), Jackson, Martin, and Eklund's (2008) Flow State Scale-2 (for Flow), and Hood, Morris, and Watson's (1993)

Mysticism Scale (for Spiritual). These scales were compared and contrasted in order to eliminate domains and items that overlapped. In order to reduce the overall number of items in my comprehensive PDE scale, I reduced the number of items measuring each factor to three. This provides a reasonable balance in terms of parsimony, reliability, and the requirements of the planned statistical techniques (Hau & Marsh; Schmidt & Little, 2007).

### **Flow, Communitas, and Enduring Involvement scale (Communitas)**

McGinnis, Gentry, and Gao's (2008) Flow, Communitas, and Enduring Involvement survey is measured on a seven-point bipolar scale, ranging from strongly disagree to strongly agree. Table 9 defines each of the three domains and lists the items intended to measure those domains. Items in bold were chosen for inclusion in the comprehensive PDE scale based on the highest factor loadings.

*Table 9. Flow, Communitas, and Enduring Involvement Scale*

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Domains and items

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**Communitas:** "is often seen as a temporary process whereby people of different backgrounds and places within the social order communicate and bond with one another without considering one's social standing as a divide....In essence, communitas is an elevated, extraordinary experience shared with other human beings" (L. P. McGinnis et al., 2008, p.76).

1. **When I golf, I feel a sense of harmony with the others playing\*.**
2. **When I play golf, I feel a sense of sharing with the people there.**
3. When I golf, I feel a sense of camaraderie
4. When I golf, I feel a bond with my fellow golfer that I could not experience away from the golf course.
5. Golf really allows me to get to know my fellow golfer.
6. **When I golf, I feel a sense of belonging with others at the golf course.**

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Continued

Table 9

*Flow, Communitas, and Enduring Involvement Scale - Continued*


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**Flow:** is “an optimal experience in people’s lives when they experience deep joy and satisfaction” (p. 76).

7. I find golf to be a very liberating experience.
8. Golf is the best way to relieve my stress.
9. When I golf, I can become totally involved in what I am doing.
10. When I play golf, it receives my total concentration.
11. When I play golf, I am surprised to find I have lost track of time.
12. Golf is an enjoyable release from the everyday grind.
13. When I golf, time seems to rush by quickly.

**Enduring Involvement:** “includes a deep interest and enjoyment in a product or activity, in which one totally identifies oneself with this activity” (p. 76).

14. Golf is one of the most satisfying things I do.
  15. I can see myself playing golf the rest of my life.
  16. I will enjoy golf for some time to come.
  17. I find that a lot of my time is organized around golf.
  18. Golf is one of the most enjoyable things I do.
  19. Golf is a part of my self-image.
  20. Golf tells others about me.
  21. I know I will always enjoy playing golf.
  22. Golf is fun.
- 

\*Note: Items in bold were included in the comprehensive PDE survey

In my comprehensive PDE scale I will only use items from the Communitas domain. Of the six items that compose this scale, items three, four, and five were dropped because they had the lowest factor loadings, leaving items, one, two, and three (bolded in Table 9). The Communitas items from this study are activity focused and, consequently, need to be reworded. Thus, in my comprehensive PDE scale, I will eliminate the activity of *golf* and replace it with a place focus: *nature experience*. Additionally, ‘I felt’ will be replaced with ‘I experienced’ to maintain homogeneity between the Communitas items and items from the other scales.

### Perceived Restoration Scale (Fascination)

Much of the research on Attention Restoration Theory (ART) involves the use of the Perceived Restoration Scale (PRS) to discover people's affinity for nature spaces as well as to distinguish preferences between urban and nature spaces (Chang et al., 2008; Felsten, 2009; Han, 2007; Hartig, Kaiser, et al., 1997; Hartig, Korpela, et al., 1997; Korpela et al., 2001; Purcell et al., 2001). The PRS was developed by Hartig, Korpela, Evans, and Garling (1997) and further validated by Hartig, Kaiser and Bowler (1997). The updated scale has 26 items measured on a seven-point unipolar scale (where 0 = not at all and 6 = completely). The restorative experience of nature is represented by four factors: Fascination, being away, extent, and coherence. In Table 10, the four factors are defined and the items that correlate with the factor are listed immediately below.

*Table 10. Perceived Restorativeness Scale*

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Domains and items

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**Being away:** "Getting a distance from the ordinarily present or routine aspects of one's life, at least some of which are not always enjoyed or preferred" (Hartig, Korpela, et al., 1997, p.3)

1. Being here is an escape experience.
2. Spending time here gives me a break from my day-to-day routine.
3. It is a place to get away from it all.
4. Being here helps me to relax my focus on getting things done.
5. Coming here helps me to get relief from unwanted demands on my attention.

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Continued

Table 10  
*Perceived Restorativeness Scale - Continued*

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Domains and items

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**Fascination:** Effortless attention (p. 3)

- 6. This place has fascinating qualities\*.**
- 7. My attention is drawn to many interesting things.**
- 8. I want to get to know this place better.
- 9. There is much to explore and discover here.
- 10. I want to spend more time looking at the surroundings.
- 11. This place is boring.
- 12. The setting is fascinating.**
- 13. There is nothing worth looking at here.

**Coherence:** “The relatedness of immediately perceived elements or features of the environment, to one another and, as a coherent whole, to some larger organizational structure, such as a mental representation of the area” (p. 4).

- 14. There is too much going on.
- 15. It is a confusing place.
- 16. There is a great deal of distraction.
- 17. It is chaotic here.

**Compatibility:** “The match between the person’s goals and inclinations, the demands made on the person by environmental conditions” (p. 5)

- 18. Being here suits my personality.
- 19. I can do things I like here.
- 20. I have a sense that I belong here.
- 21. I can find ways to enjoy myself here.
- 22. I have a sense of oneness with this setting.
- 23. There are landmarks to help me get around.
- 24. I could easily form a mental map of this place.
- 25. It is easy to find my way around here.
- 26. It is easy to see how things are organized.

---

\*Note: Items in bold were included in the comprehensive PDE survey

In terms of my proposed comprehensive PDE scale, I include only the Fascination aspect of the PRS for several reasons. Theoretically, I am only interested in the attention and Fascination aspect of the theory. Statistically, my decision is supported because of the high correlation among the constructs of being away, Fascination, and compatibility as previous research shows they all load on one latent factor (Hartig, Korpela, et al., 1997). I only included three

items to measure Fascination, instead of the eight these researchers include. Those items with the lowest factor loading based on the four-factor model (Hartig, Kaiser, et al., 1997) were dropped from the final scale, leaving items 6, 7, and 12 (in bold in Table 10). These remaining items were changed into past tense. Additionally, to increase clarity and focus, item seven was change from ‘My attention was drawn to many interesting things’ to ‘My attention was drawn to many interesting natural things’. When Table 7 from Chapter Two is considered, the three items address the majority of the scope from the Fascination literature, with the exception of the expansive attention aspect ‘I was able to reflect on life at the same time’.

### **Flow State Scale 2 (Flow)**

The scale items for the FSS-2 are based on nine factors (i.e., challenge-skill balance, action-awareness merging, clear goals, unambiguous feedback, concentration on the task at hand, paradox of control, loss of self-consciousness, transformation of time) (Jackson & Eklund, 2004). The items are measured on a five point unipolar scale (1 = never, 5 = always). The nine factors and corresponding items are reported in Table 11. Bolded items indicated the ones included in the comprehensive PDE survey.

*Table 11. Flow State Scale-2*


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 Domains, definitions, and items
 

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**Challenge-skill balance:** “In flow, the person perceives a balance between the challenges of a situation and one’s skills, with both operating at a personally high level. Csikszentmihalyi and Csikszentmihalyi (1988) explain this dimension as occurring when a person’s skill is at just the right level to cope with the situational demands, which are above average for the person. ‘Was challenging, but also seemed automatic,’ is how a track and field athlete described this flow dimension.” (Jackson & Marsh, 1996, p. 18).

1. I was challenged, but I believed my skills would allow me to meet the challenge.

**10. My abilities matched the high challenge of the situation\*.**

**19. I felt I was competent enough to meet the high demands of the situation.**

**28. The challenge and my skills were at an equally high level.**

**Action-awareness merging:** “Involvement in the flow activity is so deep that it becomes spontaneous or automatic. There is no awareness of self as separate from the actions one is performing. Statements such as ‘in the groove’ and ‘things happen automatically’ were used by several athletes to describe action-awareness merging” (p. 18).

2. I made the correct movements without thinking about trying to do so.

**11. Things just seemed to be happening automatically.**

**20. I performed automatically, without thinking too much.**

**29. I did things spontaneously and automatically without having to think.**

**Clear goals:** “Goals in the activity are clearly defined (either set in advance or developed out of involvement in the activity), giving the person in flow a strong sense of what he or she is going to do. ‘Really knowing what you were going to do,’ is an example of this dimension from a rower’s perspective” (p. 19).

3. I knew clearly what I wanted to do.

12. I had a strong sense of what I wanted to do.

21. I knew what I wanted to achieve.

30. My goals were clearly defined.

**Concentration on task at hand:** “Total concentration on the task at hand occurs when in flow. ‘Feel really focused,’ describes this dimension for a marathon runner” (p. 19).

5. My attention was focused entirely on what I am doing.

**14. It was no effort to keep my mind on what was happening.**

**23. I had total concentration.**

**32. I was completely focused on the task at hand.**

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 Continue

Table 11  
Flow State Scale-2 - Continued

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Domains, definitions, and items

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**Paradox of control:** “A sense of exercising control is experienced, without the person actively trying to exert control. ‘Feel like can do anything in that state,’ and ‘You can’t imagine anything going wrong,’ illustrate how a runner and a rugby player, respectively, experienced the sense of control when in flow.... What seems critical to this dimension is that it is the potential for control, especially the sense of exercising control in difficult situations, that is central to the flow experience” (p. 19).

- 6. I had a sense of control over what I was doing.
- 15. I felt like I could control what I was doing.
- 24. I had a feeling of total control.
- 33. I felt in control of my body.

**Loss of self-consciousness:** “Concern for the self disappears during flow as the person becomes one with the activity. When freed from self-consciousness, the athlete often becomes a more natural performer, where ‘doing things instinctively and confidently’ becomes evident in the athlete’s actions. The absence of preoccupation with self does not mean the person is unaware of what is happening in mind or body, but rather is not focusing on the information normally used to represent oneself to who one is” (p. 19).

- 7. **I was not concerned with what others may have been thinking of me.**
- 16. **I was not concerned with how others may have been evaluating me.**
- 25. I was not concerned with how was I am presenting myself.
- 34. **I was not worried about what others may be thinking of me.**

**Transformation of time:** “Time alters perceptibly, either slowing down, as illustrated by a track runner saying she had ‘time to think,’ or speeding up, giving the perception that the event was ‘over so fast’ for a cyclist. Alternatively, time may simply become irrelevant and out of one’s awareness” (p. 20).

- 8. **Time seemed to alter (either slowed down or speeded up).**
- 17. **The way time passed seemed to be different than normal.**
- 26. It felt like time went by quickly.
- 35. **I lost my normal awareness of time.**

**Autotelic experience:** “An autotelic experience is an intrinsically rewarding experience. This dimension is described by Csikszentmihalyi as the end result of being in flow. It is illustrated by statements from athletes such as ‘really enjoy the experience’ and ‘leaves you on a high’” (p. 20).

- 9. I really enjoyed the experience.
  - 27. The experience left me feeling great.
  - 36. I found the experience extremely rewarding.
  - 18. I loved the feeling of the performance and want to capture it again.
-

*Table 11**Flow State Scale-2 - Continued*


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 Domains, definitions, and items
 

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**Unambiguous feedback:** “Immediate and clear feedback is received, usually from the activity itself” (p. 19).

4. It was really clear to me how my performance was going.

**13. I was aware of how well I was performing.**

**22. I had a good idea while I was performing about how well I was doing.**

**31. I could tell by the way I was performing how well I was doing.**

---

\*Note: Items in bold were included in the comprehensive PDE survey

Because Csikszentmihalyi (2000) holds that the immediate conscious experience of Flow includes: a merging of action and awareness, deep concentration, loss of self-consciousness, transformation of time, and unambiguous feedback, only these domains have been included in the comprehensive PDE survey. Additionally, challenge/skill balance items are included because they are foundational to Flow research. Domains from the other three PDE scales that are similar to these domains were maintained via the FSS-2 because of this scale’s validity and reliability. Therefore, although transformation of time does not consistently load on its factor, I have chosen to include these items. Additionally, some consideration for the FSS-2 is also necessary because it was developed to examine athletes’ performance and, according to Csikzenmihalyi (1975a, 1990), Flow can be experienced in other non-physical (e.g., chess) and non-leisure (e.g., surgery) areas. This consideration pertains mostly to the performance-based wording of the items in the FSS-2. Therefore, the word ‘performance’ was changed to ‘situation’. Additionally, ‘performing’ was changed to ‘doing the activity’. Factor loadings based on Jackson and Eklund’s (2002) study were used to eliminate one item and maintain three items to measure each domain.

While the place-based focus is clear for the Perceived Restoration Scale (PRS) discussed previously, in comparison, the FSS-2 focuses on how one is performing an activity. In the FSS-2 subscale “concentration”, the aspects of attention emphasize Csikszentmihalyi’s “one-pointedness of mind” or a narrowing of attention, while the PRS subscale “fascination” emphasizes the expansion of attention (e.g., item 7, “my attention is drawn to many interesting things”). Therefore, both of these items have been maintained in my comprehensive PDE scale.

### **Hood’s Mysticism Scale**

The M scale uses a bipolar five-point scale with negatively worded items reverse scored (Hood et al., 1993) (See Table 12). In my comprehensive PDE scale, I have dropped the Introvertive and Extrovertive items. The FSS-2 measures Time Expansion/Contraction and so the M scale items on Temporal/Spatial Quality were removed from my comprehensive scale. In addition, and for the same reason, the M scale domain Ego Quality, which measures the loss of self, was also removed but I believe it is still covered by the FSS-2 domain Loss of Self-Consciousness. Because the Extroverted Mysticism and Introverted Mysticism factors technically measure different types of mystical experiences and because the Interpretation factor measure core characteristics for *all* mystical experiences, the rest of the items associated with these two factors were eliminated. The associated domains with the factor Interpretation are Noetic Quality, Positive Affect, and Religious Quality. In order to reduce the length of the PDE scale, I maintain three items per factor, dropping the item with the lowest

factor score. When Table 7 is considered, the empirical findings in nature-based recreation are addressed. For example, a sense of timelessness is covered by Flow items that address the passage of time; a connection to a greater power is addressed by a sense of the divine, holy, and sacred; the emotionally intense experience is addressed through the items wonder, peaceful state, and perfection; and the heightened sensory awareness is addressed through the noetic and the items new view reality, ultimate reality, and deeper aspects reality. The only aspect not covered here that was mentioned in the literature review is the ineffability of the experience, which scholars in the science of religion speculate to be an aspect of only Introvertive spiritual experiences, and the experience of nothingness (Hood et al., 2001). Finally, I have reworded all of these items in a positive direction and dropped the items with the lowest factor loading.

*Table 12. Hood's Mysticism Scale*


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 Factors, definitions, and items
 

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**Factor 1: Extrovertive Mysticism:** “the self reaches a unity with the multiplicity of objects in the universe” (Hood et al., 2001, p.692)

- 6. I have never had an experience in which I felt myself to be absorbed as one with all things.
  - 8. I have never had an experience in which I felt as if all things were alive.
  - 10. I have never had an experience in which all things seemed to be aware.
  - 12. I have had an experience in which I realized the oneness of myself with all things.
  - 15. I have never had an experience in which time and space were non-existent.
  - 19. I have had an experience in which I felt everything in the world to be part of the same whole.
  - 24. I have never had an experience in which my own self seemed to merge into something greater.
  - 27. I have never had an experience in which time, place, and distance were meaningless.
  - 28. I have never had an experience in which I became aware of a unity to all things.
  - 29. I have had an experience in which all things seemed to be conscious.
  - 30. I have never had an experience in which all things seemed to be unified into a single whole.
  - 31. I have had an experience in which I felt nothing is ever really dead.
- 

Continue

*Table 12. Hood's Mysticism Scale - Continued*


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 Factors, definitions, and items
 

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**Factor 2: Religious Interpretation:** Interpretation of the mystical experience (Hood et al., 2001, p.692)

- 5. I have experience profound joy (AFFECT)
- 7. **I have never experienced a perfectly peaceful state** (AFFECT)
- 9. **I have never had an experience which seemed holy to me** (SPIRITUAL)
- 13. **I have had an experience in which a new view of reality was revealed to me** (NOETIC)
- 14. **I have never experienced anything to be divine** (SPIRITUAL)
- 16. I have never experienced what I would call ultimate reality (NOETIC)
- 17. **I have had an experience in which ultimate reality was revealed to me** (NOETIC)
- 18. **I have had an experience in which I felt that all was perfection at that time** (AFFECT)
- 20. **I have had an experience which I knew to be sacred** (SPIRITUAL)
- 22. I have had an experience which left me with a feeling of awe (SPIRITUAL)
- 25. **I have never had an experience which left me with a feeling of wonder** (AFFECT)
- 26. **I have never had an experience in which deeper aspects of reality were revealed to me** (NOETIC)

---

**Factor 3: Introvertive Mysticism:** an experience of self-loss in “which all the multiplicity of sensuous or conceptual or other empirical content has been excluded, so that there remains only a void and empty unity” (Hood et al., 2001, p.692)

- 1. I have had an experience which was both timeless and spaceless.
- 2. I have never had an experience which was incapable of being expressed in words.
- 3. I have had an experience in which something greater than myself seemed to absorb me.
- 4. I have had an experience in which everything seemed to disappear from my mind until I was conscious only of a void.
- 11. I have had an experience in which I had no sense of time or space.
- 21. I have never had an experience which I was unable to express adequately through language.
- 23. I have had an experience that is impossible to communicate.
- 32. I have had an experience that cannot be expressed in words.

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Note: Items in bold were included in the comprehensive PDE survey

## Summary

In the draft version of the comprehensive PDE scale, 3 items are from the PRS, 18 items are from the FSS-2, 9 items are from the M scale, and 3 items are from the Communitas scale. I expect that: (a) the “positive affect” subscale of the M scale will correlate with Flow and Communitas; and (b) the FSS-2 items that measure “time expansion/contraction” will correlate with both Flow and mystical experiences. Finally, to ensure readability and comparability, all of the items included in the comprehensive PDE scale were reworded to be consistent and all of the comprehensive PDE items are measured using the same six-point unipolar type scale. Unipolar and bipolar scales are well suited to measure phenomenological experience and have been used in previous leisure research (Hull & Michael, 1995; Walker, Hull, & Roggenbuck, 1998). These types of scales allow for the measurement of various intensities of experience. I will be using the following anchors for the six points (i.e., 1 = not at all, 2 = to a small extent, 3 = to some extent, 4 = to a moderate extent, 5 = to a great extent, and 6 = to a very great extent). All numbers are above zero, to help alleviate the positivity bias of responses (Tourangeau et al., 2000). I expect that participants will typically focus on the midrange of the scale in their responses, yet I provide a six-point scale to allow for dramatic experiences, such as an intense spiritual experience, to be captured.

## Chapter Four: Interviews

The purpose of the interviews was twofold: (a) to receive feedback on the readability of the comprehensive PDE scale, and (b) to further distinguish among PDEs in terms of what is common to all experiences, what is common to some experiences, and what makes each construct completely unique to inform the structural equation model.

### Method

Participants were recruited using purposive sampling, where individuals are strategically chosen for inclusion in the project based on their expertise on the subject matter (Patton, 2002). A poster requesting participation was placed at local Edmonton outdoor shops. Additionally, I contacted individuals who were known to have memorable PDEs. A total of twelve interviewees were recruited. Participants were interviewed using a semi structured interview guide (See Appendix A). To address the memory decay that surrounds events in the past, I used longer introductions and kept a slow pace during the interview process (such as asking them first to describe their experience). I also used multiple cues, such as asking about the type of event, where it took place, and who they were with (Tourangeau et al., 2000).

During the interview, participants were first asked to describe their experience. Probes were then used to obtain detailed information about the experience, such as how long it lasted, a description of where they were, the activities they were engaged in, and who they were with. Then they were presented with four paragraphs—one per PDE—that were developed based on the

literature review and asked to underline all aspects of the paragraph that related to their own experience. Data were analyzed using directed content analysis (Hsieh, 2005). In this case that meant developing the paragraphs based on the theory and using these paragraphs to create codes for analysis. All interviews were transcribed and uploaded into Atlas.ti for the purpose of content analysis. Each individual's experience was also attributed to a category (i.e., *Communitas*, *Fascination*, *Flow*, or *Spiritual*) using the main characteristics of each experience as outlined by the literature review and the scale development.

## **Results**

### **Feedback**

Throughout the interview process, I made small changes to the survey based on immediate feedback from my interviewees to help with clarification in future interviews. Those changes include the following:

- 1) I included "Not all the items will necessarily apply to your experience" on Section C to reduce the effects of social desirability as some individuals were agreeing with items even though it was not a strong part of their experience.
- 2) I added ethnicity as an open-ended question to the survey: What is your ethnic or cultural background? (Aboriginal, French, British, Canadian, Vietnamese, etc)

- 3) I added more space to 5b) “how many times has this experience happened to you in a natural setting”, and 5c) “urban setting” so they can use more words to describe the setting and the experience.
- 4) I changed “not at all” to “does not apply” so it is clearer that some items do not apply.
- 5) To reduce confusion with negatively worded items, “I was not concerned with how others may have been evaluating me” was changed to “I was concerned with how others were evaluating me”
- 6) To reduce confusion with negatively worded items “I was not worried about what others may be thinking of me” was changed to “I was worried about what others were thinking of me”.
- 7) To reduce confusion with negatively worded items “I was not concerned with what others may have been thinking of me” was changed to “I was concerned with what others were thinking of me”

Specific feedback from further data analysis of the twelve interviewees also includes the following. There was some confusion over the question “Please state the activity you were engaged in when the experience happened” for both Trevor and Angel. Angel wondered if this activity was the distal and over arching activity of dog sledding, or the more proximal activity of meditation, viewing scenery and spending time alone. The former gives more wilderness context, while the latter was the proximal antecedent for her profound spiritual experience. Roman also found the activity choices not quite accurate: “The closest would be backcountry camping, however we were there for work, we weren’t there for pleasure we were there as part of a project. I check that tentatively. I guess I better put it in other”.

**Recommendation 1: To improve clarity, the question now reads “What activities were you engaged in at the exact moment you had your special, or out-of-the-ordinary, meaningful nature experience?”.**

Some definitional language issues were addressed. For example, the word divine was an issue for several interviewees. As an alternative, Angel suggested universe and Dottie suggested joyous. Angel, Kerry, Nathan and Dottie also express alternate interpretations of the word holy, for example Nathan recommends holy in a spiritual sense. As well, sacred was a point of definitional contention for Dottie. Kerry also interprets the word sacred as intentional enjoying and Nan does not find much meaning in the word sacred.

**Recommendation 2: “I had an experience that seemed holy to me”, “I experienced something as being divine”, and “I had an experience that I knew to be sacred” were changed to “I had an experience that seemed holy in a spiritual way” and “I experienced something as being divine in a spiritual way” and “I had an experience that I knew to be sacred in a spiritual way”.**

Bill wonders why the survey was limited to six months: “If you have a unique experience, it’s not controlled by time. It’s so vivid it’s as vivid today as it was then”. Although research suggests that vivid memories can be recalled far into the past (White, 2002), for the survey a time period of six months was maintained as current research suggest that memory is most accurate within a six month time period (Talarico, LaBar, & Rubin, 2004).

Some clarification was needed for questions “how many times has this experience happened to you before in a natural setting” and “how many times has this experience happened to you in an urban setting”? To explain, Angel has had similar experiences to her profound spiritual experience, but to a lesser intensity.

Dan confuses the internal lived conscious experience (e.g. anxiety in a lightening storm) with the activity (e.g. backpacking) he was doing. Finally, Todd clarifies by asking if this experience includes “watching a fox like that? Never. Watching animals like that, I don’t know, ten times?”

**Recommendation 3: I moved these two questions after the items about the PDEs so that respondents would refer back to their experience. I also changed the questions to “How many times has a special out-of-the ordinary or meaningful experience of the same intensity happened to you in a natural setting?” and “How many times has a special out-of-the ordinary or meaningful experience of the same intensity happened to you in a natural setting?”**

More than one participant negotiated meaning of time differently than intended by the survey. Karen and Todd mention that they did not pay attention to time and felt this was different than remarking on a sense of timelessness. As Nathan states “So if in question twenty eight, if I lost my normal awareness of time, how can I respond to question thirty two time seemed to alter, because I do not have awareness of time...what I experienced was that time it did not matter. The notion of time was simply not there...it did not exist so it was timelessness I would say”.

**Recommendation 4: I changed item 32 “Time seemed to alter (either slowed down or speed up)” to “Time seemed to alter (either slowed down, or sped up, or I had a sense of timelessness)”.**

The item “the setting was fascinating” was confusing for some interviewees. Angel grapples with the definitional difference between setting and landscape “it depends if you want to be specific about landscape... I think landscape would be better”.

**Recommendation 5: “the setting was fascinating” was changed to “the setting, landscape, or location was fascinating”.**

**Recommendation 6: The question “Name and describe the physical setting where you experienced this event” was further clarified by stating “Name and describe the physical or geographical setting where you experienced this event as well as any important weather conditions or features”.**

Karen read, “I had total concentration” and states: “it was that kind of effortless concentration”. Fascination has items that measure effortless concentration while Flow has items that measure effortful concentration, an important distinction.

**Recommendation 7: The Fascination items were reworded to emphasize ‘effortless’ attention. For example, “my attention was drawn to many interesting natural things” was changed to “my attention was effortlessly drawn to many interesting natural things”.**

### **Paragraphs**

The experiences described to me in the interviews varied in intensity, with two interviewees describing intense negative experiences. Some experiences clearly fit into one of the ‘Big Four’, while others did not. I identified the experiences of my twelve interviewees according to the descriptors provided in Table 13. These definitions are based on the literature review. While twelve participants participated in the interview process, only eleven completed the paragraphs (See Table 14).

*Table 13. Definitions of the 'Big Four'*

Experience	Description
Communitas	A fleeting, magical connection to other people based on a sense of sharing, harmony, and belonging
Fascination	My attention was captivated effortlessly by the natural environment. I was also able to reflect on life at the same time
Flow	An activity-based deep concentration
Spiritual	Emotionally intense and heightened awareness of a different reality and connection to universe/spirit/God

*Table 14. Interviewees and Their PDEs*

Interview number	Name <sup>1</sup>	Experience
1	Angel	Spiritual
2	Carol	Spiritual
3	Nathan	Spiritual
4	Nan	Spiritual
5	Dottie	Spiritual/Fascination
6	Roman	Fascination
7	Todd	Fascination
8	Lola	Flow
9	Kerry	Flow/Fascination
10	Dan	Negative
11	Trevor	Negative

<sup>1</sup>All names have been changed to pseudonyms.

The interviewees were mostly Caucasian, with one person identifying as Pakastani and one as East Indian. There were five men and six women and most had at least an undergraduate degree with the exception of Nan, who had a high school diploma. They ranged in age from 21 to 82 and income ranged from less than \$25,000 to \$100,000 per annum. Except for Kerry and Dottie, whose experiences took place in the Edmonton River valley and an apartment balcony, all experience occurred in remote nature spaces, for example, the mountains of Alberta. Most were alone when their experience occurred and most were engaged in non-motorized activities (See Table 15).

*Table 15. Interviewee Information*

Name	Place	People with	Activity
Dan	Mountains	One friend	Hiking
Trevor	Tundra	Group	Rafting
Lola	Mountains	Group	Climbing
Todd	Field	Alone	Hunting
Roman	Open landscape	Group	Watching aurora borealis
Nan	Beach	Alone	Swimming
Nathan	Mountains	Alone	Hiking
Kerry	River valley	Alone	Walking
Dottie	Balcony	Alone	Bird watching
Angela	Tundra	Alone	Dog sledding
Carol	Fields	Alone	Horseback riding

The paragraphs were developed based on the literature review and were intended to give a brief description of each of the ‘Big Four’. In particular, the Flow paragraph addresses the five characteristics of lived conscious experience of flow (Csikszentmihalyi, 2000): deep concentration, merging of action and awareness, loss of self-consciousness, unambiguous feedback, and transformation of time. The Fascination paragraph addresses a diminished ability to concentrate, an effortless attention but also an ability to reflect on life, and fascinating scenery (S. Kaplan, 1995). The Spiritual paragraph is based on intense emotions (i.e., intense emotion, joy, bliss), ineffability (i.e., difficulty describing), a heightened awareness (i.e., new view of reality) and spiritual qualities (i.e., sacred). The Communitas paragraph is based on a magical and spontaneous connection to other people, and a mutual understanding (i.e., I was able to see people for whom they really are).

Figure 4 represents Spiritual characteristics that were underlined in the paragraphs by the five interviewees who had spiritual experiences (i.e., from

Angela, Carol, Nathan, Nan, and Dottie). The orange numbered boxes represent each interviewee and the green boxes represent spiritual characteristics. Two interviewees indicated that spiritual characteristics include ineffability, or a difficulty describing. Four out of five interviewees underlined intense emotion, connection to a higher power, heightened sensory awareness, and time passing without notice.

Figure 4. *Spiritual components of spiritual experiences*

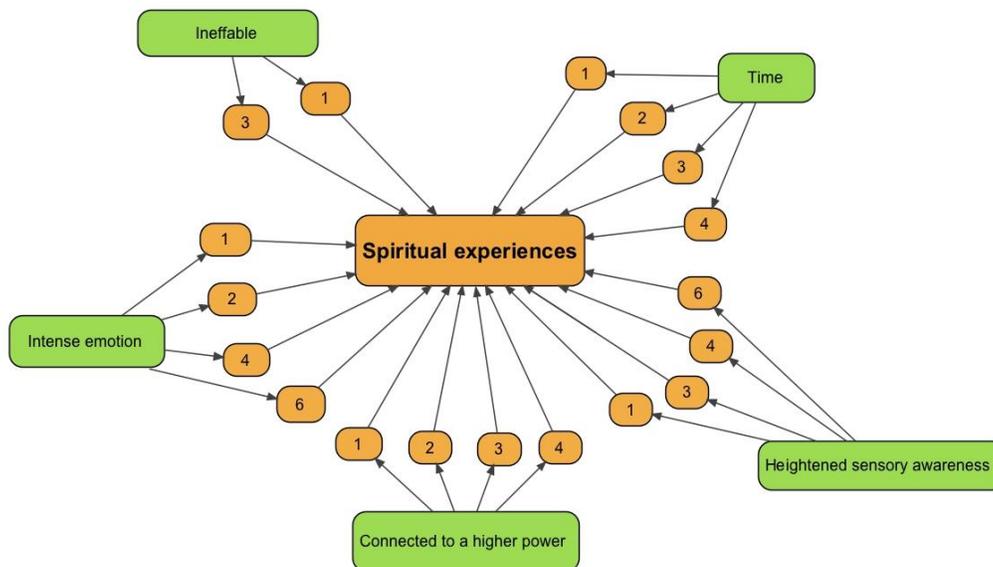
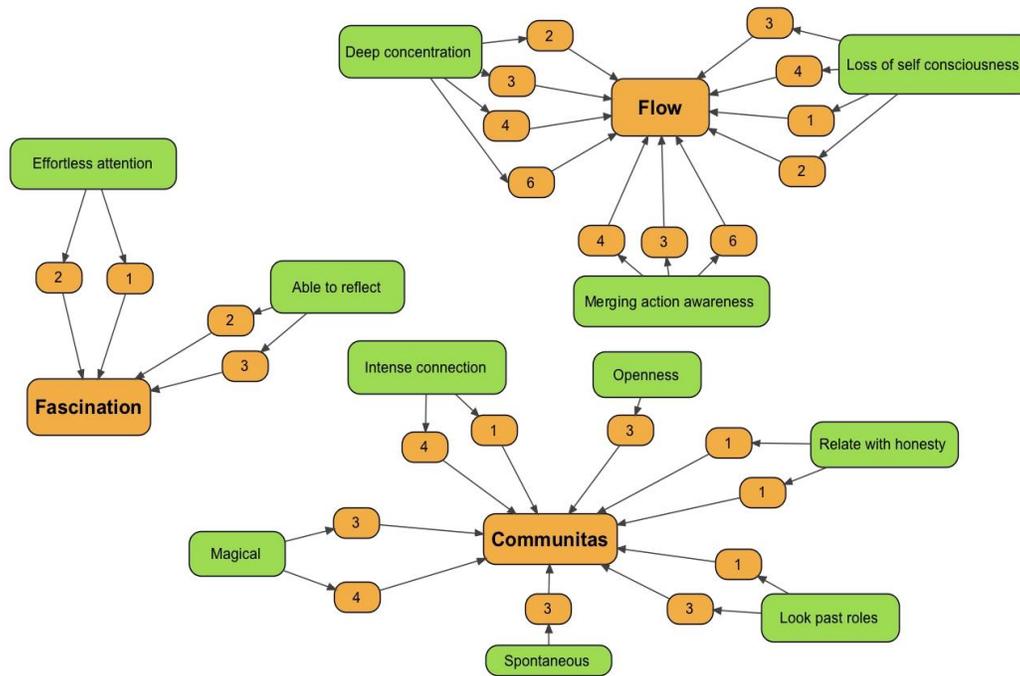


Figure 5 expands the pictorial representation. It outlines the characteristics from *Communitas*, *Fascination*, and *Flow* that were present for the five interviewees who had spiritual experiences.

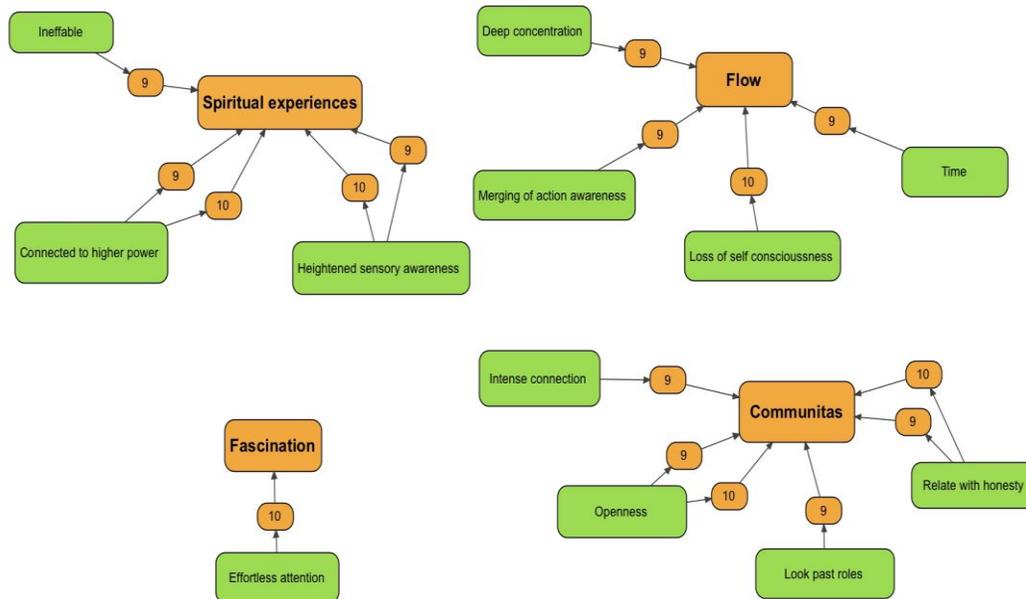
Figure 5. *Spiritual experiences and characteristics for Communitas, Fascination, and Flow*



As is clear in Figure 5, interviewees who had spiritual experiences underlined components from the spiritual experiences paragraph as well as components associated with Communitas, Fascination, and Flow. For two interviewees, elements of Fascination and its derivative of attention expansion, or effortless and captivated attention were experienced as well as the corresponding ability to reflect on life. Most of those who had a spiritual experience had it in an open landscape (except for Carol), an antecedent for fascination. Also important to four out of five interviewees were characteristics of Flow: deep concentration, a loss of self-consciousness, and for three individuals, a merging of action and awareness. Characteristics of Communitas were less important, but for two participants, they indicated an intense connection to other people.

Figure 6 outlines the characteristics underlined for the two interviewees who experienced Flow.

Figure 6. Flow and characteristics of PDEs

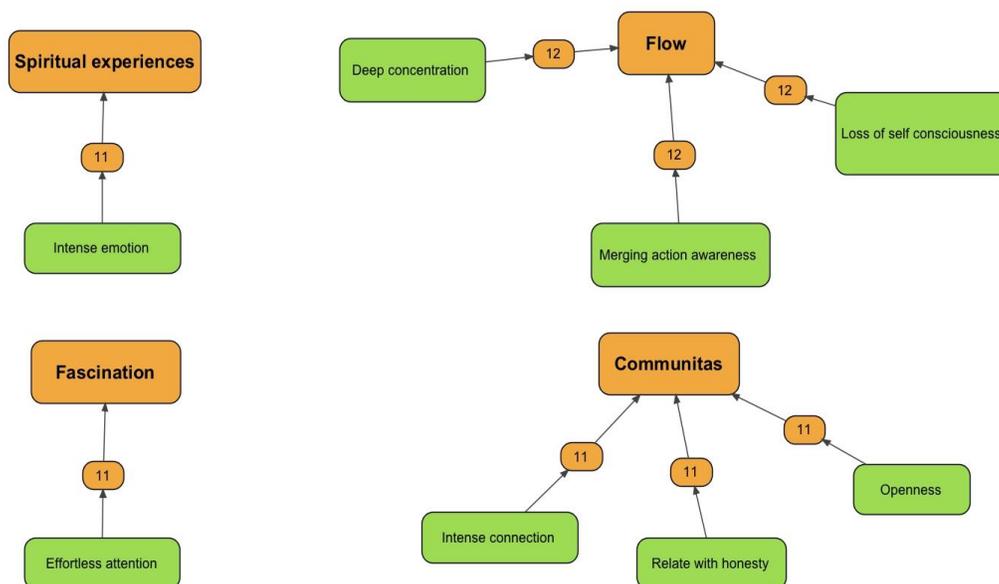


For these two interviewees the elements of Flow (deep concentration, merging of action and awareness, loss of self-consciousness, and transformation of time) are present, and for one participant the effortless attention associated with Fascination as well as Communitas elements (intense connection to other people, looking past roles and status and relating with openness and honesty) are present. For both participants, Spiritual aspects of connection to a higher power and heightened sensory awareness were present.

Figure 7 outlines characteristics of the 'Big Four' experienced by the two interviewees who had Fascinating experiences.



Figure 8. Negative experiences and the 'Big Four'



The two individuals who had intensely negative nature experiences indicated different PDEs. Dan experienced intense emotion, effortless attention, and an intense connection to other people where they were relating with honesty and openness. Trevor experienced the characteristics of flow: a deep concentration, a merging of action and awareness, and a loss of self-consciousness.

## Discussion

### Fascination

Both interviewees who experienced Fascination indicated that intense emotion was present. For Roman, "...the northern lights were out and this was the first time I had ever seen them. And they were putting on a spectacle" (Personal communication, March 2011). In Todd's case, it was the fox that came across him during the stillness of a hunting session and stared at him. Both the aurora borealis

and the fox that stared were moments that induced intense emotion because of the rarity of their occurrence.

### **Flow experiences**

Both Flow participants outline the heightened sensory awareness associated with spiritual experiences. The deep concentration of Flow has also been described as a 'one-pointedness of mind' (Csikszentmihalyi, 1990) - an ability to keep out unneeded stimuli and focus on the important information. As Lola states: "There was no 'oh, this is hot or cold' but I remember I could feel the sun and I could feel every little piece of the rock, but there wasn't these superfluous feelings of 'oh, I scratched my leg'. That didn't matter" (Personal communication, March 2011).

### **Spiritual experiences**

Individuals who reported Spiritual experiences outlined the importance of Communitas as well as deep concentration and effortless attention. The presence of Communitas characteristics during Spiritual experiences is particularly interesting given that only one individual was actually with other people during their experience. However, perhaps one of my interviewees, Nathan, says it best when he states that his Spiritual experience is one of "my overall interactions with the people in Hunza" (personal communication, March 2011) – a community in Pakistan. For example, the driver who takes him to Eagle point, the place of his profound spiritual experience, leaves him alone to do a short hike as if knowing Nathan needed this alone time: "Even without interacting with him, even in his

absence I was actually interacting with him because he thought okay, you need your space, stay there” (Personal communication, March 2011).

Those who had Spiritual experiences and identified the effortless attention of Fascination as well as the deep concentration of Flow may initially appear to report contradictory phenomenon. However, perhaps these reports make sense when we consider Angela’s experience. She seemed to have a kind of effortless, yet deep concentration during her experience: “I was aware of everything around me and yet I felt like I wasn’t looking at it. I was sort of transfixed and just kind of staring at one spot” (personal communication, March 2011). In her case, the experience happened to her, as “it was like someone just put their hands on my shoulders and pushed me down” (personal communication, March 2011). When experiences such as this are imposed, it may be effortless, yet the concentration involved is quite deep.

Also interesting is that only two of the five participants state that their experiences were ineffable; that is, difficult to describe. Both of these participants had Spiritual experiences that were quite intense and involved external forces or presence. Angela feels hands push her to the ground and Nathan explains “I felt as though someone was standing behind me, metaphorically speaking and held my hands and made me open my arms like this [opens arms to side].” Although both identify their experiences as ineffable, both are able to well explain and convey the depth of meaning for these experiences.

### **Negative experiences**

It is interesting that, in the case of Trevor and Dan, they underlined aspects of quite different PDEs given their negative experiences were quite similar. Both experiences were unexpected nature events that placed them in survival mode. However Trevor experiences flow, while Dan experiences Fascination, Communitas, and Spiritual.

### **Conclusion**

Limitations of this qualitative study include its small sample size; thus, the data can only be considered within the context in which it was produced. However, one of this study's goals was to inform the development of a comprehensive PDE scale as well as structural equation model that would test it. In this regard, it has shed light on potential relationships that should be considered, such as the importance of Communitas and Fascination during Spiritual experiences and the experience of Communitas during Flow experiences. Other limitations include memory decay, as participants were recalling past events. However, as one interviewee stated: "If you have a unique experience, it's not controlled by time. It's so vivid it's as vivid today as it was then" (personal communication, March 2011). It seems likely, therefore, that because participants were asked to focus on memorable nature events they were able to recollect their experiences with a fair degree of accuracy.

## Chapter Five: Expert Review

According to Messick (1989), scales can be assessed for content validity (i.e., the items are representative yet parsimonious of the factors), criterion-validity (i.e., comparing test scores to one or more external variables) and construct validity (i.e., the qualities a test measures). For example, in the case of the FSS-2, because scale development was based on Csikszentmihalyi's (1975a, 1990, 2000) extensive qualitative work content validity was enhanced. Other ways to assess validity include expert judges who can assess content validity and the use of confirmatory factor analysis to assess construct validity (Jackson & Marsh, 1996). While this dissertation addresses the latter two, this chapter in particular describes the process of conducting an expert review of the comprehensive PDE scale.

### Method

To address the content validity of the comprehensive PDE scale, I sent the items as well as the paragraphs that describe each experience and factor to five expert reviewers: that is, individuals who have a background studying PDEs or nature experiences. Messick (1989) attests that "expert judgment is clearly an important ingredient in attesting to content and format relevance" of scale development (p. 39).

According to Dunn, Bouffard, and Rogers (1999), protocols for using expert panels include the following steps:

- 1) Ask enough experts to be involved so that the final number is a minimum of five experts or judges and a maximum of ten (Lynn, 1986). This number allows for adequate statistical testing of expert responses. If

enough experts are involved, those whose ratings are far from the norm can be dropped from the study. In addition, researchers need to outline the composition of the expert panel: What are the qualifications and characteristics of the experts? Why were they chosen? Are there experts who have a primary research area in the subject area?

- 2) Researchers should use some kind of Likert scale to keep evaluation from the judges clear and to allow for statistical evaluation. Matching tasks can also be used.
- 3) Provide details about how and why items were deleted or modified from the original item pool. Report level of interrater agreement and mean item ratings (Dunn et al., 1999, p.17-21)

Procedures for collecting ratings on the PDE scale:

- 1) Researchers need to define the universe or factor that the items are intended to measure (i.e., Communitas, Fascination, Flow, and Spiritual, and their respective factors, for example, noetic quality (Spiritual) and challenge/skill balance (Flow). Ask the judges to familiarize themselves with these definitions and then examine the list of items. After reviewing the items, experts can rate the degree to which the content of each item matches the content of the factors on a five point Likert scale. By keeping the experts blind to the researcher's intended item-factor matches, experts won't be biased by the researcher.
- 2) Eliminate expert raters whose judgements are far from the norm, based on statistical analysis.

- 3) If judges are from more than one group (e.g., athletes and academics), combine ratings provided by all judges for each item and then do univariate F tests to see if there are differences between sets of judges for each item.
- 4) Provide a statistical analysis of the data, for example, using Aiken's (1985) item content-validity coefficient, in which the researcher can test the statistical significance of the judges' ratings for each of the factors.
- 5) Include qualitative methods of evaluation for each item (p. 23-30)

## **Results**

Twelve individuals who were experts on Communitas, Fascination, Flow, Spiritual experiences and nature-based recreation were invited to participate by email. Five individuals completed the expert review and all five were academics with a background in the social psychology of nature experiences. Three of the five participants were experts in one PDE in particular as it relates to nature-based recreation. Based on the procedures outlined previously, each expert reviewer was sent the descriptors of the nine factors (e.g., Challenge/skill balance, Noetic) and asked to match each of the 33 items the best factor and the second best factor on a five point likert scale (See Appendix B for a copy of the expert review). An opportunity for written feedback was also provided.

Overall, four or more experts ranked first the hypothesized factor/item agreement on 21 of the items. The means and standard deviations for these items are provided in Table 16.

*Table 16. Means and Standard Deviations for the 21 Factor/Item Agreements*

Factor	Item	M	SD
Action Aware Action	I did things spontaneously and automatically without having to think	4.2	0.84
Aware C/Skill	Things just seemed to happen automatically	4.4	0.89
Balance C/Skill	I felt I was competent enough to meet the high demands of the situation	4.4	0.89
Balance C/Skill	My abilities matched the high challenge of the situation	4.8	0.45
Balance C/Skill	The challenge and my skills were at an equally high level	4.6	0.55
Communitas Communitas	I experienced a sense of belonging with other people	4.8	0.45
Communitas Communitas	I experienced a sense of harmony with other people	4.4	0.89
Communitas Concentra- tion	I experienced a sense of sharing with the people there	4.4	0.89
Concentra- tion Concentra- tion	I had total concentration of the activity or task that I was doing	4.8	0.45
Concentra- tion Fascination	I was completely focused on the task or situation at hand	4.6	0.89
Fascination Fascination	The natural setting had fascination qualities	3.6	0.58
Fascination Noetic	The natural setting or landscape was fascinating	3.8	0.50
Noetic Noetic	I had an experience in which a new view of reality was revealed to me	3.2	0.82
Noetic Noetic	I had an experience in which deeper aspects of reality were made evident	4	0.71
Noetic Spiritual	I had an experience in which ultimate reality was revealed to me	3.6	1.14
Spiritual Spiritual	I experienced something as being "divine" in a spiritual sense	4.8	0.45
Spiritual Spiritual	I had an experience that I knew to be "sacred" in a spiritual sense	4.6	0.55
Spiritual Trans Time	I had an experience that seemed "holy" in a spiritual way	4.4	0.89
Trans Time Trans Time	I lost my normal awareness of time	3.8	1.64
Trans Time Trans Time	The way time passed seemed to be different than normal	4.6	0.55
Trans Time Trans Time	Time seemed to alter (either slowed down, or sped up, or I had a sense of timelessness)	4.8	0.45

For these 21 items, I calculated Aikin's (1985) V coefficient to find out if this agreement was by chance. For six of these items, the Validity coefficient was not significant (see Table 17), indicating that changes need to be made to one Transformation of time item, one Fascination item and three Noetic items.

Table 17. *V* Coefficient on 21 Factor/Item Agreements

Factor	Item	V	p
Action Aware	I did things spontaneously and automatically without having to think	0.8	*
Action Aware	Things just seemed to happen automatically	0.85	*
C/S	I felt I was competent enough to meet the high demands of the situation	0.85	*
C/S	My abilities matched the high challenge of the situation	0.95	**
C/S	The challenge and my skills were at an equally high level	0.9	**
Communitas	I experienced a sense of belonging with other people	0.95	**
Communitas	I experienced a sense of harmony with other people	0.85	*
Communitas	I experienced a sense of sharing with the people there	0.85	*
Concentration	I had total concentration of the activity or task that I was doing	0.95	**
Concentration	I was completely focused on the task or situation at hand	0.9	**
Fascination	The natural setting had fascinating qualities	0.65	
Fascination	The natural setting or landscape was fascinating	0.7	
Noetic	I had an experience in which a new view of reality was revealed to me	0.55	
Noetic	I had an experience in which deeper aspects of reality were made evident	0.75	
Noetic	I had an experience in which ultimate reality was revealed to me	0.65	
Spiritual	I experienced something as being "divine" in a spiritual sense	0.95	**
Spiritual	I had an experience that I knew to be "sacred" in a spiritual sense	0.9	**
Spiritual	I had an experience that seemed "holy" in a spiritual way	0.85	*
Trans Time	I lost my normal awareness of time	0.7	
Trans Time	The way time passed seemed to be different than normal	0.9	**
Trans Time	Time seemed to alter (either slowed down, or sped up, or I had a sense of timelessness)	0.95	**

Note: \*  $p < .05$  and \*\*  $p < 0.01$ , Right tail probabilities

Atkins V coefficient can also be calculated for each reviewer to see if any are far from the norm. When this was done, one reviewer's answers were not significant (See Table 18).

*Table 18. V Coefficient for Reviewer #5*

Factor	Expert Reviewer #5 Raw Score	s
Action Aware	5	4
Action Aware	5	4
C/S	5	4
C/S	5	4
C/S	5	4
Communitas	5	4
Communitas	5	4
Communitas	5	4
Concentration	5	4
Concentration	5	4
Fascination	0	-1
Fascination	0	-1
Noetic	0	-1
Noetic	3	2
Noetic	3	2
Spiritual	5	4
Spiritual	4	3
Spiritual	5	4
Trans time	1	0
Trans time	4	3
	V coefficient	.59
	p	.47

By removing this expert reviewer's responses, all V coefficients for the 21 agreed factor/items become significant (See Table 19), indicating that both the factor description and items do not need to be changed.

*Table 19. V Coefficient on 21 Factor/Item Agreements with Reviewer #5 Removed*

Factor	Item	V	p
Action Aware	I did things spontaneously and automatically without having to think	0.75	**
Action Aware	Things just seemed to happen automatically	0.81	*
C/S	I felt I was competent enough to meet the high demands of the situation	0.81	*
C/S	My abilities matched the high challenge of the situation	0.94	**
C/S	The challenge and my skills were at an equally high level	0.88	*
Communitas	I experienced a sense of belonging with other people	0.94	**
Communitas	I experienced a sense of harmony with other people	0.81	*
Communitas	I experienced a sense of sharing with the people there	0.81	*
Concentration	I had total concentration of the activity or task that I was doing	0.94	**
Concentration	I was completely focused on the task or situation at hand	0.88	*
Fascination	The natural setting had fascination qualities	0.88	*
Fascination	The natural setting or landscape was fascinating	0.94	**
Noetic	I had an experience in which a new view of reality was revealed to me	0.75	**
Noetic	I had an experience in which deeper aspects of reality were made evident	0.81	*
Noetic	I had an experience in which ultimate reality was revealed to me	0.69	*
Spiritual	I experienced something as being "divine" in a spiritual sense	0.94	**
Spiritual	I had an experience that I knew to be "sacred" in a spiritual sense	0.94	**

Continued

*Table 19. V Coefficient on 21 factor/item Agreements with Reviewer #5 Removed  
Continued*

Factor	Item	V	p
Spiritual	I had an experience that seemed "holy" in a spiritual way	0.81	*
Trans Time	I lost my normal awareness of time	0.88	*
Trans Time	The way time passed seemed to be different than normal	0.94	**
Trans Time	Time seemed to alter (either slowed down, or sped up, or I had a sense of timelessness)	0.94	**

*Note: \*  $p < .05$  and \*\*  $p < 0.01$ , Right tail probabilities*

There was disagreement by one or more experts regarding which of the 12 remaining items were associated with which factors. Below, I outline the original item, followed by the hypothesized factor, followed by the number of times ranked first and second. All of the proposed resolutions maintain the item but make adjustments to the factor name.

The first item, ‘I experienced a perfectly peaceful state’, was hypothesized to be associated with the factor ‘Affect’. One expert ranked this factor first, none ranked it second, and one did not rank it at all. Written feedback included: Peaceful is not equal to positive feeling (rather neutral) and none match, I had no idea where to place “peaceful”; Did you intend this as an affect item?; and I do not associate peacefulness as a positive affect/emotion/feeling, but rather a neutral one. Based on the previous, the following resolution is put forward. There appears to be disagreement on peace and wonder as feelings. Below it is suggested that the factor that includes peace, wonder, and perfection be renamed “positive affect”. This contradicts the above feedback of peace as a “neutral” feeling. However, psychologists Saroglu, Buxant, and Tilquin (2008) explore self-transcendent

positive affect, including the emotions of wonder and awe. They argue that self-transcendent positive emotions can increase self-reported spirituality.

Additionally, Russell, Ward, and Pratt (1981) include peace in their study of affective adjectives that describe environments. Fuller (2006) holds that wonder is a principle element of spirituality and, in North America in particular, an “experience of contemplating how the various parts relate to a greater (even if unobserved) whole” (p. 8-9). In this case, wonder is an emotion that is similar to interest, but heightened.

The second item, ‘I performed automatically, without thinking too much’, was hypothesized to be associated with the factor, ‘Action awareness’. Three experts ranked this factor first, and one ranked it second, while one did not rank it at all. No written feedback was given. The expert who did not rank this with action and awareness merging placed it with the “Fascination” and “Loss of self” factors. It is possible that this expert believed Fascination to mean “hard fascination”, a space where we are unable to reflect. As indicated in the literature review, the Fascination intended in this study is “soft fascination”, indicating the ability to reflect at the same time. As such, the resolution for this issue includes renaming the factor “soft Fascination”.

The third item, ‘I was concerned with how others were evaluating me’, was hypothesized to be associated with the factor ‘Loss of Self-Consciousness’. Three experts ranked this association first, while two ranked it second. Comments included the need to reverse code the items.

The fourth item, ‘I was worried about what others were thinking of me’, was hypothesized to be associated with the factor ‘Loss of Self-Consciousness’.

Two experts ranked this association first, and two experts ranked it second.

Feedback indicated that the item should be reverse-coded.

The fifth item, 'My attention was effortlessly drawn to many interesting things', was hypothesized to be associated with the factor 'Fascination'. Four experts ranked this association first and one expert ranked it second. Feedback included: Nature is a setting that allows for soft fascination (reflection) and reflection is not necessarily on nature itself and the description of the factor describes soft fascination. Fascination occurs on a continuum from hard to soft. One expert ranked merging of action and awareness first. However, this type of one-pointed concentration is not the same as the expansive concentration that is indicated in this item. This issue was resolved by leaving the item unchanged but changing the name of the factor to 'Soft fascination'.

The sixth item, 'I was concerned with what others were thinking of me', was hypothesized to be associated with 'Loss of Self-Consciousness'. Two experts ranked this association first, one ranked it second and two experts chose nothing. The resolution is to reverse code the item.

The seventh item, 'I had an experience that left me with a feeling of wonder', was hypothesized to be associated with the factor 'Affect'. Two experts ranked this association first and one ranked it second. Written feedback indicated that the factor should be called "self-transcendent positive affect". Those experts who did not rank this item with 'Affect' ranked it instead with 'Spiritual' and 'Noetic', or 'Fascination' and 'Spiritual'. To resolve this, as mentioned above, this factor name will be changed to "Self-transcendent positive affect".

The eighth item, 'I had a good idea, while I was engaged in the activity, how well I was doing in it' was hypothesized to be associated with the factor 'Unambiguous Feedback'. Four experts ranked it first, and one did not rank it at all. The only written feedback was that the item was grammatically awkward and this was resolved by removing the commas.

The ninth item, 'I was aware of how well I was doing the activity' was hypothesized to be associated with the factor, 'Unambiguous Feedback'. Four experts ranked this association first while one did not rank it at all. No written feedback was provided and as such there was no resolution.

The tenth item, 'I could tell by the way I was doing the activity how well I was doing' was hypothesized to be associated with 'Unambiguous Feedback'. It was ranked first by four experts and one did not rank it at all. Written feedback was that the item was mediocre and that the other items for 'Unambiguous Feedback' are better. Resolution included looking at previous item/factor matches for this particular expert who ranked all the intended 'Unambiguous Feedback' items with 'Action and Awareness' and 'Challenge/Skill Balance'. Because they placed all three unambiguous feedback items into these other two factors, perhaps they misunderstood or forgot to include the unambiguous feedback factor.

The eleventh item, 'I had an experience in which I felt that all was perfection' was hypothesized to be associated with 'Affect'. It was ranked first by one expert and second by one expert, while three experts left it blank. No written feedback was provided and as mentioned previously, this factor will be changed to "self-transcendent positive affect" with the descriptor changed to I felt overtaken by emotions.

The twelfth item, ‘It was no effort to keep my mind on what was happening’ was hypothesized to be associated with the factor ‘Concentration’. Four experts ranked it first, while one ranked it second. No written feedback was provided, although the one expert that ranked ‘Concentration’ second, ranked ‘Action and Awareness Merging’ first. This item may load on both of these factors and for now it will remain unchanged.

Additional written recommendations included dropping “the experience was quite magical” from the *Communitas* descriptor as it was felt that this phrase was confusing. Table 20 show the updated factors and their descriptors.

*Table 20. Updated Factors and Their Descriptors*

**Action and awareness merging:** I was in the zone and things seemed to happen spontaneously.

Self-transcendent positive affect: I felt overtaken by emotions

**Challenge/skill balance:** I perceived the experience to be challenging, but not beyond my abilities.

Concentration on the task at hand: I was very focused.

**Communitas:** I felt intensely connected to other people and relationships seemed to flow spontaneously.

**Soft Fascination:** This experience happened when I was in a natural landscape where I did not have to focus; yet my attention was captivated effortlessly. I was also able to reflect on life at the same time.

**Loss of self-consciousness:** I felt free from self-consciousness, and I was doing things instinctively and confidently without concern for others.

**Noetic:** This experience engaged alternate forms of knowledge or reality.

**Spiritual:** I felt a connection to a higher power

**Transformation of time:** Time either speeds up or slows down.

**Unambiguous feedback:** Immediate and clear feedback is received, usually from the activity itself.

**Conclusion**

Limitations of the expert review include its small size. With only five expert reviewers initially, and one expert whose scores were below the norm and therefore had to be dropped from the study, the total is at the low end of the range some researchers have recommended (Lynn, 1986). However, the strength of having the scale expertly reviewed before having participants complete it far outweighs this limitation. Many of the experts' recommendations involved grammatical or format suggestions, while others led to the factor descriptions being modified and, subsequently, the PDEs being clarified. The next chapter, with its focus on the findings of a series of confirmatory factor analyses, will further enhance the comprehensive PDE scale's construct validity (Messick, 1989).

## **Chapter Six: Survey**

### **Introduction**

One of the primary purposes of this dissertation was to develop and test a comprehensive PDE scale composed of the ‘Big Four’: Communitas, Fascination, Flow, and Spiritual experiences. To accomplish this objective, a four-stage process took place. First, a preliminary version of the survey was developed based on a review of the literature. Second, this preliminary survey was then scrutinized by twelve interviewees to discover if there were any omissions in the scale and to evaluate its overall readability. Third, the scale was then tested using expert review to determine its content validity. Fourth, 431 respondents completed the final version of the comprehensive PDE survey. This chapter focuses on the final stage. Within the current chapter is a description of the data collection procedures, a report of the descriptive data, as well as the final results for the confirmatory factor analysis and structural equation model.

### **Method**

The final version of the comprehensive PDE survey (see Appendix C) was uploaded to Survey Monkey on November 15<sup>th</sup>, 2011. The website link was disseminated via several means. For example, an email was sent to a number of organizations with the request that the link either be forwarded to listservs or to staff members. Organizations were chosen based on their outdoor focus and included: Alberta Council of Environmental Educators, Alberta Hiking Association, Camper’s Village, City of Edmonton Master Composters, City of Edmonton Master Naturalists, Devonian Botanical Gardens, Edmonton

Horticultural Society, Edmonton Naturalization Group, Edmonton Nature Club, Edmonton Nordic Ski Club, Global Environmental and Outdoor Educators, Grant MacEwan University Mountaineering Club, Strathcona Wilderness Centre, University of Alberta Outdoor Club, and Wild Bird General Store.

Additionally, advertisements were placed in the University of Alberta's *Folio* and the University of Alberta's undergraduate publication *The Gateway* in early December 2011. These ads asked individuals who had had a special or meaningful nature experience to go to the link and complete the survey. Posters were also hung at the Mountain Equipment Co-op, Urban Uprising climbing centre, and in the city of Edmonton's urban parks. As a result of the advertisements, on December 28<sup>th</sup> 2011, the *Edmonton Journal* requested an interview that was subsequently published on the first page of the *Journal* on January 1<sup>st</sup>, 2012 and then also syndicated to *The Calgary Herald* and the *Vancouver Sun* on January 2<sup>nd</sup> and 3<sup>rd</sup>, respectively. Finally, interviews were conducted with the University of Alberta's student paper *The Gateway* on January 13<sup>th</sup>, 2012 and to a live radio show on *630 CHED* on January 11<sup>th</sup>, 2012.

Data were downloaded from Survey Monkey on March 18, 2012. The data were cleaned and run for both confirmatory factor analysis (CFA) and structural equation modeling (SEM). CFA is very similar to exploratory factor analysis (EFA) in that the nature of the relationships between measured variables and factors is of primary interest to the researcher. However, CFA is used when there is a strong rationale and an a priori specification of these relationships (Reis & Judd, 2000). As Fabrigar, Wegener, MacCallum, and Strahan (1999) state: "when there is sufficient theoretical and empirical basis for a researcher to specify the

model or small subset of models that is the most plausible, CFA is likely to be a better approach” (p. 277). The CFA PDE model is based on a strong theoretical rationale as the items and factors of the ‘Big Four’ are based on previous surveys (i.e., Perceived Restorativeness Scale (Korpela et al., 2001), Flow State Scale-2 (Jackson et al., 2008 ), Mysticism Scale (Hood et al., 1993), Flow, Communitas, and Enduring Involvement Scale (McGinnis et al., 2008).

In particular, CFA allows for predicting: (a) the number of factors, and (b) the relationship between the factors and measured variables. The CFA PDE model is based on two major hypotheses, for example: (a) Does an eleven-factor model with simple structure (i.e., each variable loading only on one factor) fit the data?, and (b) Is there significant covariance among the factors (i.e., Noetic, Affect, Spiritual, Transformation of Time, Loss of Self, Unambiguous Feedback, Action Awareness, Concentration, Challenge Skill Balance, Communitas, and Fascination) (Tabachnick & Fidell, 2007)?

The appropriate sample size for the planned statistical analysis can be determined in a variety of ways, including the minimum  $N$  needed for CFA, the minimum ratio of  $N$  to measured variables, and the sample size needed for the degrees of freedom in the study in order to maintain sufficient power. Kelloway (1998) states minimum sample sizes for CFA as 200, or a ratio of parameters to cases between 1:5 and 1:10 (Hu & Bentler, 1999). A ratio of five cases per measured variable would meet the minimum sample requirements (Gorsuch, 1983). MacCallum, Browne, and Sugarwara (1996) agree with the ratio method of estimating of sample size as long as each factor is overdetermined (i.e., at least three items) and communalities are on average at least 0.7.

In this analysis, the 431 cases from the data collected on the PDE survey were randomly split into two groups using SPSS. This was done for the purpose of cross-validation, a common statistical practice (Kim et al., 2012). This created two groups: a test sample, with 224 cases, and a cross-validation sample, with 207 cases. Both sample sizes are more than an adequate number of cases necessary for a CFA (Kelloway, 1998). Additionally, the hypothesized model meets the other suggested standards with a ratio of six cases per variable measured (Gorsuch, 1983) and post-hoc communalities average of 0.68 (MacCallum et al., 1996).

### **Analysis**

Tabachnick and Fidell (2007) outline a process for cleaning and preparing the data for analysis consisting of four main areas: (a) checking the accuracy of the data input and dealing with missing data and skewed distributions; (b) checking for univariate outliers and conducting transformations; (c) checking multivariate assumptions, conducting transformations, and checking for multivariate outliers; and (d) checking for highly correlated variables.

### **Input, missing data, and distribution issues**

#### *Accuracy of input*

The data were downloaded from Survey Monkey into Excel and then into SPSS. Tabachnick and Fidell (2007) recommend proofreading the original data and state that screening for accuracy involves using descriptive statistics and determining if all the values are within range and plausible for discrete variables.

### *Missing data issues*

Tabachnick and Fidell (2007) state that: (a) the pattern of missing data is more important than how much data is missing, and (b) random missing values are a less serious problem than non-random missing data because the latter influence the generalizability of results. The authors include a categorization of missing results as follows, listed from the best to worst scenario: (a) MCAR (i.e., missing completely at random), (b) MAR (i.e., missing at random), and (c) MNAR (i.e., missing not at random).

The first two scenarios are ignorable, in other words, the missing data will not impact the data analysis in predictable ways. The third scenario, MNAR, is not ignorable and missing data must be dealt with. Although missing data requires attention, “unfortunately, there are as yet no firm guidelines for how much missing data can be tolerated for a sample of a given size” (2007, p. 63). Additionally, as Schafer and Graham (2002) state: "When missingness is beyond the researcher's control, its distribution is unknown and MAR is only an assumption. In general, there is no way to test whether MAR holds in a data set, except by obtaining follow-up data from nonrespondents or by imposing an unverifiable model" (p. 152).

Because the university-issued statistical package did not include the SPSS Missing Values Analysis software, I dealt with missing data and the subsequent deletion of cases manually. Survey Monkey downloads any survey that has at least one answer. In this case, if a respondent checked that they had read and agreed with the survey protocols and then skipped through to the end of the

survey, they were counted as having completed the survey. A total of 627 surveys were downloaded from Survey Monkey. Of these surveys, 35 participants indicated that they did not have a memorable nature experience. These respondents were deleted. Twenty-six individuals did not indicate whether or not they had had a memorable nature experience and were dropped from the study (i.e., Incomplete). This left 566 individuals who indicated they did have a memorable nature experience (See Table 20).

*Table 21. I Have Had a Special, Out-of-the-Ordinary, or Meaningful Nature Experience*

	Frequency	Percent	Valid Percent
Incomplete	26	4.1	4.1
No	35	5.6	5.6
Yes	566	90.3	90.3
Total	627	100.0	100.0

To further explore the missing data, I created a dummy variable with the first question on the PDE experience (i.e., ‘I had an expanded view of reality’) as well as the last question (i.e., ‘It was no effort to keep my mind on what was happening’). I did this because I wanted to determine if participants who did not start the survey also did not complete the end of the survey. Additionally, I created a dummy variable for “income” as Tabachnick and Fidell (2007) state that income is a question that is often skipped because of its sensitivity. I then combined the three dummy variables into one amalgamated dummy variable. The frequency of this dummy variable, labeled ‘Missing Data PDE and Income’ is reported in Table 21 where missing data was coded as -1 and all other answers (i.e., 1 to 5 and N/A) were coded as a 1.

*Table 22. Missing Data PDE and Income*

Code	Frequency	Percent	Valid Percent
-1.00	76	13.4	13.4
1.00	490	86.6	86.6
Total	566	100.0	100.0

When I reorganized the data based on the dummy variable ‘Missing Data PDE and Income’ it was clear that the 76 cases who did not answer ‘I had an expanded view of reality’, ‘It was no effect to keep my mind on what was happening’ and “income”, also did not answer *any* of the PDE questions or demographic questions. Consequently, these cases were removed because they were deemed to have insufficient data. It was also clear that the remaining 490 cases had completed most of the survey. Finally, respondents who indicated their PDE’s occurred more than six months ago, as well as those who did not indicate when their PDE happened, were also deleted, leaving 463 cases for analysis (see Table 23).

Table 23. When Did Your PDE Happen

	Frequency	Percent	Valid Percent	Cumulative Percent
In the last week	33	6.7	6.8	6.8
In the last month	63	12.7	12.7	19.5
In the last three months	112	22.9	23.0	42.5
In the last six months	255	52.0	52.4	94.9
In the last year*	9	1.8	1.8	96.7
In the last five years*	8	1.6	1.6	98.4
More than five years*	8	1.6	1.6	100.0
Total	488	99.4	100.0	
Missing	2	0.6		
Total	490	100.0		

\*Note: These individuals were not included in the analysis

Frequency distributions for the rest of the variables were then created for the remaining 463 cases to determine if more than 5% of the data were missing, the benchmark for potential deletion according to Tabachnick and Fidell (2007) concern. However, only Income, Religion, and Ethnicity were missing more than 5% and because these variables are descriptive in nature and will not be included in the structural equation model there was no need to further consider the missing data.

A different Survey Monkey link was utilized to identify those individuals who filled out the survey after listening to the live interview or reading the newspaper articles, as these individuals had more knowledge about the project going into the survey and, consequently, may have been 'primed'. This group of respondents was then compared to the group of respondents who filled out the survey before the interview and articles. A dummy variable was created to analyze differences in means for the Pre-*Journal* article group and the Post-*Journal* article group. A frequency distribution (i.e., Table 24) indicates that there

are one hundred and forty five 'Pre *Journal*' respondents and three hundred and eighteen 'Post *Journal*' respondents.

*Table 24. Frequency Pre- and Post-Edmonton Journal Article*

	Frequency	Valid Percent
Post Journal	318	68.7
Pre Journal	145	31.3
Total	463	100.0

A one-way ANOVA was conducted to compare the means between the two groups. In this case, the null hypothesis is that the two groups are equal. As such,  $p < .001$  was chosen to be stringent and decrease the chance of rejecting the null when it is true (i.e., a Type I error). As the group sizes were different, homogeneity of variance was a potential issue (Field, 2005). However, at  $p < .001$  and as reported in Table 25, none of the comparisons are significant, supporting the null hypothesis that the two participant groups' responses are the same.

Table 25. One-way ANOVA, Pre- and Post-Edmonton Journal Article

		Sum of		<i>M</i>		
		Squares	<i>df</i>	<i>Square</i>	<i>F</i>	<i>S</i>
New view of reality	Between Groups	5.02	1	5.02	2.11	0.15
	Within Groups	1094.49	461	2.37		
	Total	1099.50	462			
Peaceful state	Between Groups	4.92	1	4.92	2.91	0.09
	Within Groups	773.30	458	1.69		
	Total	778.22	459			
Sense of sharing	Between Groups	13.36	1	13.36	3.15	0.08
	Within Groups	1943.58	458	4.24		
	Total	1956.95	459			
Worried what others thinking	Between Groups	1.80	1	1.80	2.41	0.12
	Within Groups	344.23	459	0.75		
	Total	346.04	460			
Performed automatically	Between Groups	2.12	1	2.12	0.69	0.41
	Within Groups	1409.70	458	3.08		
	Total	1411.82	459			
Sense of harmony	Between Groups	8.74	1	8.74	2.38	0.12
	Within Groups	1677.30	456	3.68		
	Total	1686.04	457			
Divine	Between Groups	16.72	1	16.72	5.21	0.02
	Within Groups	1465.31	456	3.21		
	Total	1482.04	457			
Time passed differently	Between Groups	14.65	1	14.65	5.64	0.02
	Within Groups	1187.21	457	2.60		
	Total	1201.86	458			
Landscape fascinating	Between Groups	0.10	1	0.10	0.09	0.76
	Within Groups	515.52	457	1.13		
	Total	515.63	458			
Things happened automatically	Between Groups	0.09	1	0.09	0.03	0.86
	Within Groups	1349.50	453	2.98		
	Total	1349.59	454			
Abilities match challenge	Between Groups	19.43	1	19.43	4.79	0.03
	Within Groups	1847.02	455	4.06		
	Total	1866.45	456			

Continued

Table 25. One-way ANOVA, Pre- and Post-Edmonton Journal Article - Continued

		Sum of		<i>M</i>		
		Squares	<i>df</i>	<i>Square</i>	<i>F</i>	<i>S</i>
Concerned others evaluation	Between Groups	5.17	1	5.17	6.71	0.01
	Within Groups	352.18	457	0.77		
	Total	357.35	458			
Total concentration	Between Groups	1.34	1	1.34	0.53	0.47
	Within Groups	1144.71	455	2.52		
	Total	1146.05	456			
Deeper aspects reality	Between Groups	3.17	1	3.17	1.10	0.30
	Within Groups	1308.30	455	2.88		
	Total	1311.47	456			
Effortless attention	Between Groups	1.21	1	1.21	0.76	0.38
	Within Groups	722.09	454	1.59		
	Total	723.30	455			
Sacred	Between Groups	8.79	1	8.79	2.57	0.11
	Within Groups	1551.17	454	3.42		
	Total	1559.97	455			
Concerned with what others thinking	Between Groups	4.33	1	4.33	7.39	0.01
	Within Groups	267.12	456	0.59		
	Total	271.44	457			
Wonder	Between Groups	0.04	1	0.04	0.02	0.89
	Within Groups	894.29	456	1.96		
	Total	894.33	457			
How well I was doing	Between Groups	3.42	1	3.42	0.93	0.34
	Within Groups	1674.65	455	3.68		
	Total	1678.07	456			
Ultimate reality revealed	Between Groups	0.61	1	0.61	0.20	0.66
	Within Groups	1378.08	451	3.06		
	Total	1378.68	452			
Competent meet high demands	Between Groups	21.20	1	21.20	4.86	0.03
	Within Groups	1978.96	454	4.36		
	Total	2000.16	455			
Aware how well doing	Between Groups	12.66	1	12.66	3.37	0.07
	Within Groups	1705.24	454	3.76		
	Total	1717.89	455			
I did things spontaneously	Between Groups	0.00	1	0.00	0.00	0.98
	Within Groups	1275.29	453	2.82		
	Total	1275.29	454			

Table 25. One-way ANOVA, Pre- and Post-Edmonton Journal Article - Continued

		Sum of		<i>M</i>		
		Squares	<i>df</i>	<i>Square</i>	<i>F</i>	<i>S</i>
Could tell how well doing	Between Groups	5.22	1	5.22	1.35	0.25
	Within Groups	1738.08	450	3.86		
	Total	1743.30	451			
Completely focused	Between Groups	9.81	1	9.81	4.00	0.05
	Within Groups	1096.20	447	2.45		
	Total	1106.00	448			
Holy	Between Groups	8.43	1	8.43	2.29	0.13
	Within Groups	1658.64	450	3.69		
	Total	1667.07	451			
Sense of belonging	Between Groups	9.14	1	9.14	2.33	0.13
	Within Groups	1781.74	454	3.93		
	Total	1790.88	455			
Lost awareness of time	Between Groups	7.79	1	7.79	3.02	0.08
	Within Groups	1163.29	451	2.58		
	Total	1171.08	452			
Natural setting fascinating	Between Groups	0.12	1	0.12	0.11	0.74
	Within Groups	506.09	452	1.12		
	Total	506.21	453			
Challenge and skill high	Between Groups	15.69	1	15.69	4.13	0.04
	Within Groups	1700.79	448	3.80		
	Total	1716.48	449			
All was perfection	Between Groups	3.98	1	3.98	1.40	0.24
	Within Groups	1288.45	453	2.84		
	Total	1292.43	454			
Time slowed	Between Groups	15.26	1	15.26	5.45	0.02
	Within Groups	1269.25	453	2.80		
	Total	1284.51	454			
No effort to keep my mind	Between Groups	0.24	1	0.24	0.14	0.71
	Within Groups	749.60	452	1.66		
	Total	749.84	453			

**Distributions: PDE-Scale Items**

Table 26 reports the descriptive statistics for all of the items included in the confirmatory factor analysis (CFA) and the structural equation model (SEM) (i.e., all of the PDE items as well as ‘Physical setting’ and ‘Who with’ items).

Noteworthy here is that Table is organized so that each factor is listed with the hypothesized corresponding items.

Table 26. Descriptive Statistics

Factor	Variable	<i>N</i>	Min	Max	<i>M</i>	<i>SD</i>
NOETIC	New view of reality	463	1	6	3.93	1.54
NOETIC	Ultimate reality revealed	453	1	6	3.27	1.75
NOETIC	Deeper aspects of reality	457	1	6	4.07	1.70
AFFECT	Peaceful state	460	1	6	4.96	1.30
AFFECT	Wonder	458	1	6	4.92	1.40
AFFECT	All was perfection	455	1	6	4.15	1.69
SPIRITUAL	Divine	458	1	6	4.05	1.80
SPIRITUAL	Holy	452	1	6	3.35	1.92
SPIRITUAL	Sacred	456	1	6	3.82	1.85
TIME	Time passed differently	459	1	6	4.28	1.62
TIME	Lost awareness of time	453	1	6	4.12	1.61
TIME	Time slowed	455	1	6	4.11	1.68
LOSS	Concerned others evaluation	459	1	6	1.59	0.88
LOSS	Worried what others thinking	461	1	6	1.58	0.87
LOSS	Concerned others thinking	458	1	6	1.55	0.77
UNAM.	How well I was doing	457	1	6	3.32	1.92
UNAM.	Aware how well I was doing	456	1	6	3.48	1.94
UNAM.	Could tell how well I was doing	452	1	6	3.37	1.97
ACTION	I did things spontaneously	455	1	6	4.27	1.68
ACTION	Performed automatically	460	1	6	4.14	1.75
ACTION	Things happen automatically	455	1	6	4.20	1.72
CONC.	Completely focused	449	1	6	4.48	1.57
CONC.	No effort to keep my mind	454	1	6	4.95	1.29
CONC.	Total concentration	457	1	6	4.48	1.59
CSBAL	Challenge and skill high	450	1	6	3.51	1.96
CSBAL	Abilities match challenge	457	1	6	3.61	2.02
CSBAL	Competent meet high demands	456	1	6	3.69	2.10
COMM.	Sense of sharing	460	1	6	4.01	2.07
COMM.	Sense of harmony	458	1	6	3.84	1.92
COMM.	Sense of belonging	456	1	6	3.62	1.98
FASC.	Landscape fascinating	459	1	6	5.39	1.06
FASC.	Effortless attention	456	1	6	5.11	1.26
FASC.	Natural setting fascinating	454	1	6	5.39	1.06

Continued

*Table 26. Descriptive Statistics - Continued*

Factor	Variable	<i>N</i>	Min	Max	<i>M</i>	<i>SD</i>
Not Applicable	Who with	451	1	2	---	---
Not Applicable	Physical setting	463	1	5	---	---
Valid <i>N</i> (listwise)		380				

\**Note:* ‘Who with’ and ‘Physical setting’ are dichotomous and categorical variables and as such, mean and standard deviation are not reported.

Skewness and kurtosis statistics are provided (Table 27) for the items that will be included in the CFA and SEM and Figure 9 outlines this information pictorially. Both these indices reveal how the far the data strays from the normal curve. More specifically, a positive skewness indicates that the data is overrepresented in the lower scale and vice versa for negative skewness. Negative kurtosis indicates the data are overrepresented centrally, pictorially represented by a curve that is spiked (i.e., leptokurtic), while positive kurtosis is an equal representation of all the responses and is pictorially represented by a flat top (i.e., platykurtic). Tabachnick and Fidell (2007) indicate that a skewness index over two, and Wegener and Fabrigar (1999) indicate that a Kurtosis index over seven, require transformations. Based on these guidelines, the items ‘Worried what others thinking’ (2.261), ‘Landscape fascinating’ (-2.040), ‘Concerned with others’ evaluation’ (2.209), ‘Concerned others thinking’ (2.042), and ‘Natural setting fascinating’ (-2.107) would need to be transformed for negative and positive skewness, whereas ‘Worried what others thinking’ (7.028) would need to be transformed for leptokurtic kurtosis (See Figure 9). However, Tabachnick and Fidell (2007) also hold that transformations make it more difficult to interpret results. As the items in bold are only marginally in need of transformation, it was decided to leave all of the items as they are at this time.

Table 27. Skewness and Kurtosis of SEM Items\*

Factor	Variable	N	Skewness		Kurtosis	
			Stat	SE	Stat	SE
NOETIC	New view of reality	463	-0.35	0.11	-0.92	0.23
NOETIC	Ultimate reality revealed	453	0.11	0.12	-1.35	0.23
NOETIC	Deeper aspects of reality	457	-0.52	0.11	-1.03	0.23
AFFECT	Peaceful state	460	-1.40	0.11	1.36	0.23
AFFECT	Wonder	458	-1.41	0.11	1.19	0.23
AFFECT	All was perfection	455	-0.65	0.11	-0.84	0.23
SPIRITUAL	Divine	458	-0.46	0.11	-1.21	0.23
SPIRITUAL	Holy	452	0.11	0.12	-1.52	0.23
SPIRITUAL	Sacred	456	-0.27	0.11	-1.39	0.23
TIME	Time passed differently	459	-0.66	0.11	-0.78	0.23
TIME	Lost awareness of time	453	-0.56	0.12	-0.82	0.23
TIME	Time slowed	455	-0.58	0.11	-0.92	0.23
LOSS	<b>Concerned others evaluation</b>	<b>459</b>	<b>2.21</b>	<b>0.11</b>	<b>6.33</b>	<b>0.23</b>
LOSS	<b>Worried others thinking</b>	<b>461</b>	<b>2.26</b>	<b>0.11</b>	<b>7.03</b>	<b>0.23</b>
LOSS	<b>Concerned others thinking</b>	<b>458</b>	<b>2.04</b>	<b>0.11</b>	<b>6.65</b>	<b>0.23</b>
UNAM.	How well I was doing	457	-0.01	0.11	-1.55	0.23
UNAM.	Aware how well I was doing	456	-0.16	0.11	-1.57	0.23
UNAM.	Could tell how well doing	452	-0.08	0.12	-1.63	0.23
ACTION	I did things spontaneously	455	-0.82	0.11	-0.56	0.23
ACTION	Performed automatically	460	-0.58	0.11	-1.04	0.23
ACTION	Things happen automatically	455	-0.65	0.11	-0.87	0.23
CONC.	Completely focused	449	-0.98	0.12	-0.10	0.23
CONC.	No effort to keep my mind	454	-1.43	0.12	1.65	0.23
CONC.	Total concentration	457	-0.89	0.11	-0.35	0.23
CSBAL	Challenge and skill high	450	-0.17	0.12	-1.55	0.23
CSBAL	Abilities match challenge	457	-0.24	0.11	-1.60	0.23
CSBAL	Competent meet high demands	456	-0.27	0.11	-1.64	0.23
COMM.	Sense of sharing	460	-0.50	0.11	-1.45	0.23
COMM.	Sense of harmony	458	-0.42	0.11	-1.36	0.23
COMM.	Sense of belonging	456	-0.18	0.11	-1.58	0.23
FASC.	<b>Landscape fascinating</b>	<b>459</b>	<b>-2.04</b>	<b>0.11</b>	<b>3.95</b>	<b>0.23</b>
FASC.	Effortless attention	456	-1.59	0.11	1.86	0.23
FASC.	<b>Natural setting fascinating</b>	<b>454</b>	<b>-2.11</b>	<b>0.12</b>	<b>4.24</b>	<b>0.23</b>

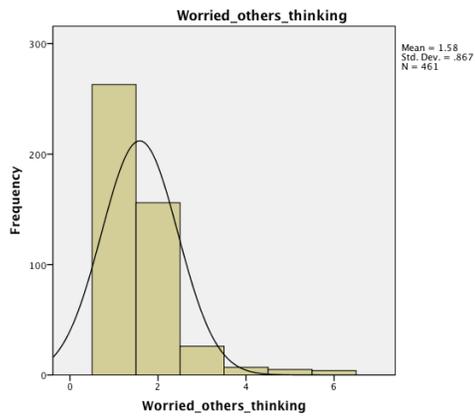
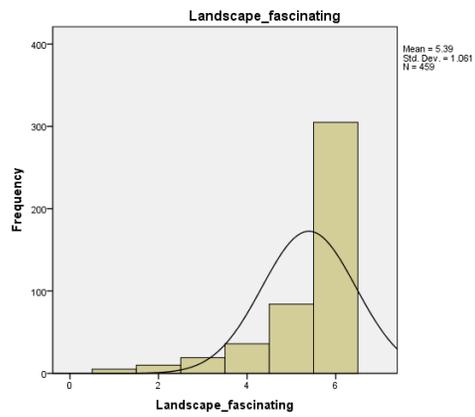
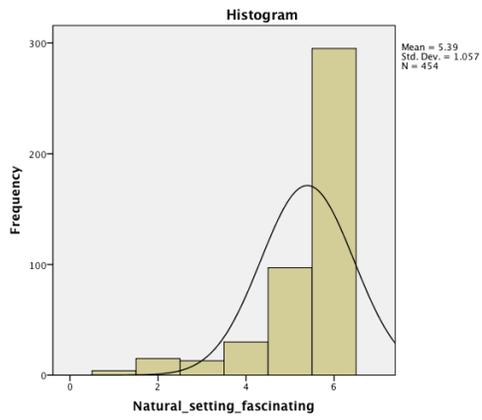
Continued

*Table 27. Skewness and Kurtosis of SEM Items – Continued\**

Not applicable	Who with	451	-1.51	0.12	0.28	0.23
Not applicable	Physical setting	463	1.04	0.11	2.07	0.23
	Valid <i>N</i> (listwise)	380				

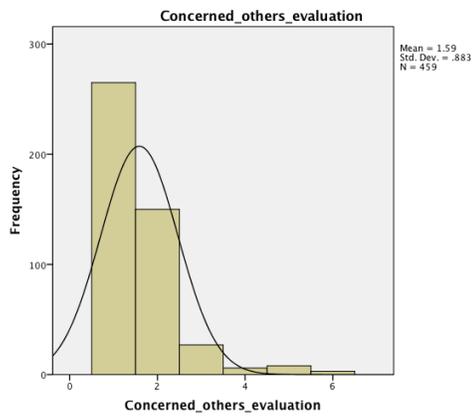
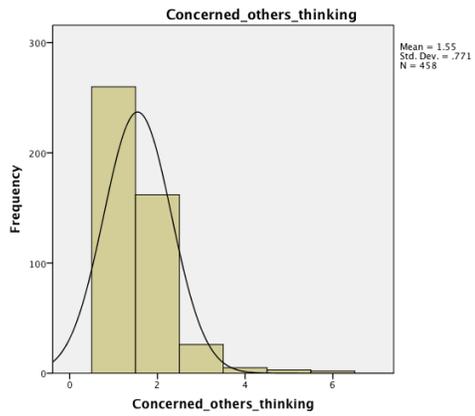
\*Note: Bold font indicates a skewness over 2.0

Figure 9. Skewness and kurtosis of five SEM items



Continued

Figure 9. Skewness and Kurtosis of five SEM items - Continued



### **Univariate outliers and transformations**

With dichotomous variables, univariate outliers are those variables with more than a 90/10 split because the category with fewer cases (i.e., the ten percent) is more influential than the category with more cases (i.e., the ninety percent). My four dichotomous variables, 'Activity caused PDE', 'Gender', 'Partner status' and the reconfigured 'Who with', have less than a 90/10 split and therefore are not considered to be outliers.

For discrete variables, outliers can be found by converting raw scores to standardized  $z$ -scores. If the minimum or maximum score is more than 3 standard deviations (i.e., +/- 3.29) away from the mean (i.e., 0), outliers are present in the data set (Tabachnick & Fidell, 2007). As reported in Table 27, the five-bolded items fall outside of this range (i.e., 'Worried what others thinking', 'Concerned with others evaluation', 'Concerned others thinking' 'Landscape fascinating', 'Natural setting fascinating').

Table 28. Z-scores for SEM Items\*

Factor	Variable	N	Min.	Max.
NOETIC	New view of reality	463	-1.90	1.34
NOETIC	Ultimate reality revealed	453	-1.30	1.56
NOETIC	Deeper aspects of reality	457	-1.81	1.14
AFFECT	Peaceful state	460	-3.04	0.80
AFFECT	Wonder	458	-2.80	0.77
AFFECT	All was perfection	455	-1.86	1.10
SPIRITUAL	Divine	458	-1.69	1.09
SPIRITUAL	Holy	452	-1.22	1.38
SPIRITUAL	Sacred	456	-1.53	1.17
TIME	Time passed differently	459	-2.02	1.06
TIME	Lost awareness of time	453	-1.94	1.17
TIME	Time slowed	455	-1.85	1.12
LOSS OF SELF	<b>Concerned others evaluation</b>	<b>459</b>	<b>-0.66</b>	<b>5.00</b>
LOSS OF SELF	<b>Worried what others thinking</b>	<b>461</b>	<b>-0.67</b>	<b>5.09</b>
LOSS OF SELF	<b>Concerned others thinking</b>	<b>458</b>	<b>-0.71</b>	<b>5.78</b>
UNAMBIGUOUS	How well I was doing	457	-1.21	1.40
UNAMBIGUOUS	Aware how well I was doing	456	-1.28	1.29
UNAMBIGUOUS	Could tell how well I was doing	452	-1.21	1.34
ACTION	I did things spontaneously	455	-1.95	1.03
ACTION	Performed automatically	460	-1.79	1.06
ACTION	Things happen automatically	455	-1.85	1.05
CONCENTRATION	Completely focused	449	-2.21	0.97
CONCENTRATION	No effort to keep my mind	454	-3.07	0.82
CONCENTRATION	Total concentration	457	-2.19	0.96
CSBAL	Challenge and skill high	450	-1.28	1.28
CSBAL	Abilities match challenge	457	-1.29	1.18
CSBAL	Competent meet high demands	456	-1.28	1.10
COMMUNITAS	Sense of sharing	460	-1.46	0.96
COMMUNITAS	Sense of harmony	458	-1.48	1.13
COMMUNITAS	Sense of belonging	456	-1.32	1.20
FASCINATION	<b>Landscape fascinating</b>	<b>459</b>	<b>-4.14</b>	<b>0.57</b>
FASCINATION	Effortless attention	456	-3.26	0.70
FASCINATION	<b>Natural setting fascinating</b>	<b>454</b>	<b>-4.15</b>	<b>0.58</b>
Valid N (after listwise deletion)		392		

\*Note: Bold indicates outliers. *M* is 0 and *SD* is 1 for all variables.

The frequency distributions for the five items with univariate outliers are reported in Tables 29 through Table 33.

*Table 29. Worried What Others Thinking*

	Frequency	Percent	Valid Percent	Cumulative Percent
Not applicable	263	56.8	57.0	57.0
To a small extent	156	33.7	33.8	90.9
To some extent	26	5.6	5.6	96.5
To a moderate extent	7	1.5	1.5	98.0
To a great extent	5	1.1	1.1	99.1
To a very great extent	4	.9	.9	100.0
Total	461	99.6	100.0	
Missing	2	.4		
Total	463	100.0		

*Table 30. Landscape Fascinating*

	Frequency	Percent	Valid Percent	Cumulative Percent
Not applicable	5	1.1	1.1	1.1
To a small extent	10	2.2	2.2	3.3
To some extent	19	4.1	4.1	7.4
To a moderate extent	36	7.8	7.8	15.3
To a great extent	84	18.1	18.3	33.6
To a very great extent	305	65.9	66.4	100.0
Total	459	99.1	100.0	
Missing	4	.9		
Total	463	100.0		

*Table 31. Concerned Others Evaluation*

	Frequency	Percent	Valid Percent	Cumulative Percent
Not applicable	265	57.2	57.7	57.7
To a small extent	150	32.4	32.7	90.4
To some extent	27	5.8	5.9	96.3
To a moderate extent	6	1.3	1.3	97.6
To a great extent	8	1.7	1.7	99.3
To a very great extent	3	.6	.7	100.0
Total	459	99.1	100.0	
Missing	4	.9		
Total	463	100.0		

*Table 32. Concerned Others Thinking*

	Frequency	Percent	Valid Percent	Cumulative Percent
Not applicable	260	56.2	56.8	56.8
To a small extent	162	35.0	35.4	92.1
To some extent	26	5.6	5.7	97.8
To a moderate extent	5	1.1	1.1	98.9
To a great extent	3	.6	.7	99.6
To a very great extent	2	.4	.4	100.0
Total	458	98.9	100.0	
Missing	5	1.1		
Total	463	100.0		

*Table 33. Natural Setting Fascinating*

	Frequency	Percent	Valid Percent	Cumulative Percent
Not applicable	4	.9	.9	.9
To a small extent	15	3.2	3.3	4.2
To some extent	13	2.8	2.9	7.0
To a moderate extent	30	6.5	6.6	13.7
To a great extent	97	21.0	21.4	35.0
To a very great extent	295	63.7	65.0	100.0
Total	454	98.1	100.0	
Missing	9	1.9		
Total	463	100.0		

Tabachnick and Fidell (2007) report that if it is known that respondents are from the intended population, that the outlier scores be changed so that they do not influence the data in unknown ways. For example ‘Worried what others thinking’ has four cases ‘To a very great extent’ that can be changed to ‘To a great extent’. When the outliers are amalgamated as per their recommendation, all five items still have outliers when the data is rechecked using Z-scores.

*Table 34. Z-scores For SEM Items, Amalgam One*

	N	Min	Max	M	SD
Z-score: Worried others thinking	461	-0.70	4.14	0.00	1.00
Z-score: Landscape fascinating	459	-0.58	3.34	0.00	1.00
Z-score: Concerned others evaluation	459	-0.68	4.01	0.00	1.00
Z-score: Concerned others thinking	458	-0.73	4.62	0.00	1.00
Z-score: Natural setting fascinating	454	-0.59	3.32	0.00	1.00
Valid N (after listwise deletion)	450				

All of the items were further amalgamated (e.g., for the item ‘Worried others thinking’ the now nine cases in the category ‘to a great extent’ were amalgamated with the category ‘to a moderate extent’). Table 34 shows that this amalgamation worked for all items except ‘Concerned others thinking’.

Therefore, another amalgamation was done for ‘Concerned others thinking’ and Table 35 and Table 36 demonstrate that the outliers disappear. All further statistical tests are based on these amalgamated items.

*Table 35. Z-scores For SEM Items, Amalgam Two*

	N	Min	Max	M	SD
Z-score: Worried others thinking	461	-0.74	3.24	0.00	1.00
Z-score: Landscape fascinating	459	-0.61	2.65	0.00	1.00
Z-score: Concerned others evaluation	459	-0.72	3.19	0.00	1.00
Z-score: Concerned others thinking	458	-0.76	3.51	0.00	1.00
Z-score: Natural setting fascinating	454	-0.62	2.73	0.00	1.00
Valid N (after listwise deletion)	450				

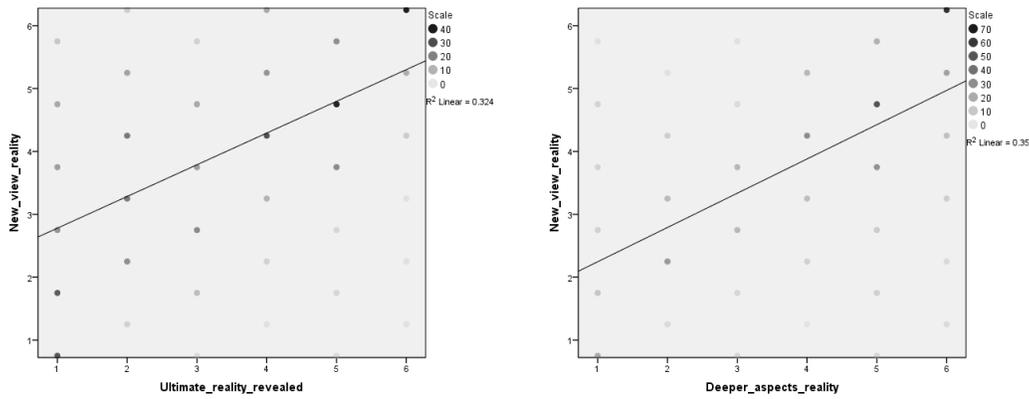
*Table 36. Z-scores for SEM Items, Amalgam Three*

	N	Min	Max	<i>M</i>	<i>SD</i>
Z-score: Concerned others thinking	458	0.80	2.33	0.00	1.00
Valid <i>N</i> (after listwise deletion)	458				

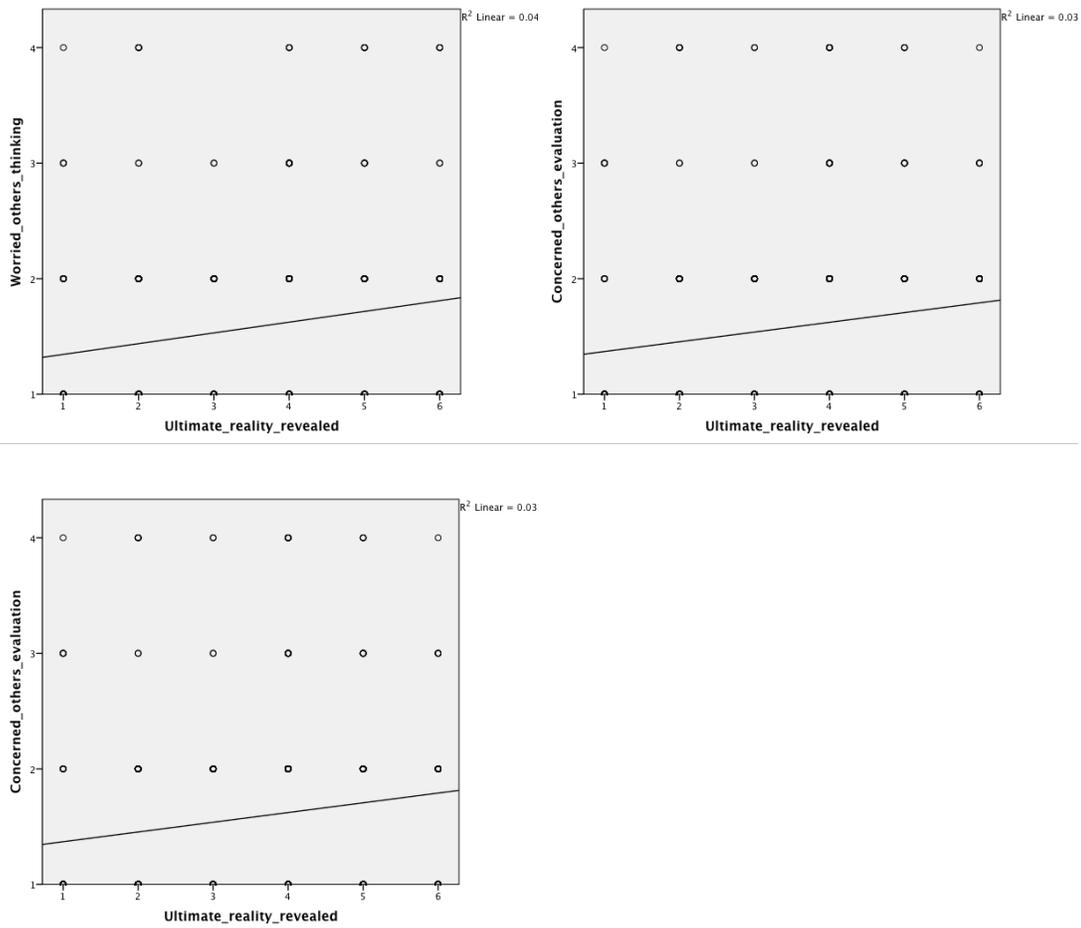
### **Linearity and homoscedasticity**

Tabachnick and Fidell (2007) suggest testing for linearity, or a straight-line relationship between two variables, by using bivariate scatterplots. This is important because assumptions of linearity occur with many statistical indices, for example, all tests of correlation (e.g. Pearson's *r*). Tabachnick and Fidell recommend using a comparison variable with skewness and kurtosis indices closest to zero and therefore closest to a normal distribution. Therefore, the item 'Ultimate reality' was compared to all other variables. This comparison was done to assess linearity and homoscedasticity, although as noted by Tabachnick and Fidell, heteroscedasticity is not serious for ungrouped data analysis such as SEM. The results reported in Figure 10 are grouped by the appropriate factor.

Figure 10. Bivariate scatterplots to determine linearity, Noetic (with Ultimate Reality the comparison variable)



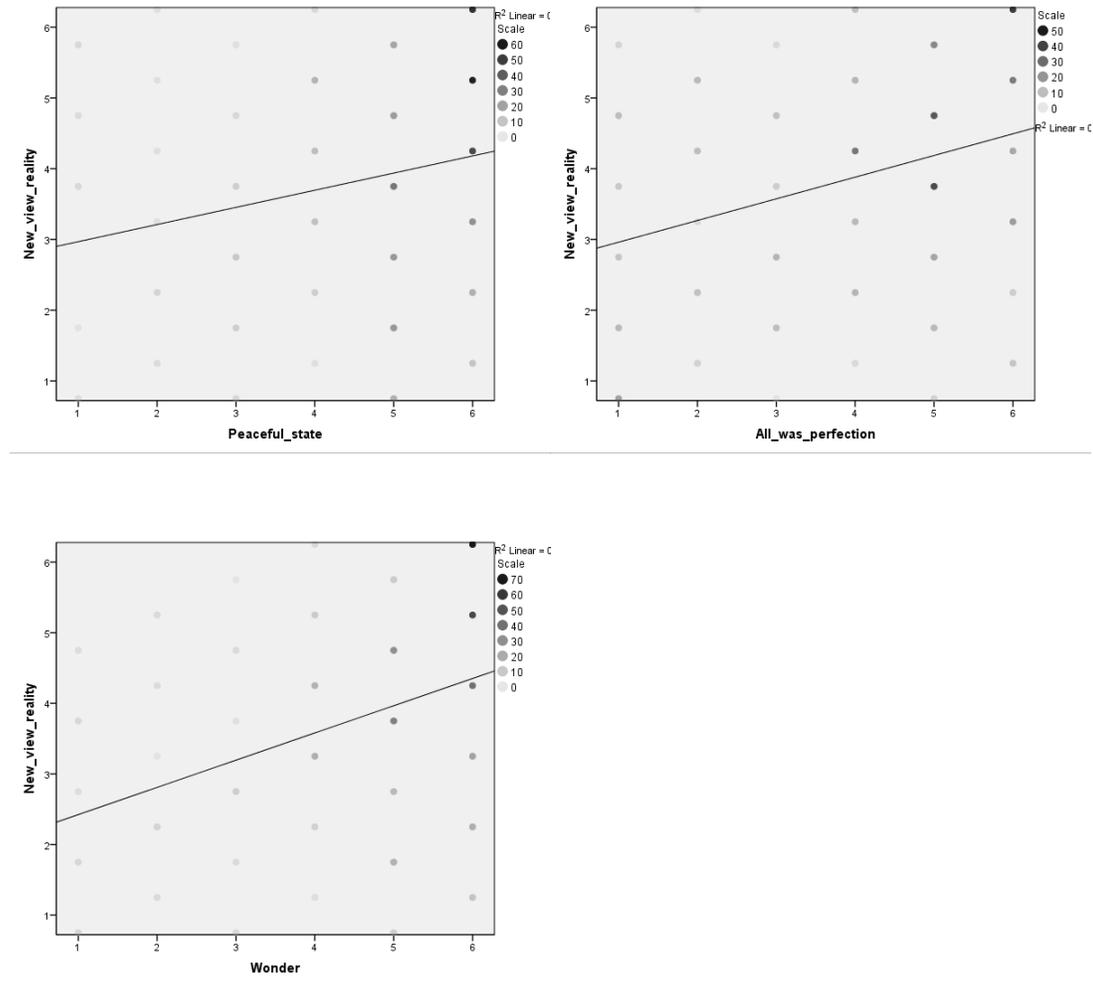
Loss of Self-Consciousness



Continued

Figure 10. Bivariate Scatterplots to determine linearity

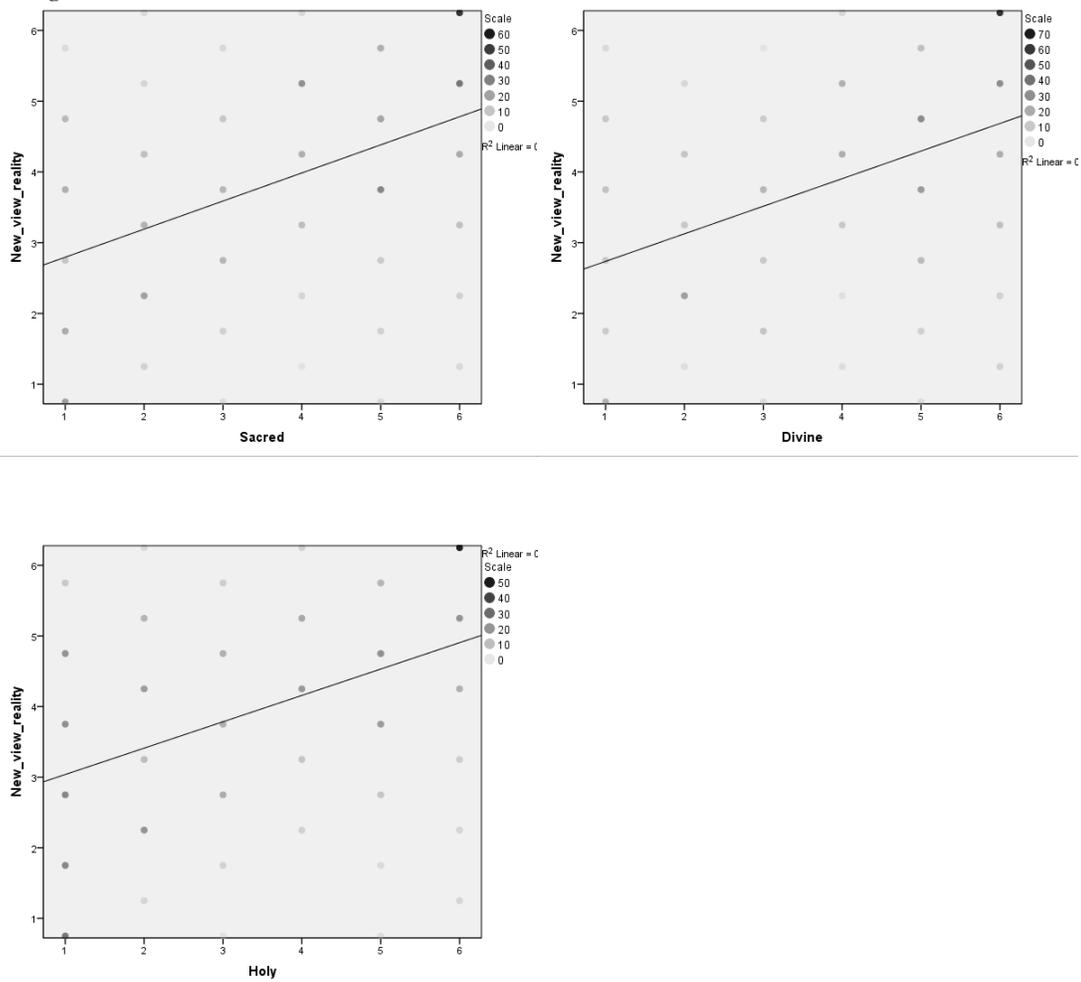
Affect



Continued

Figure 10. Bivariate Scatterplots to determine linearity – Continued

Religion



Continued

Figure 10. Bivariate Scatterplots to determine linearity – Continued

Action and Awareness Merging

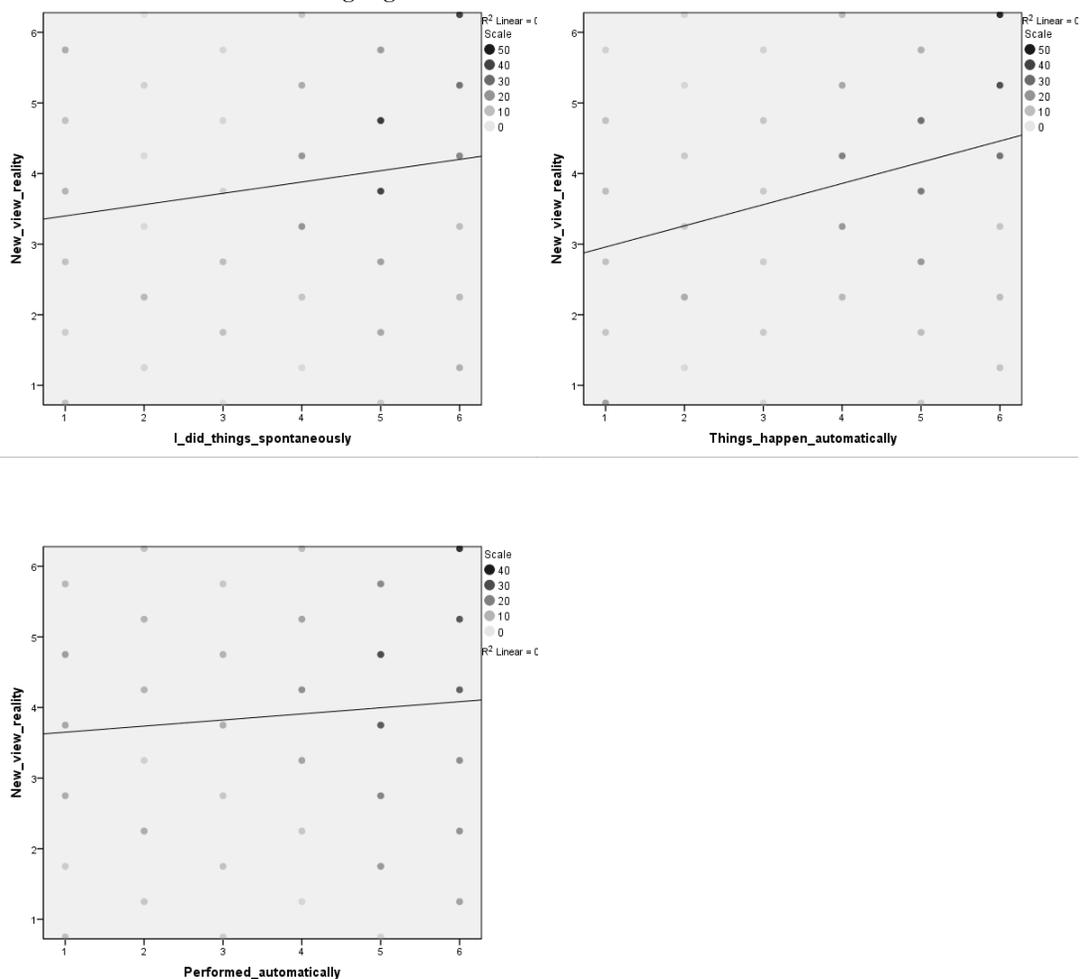
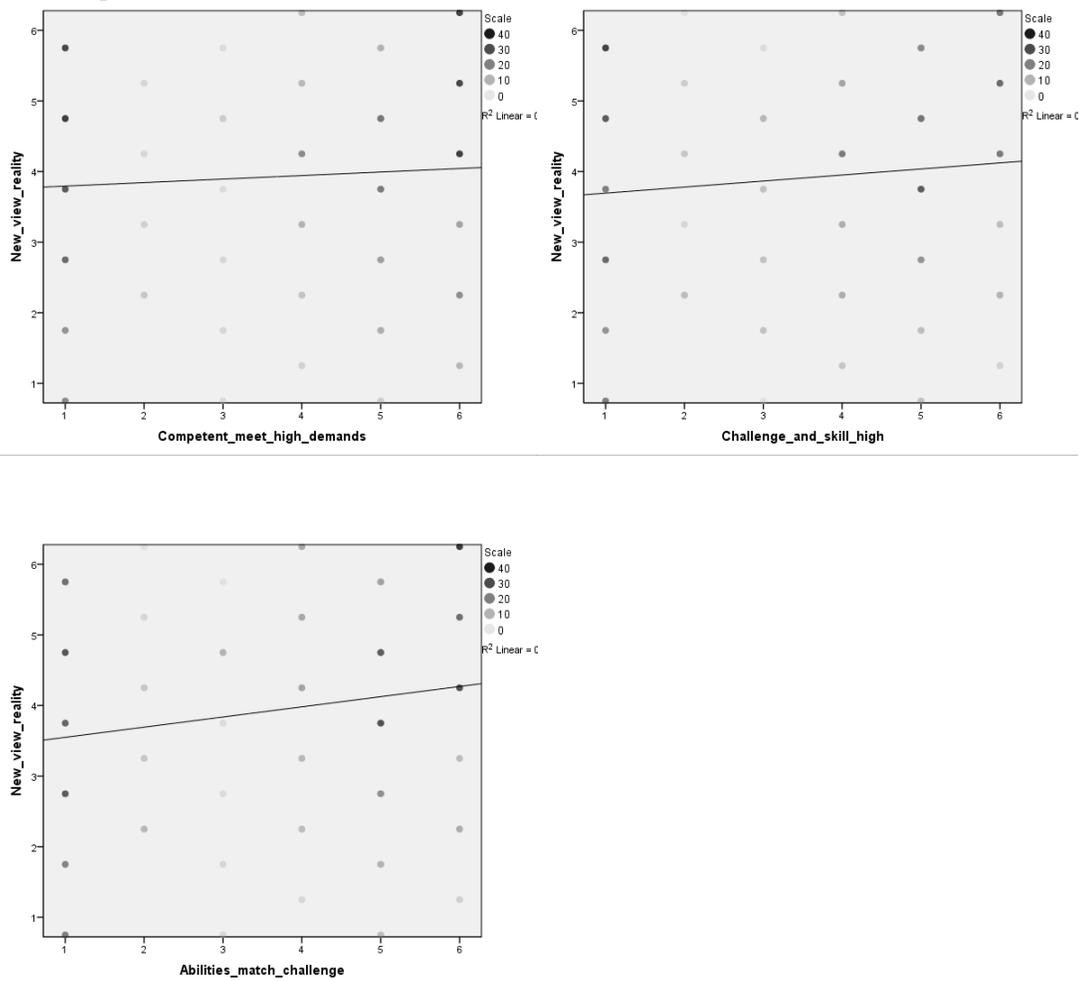


Figure 10. Bivariate Scatterplots to determine linearity – Continued

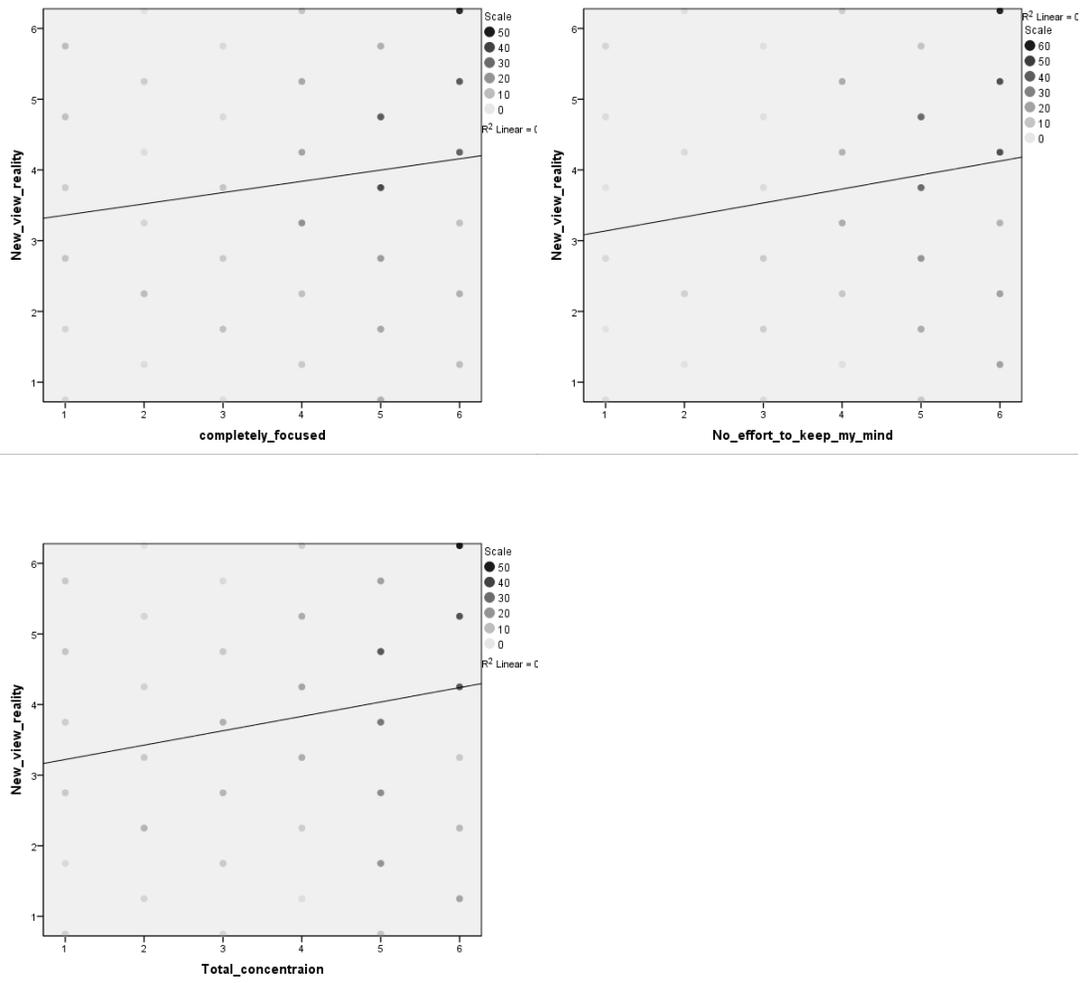
Challenge/Skill balance



Continued

Figure 10. Bivariate Scatterplots to determine linearity – Continued

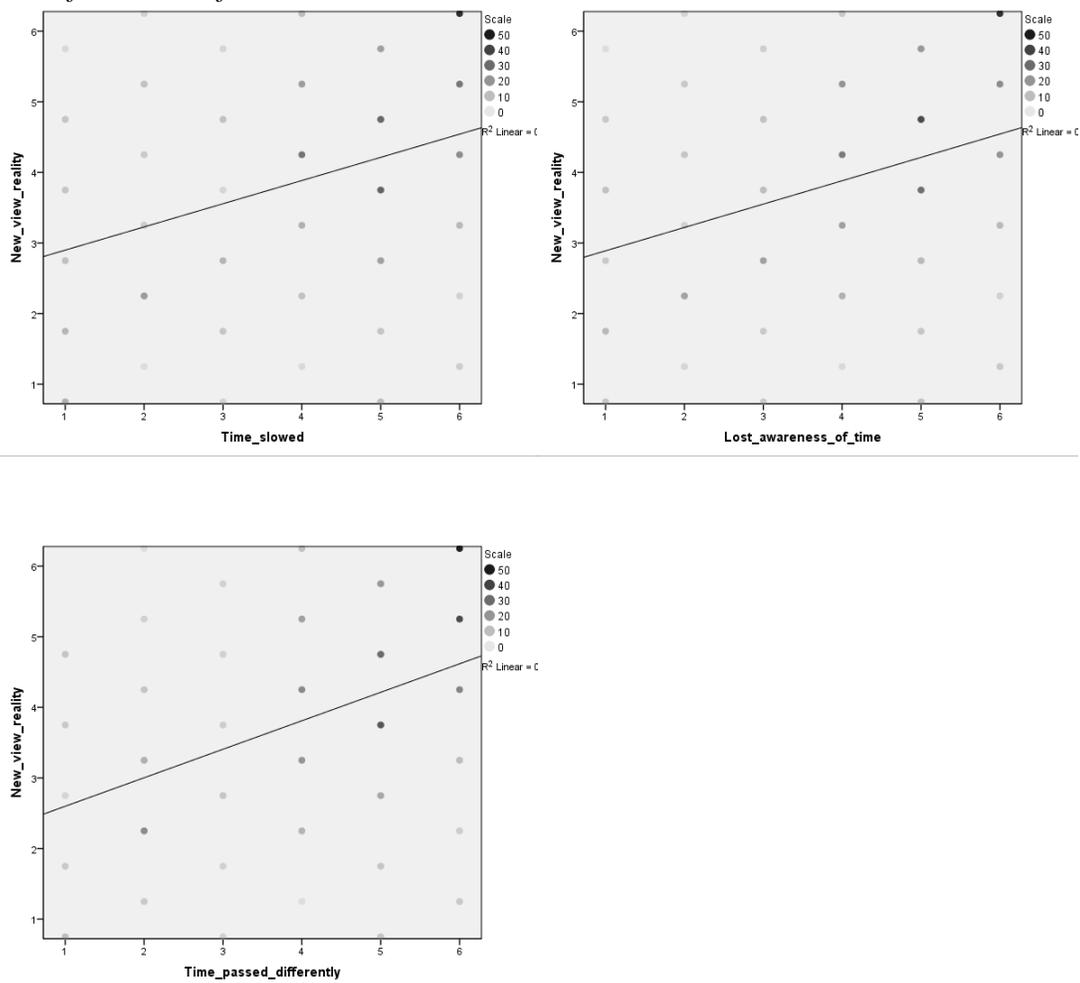
Concentration



Continued

Figure 10. Bivariate Scatterplots to determine linearity – Continued

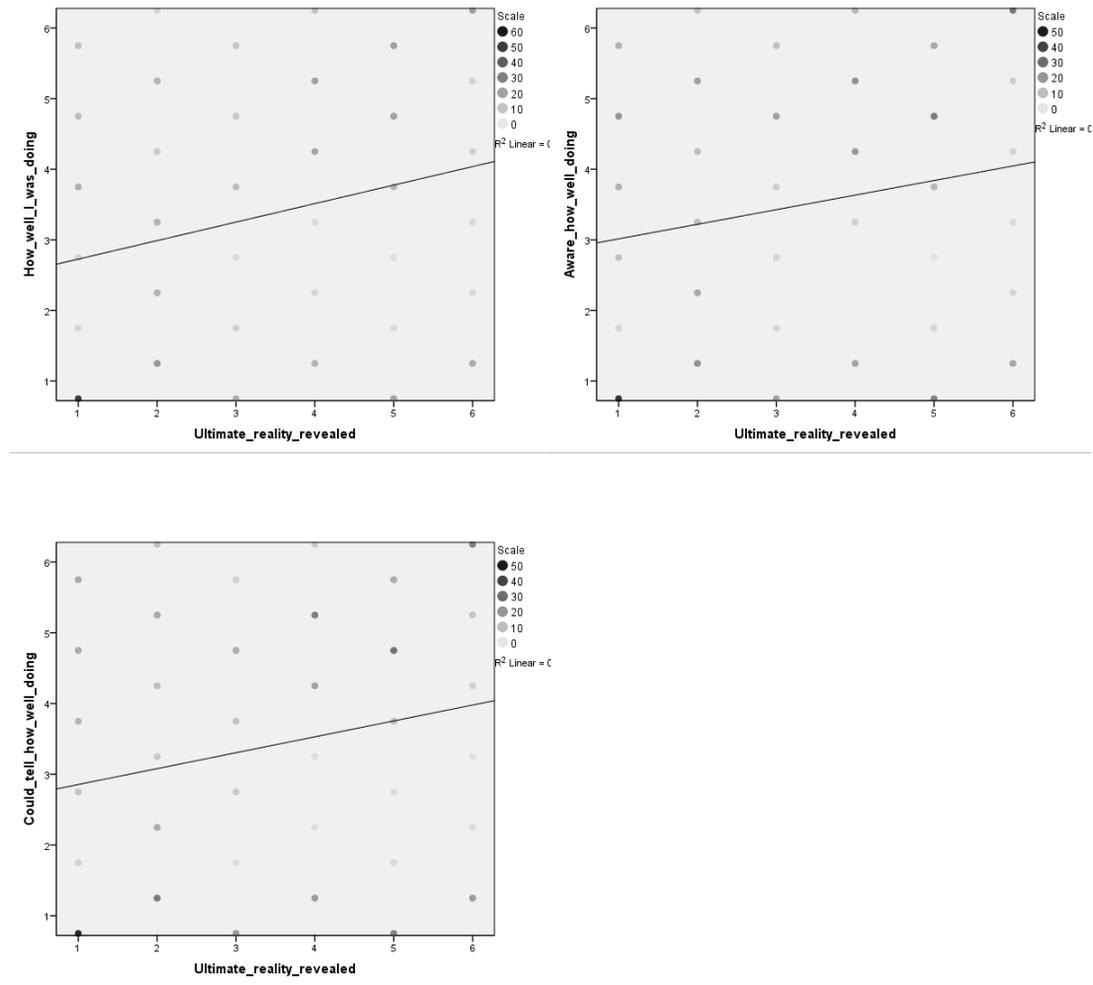
*Transformation of time*



Continued

Figure 10. Bivariate Scatterplots to determine linearity – Continued

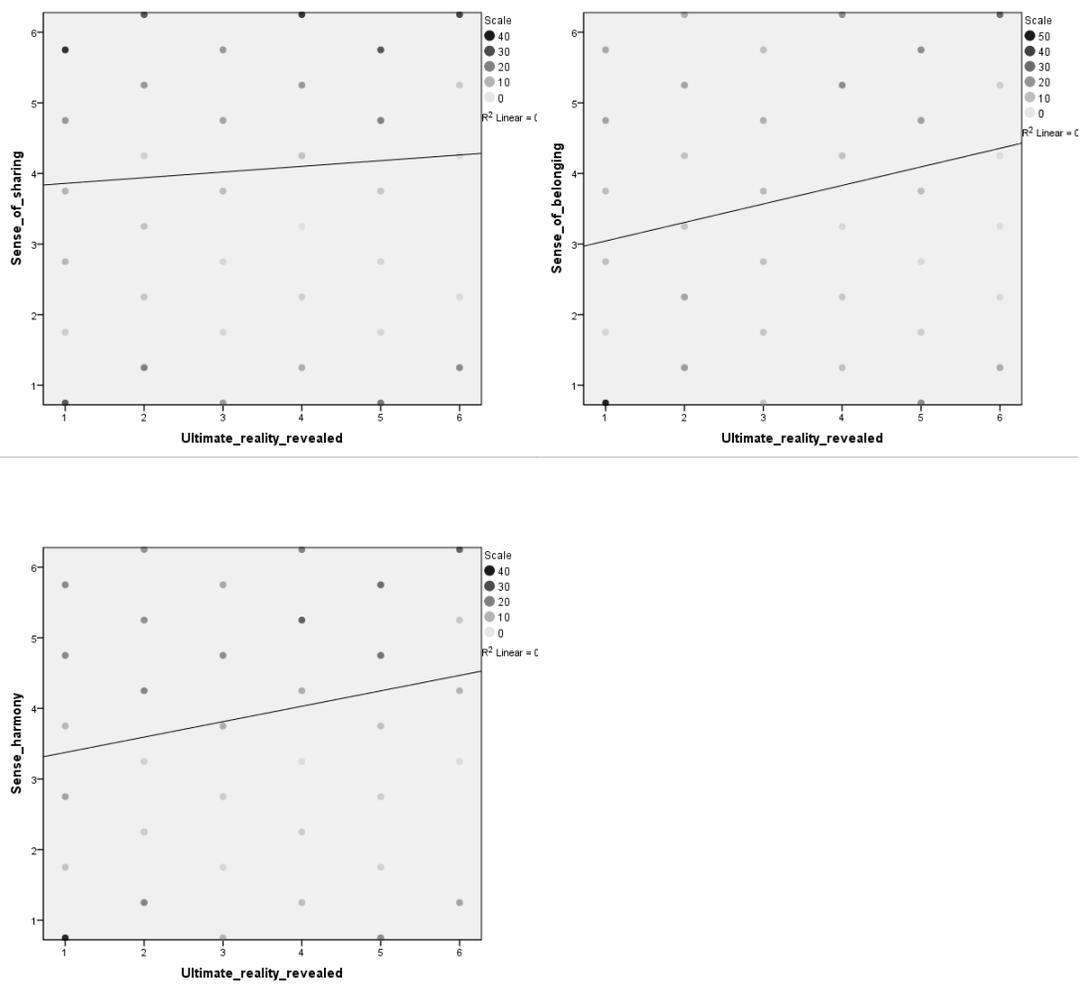
Unambiguous feedback



Continued

Figure 10. Bivariate Scatterplots to determine linearity – Continued

Communitas

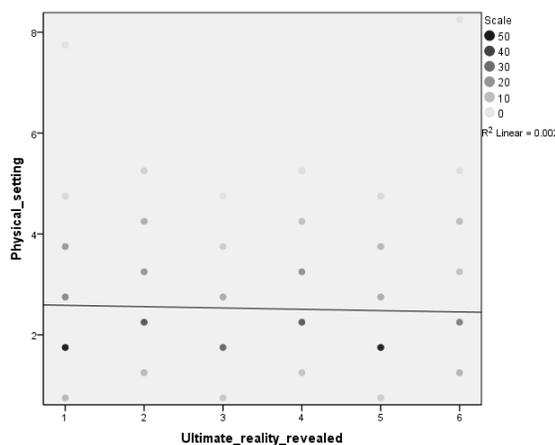


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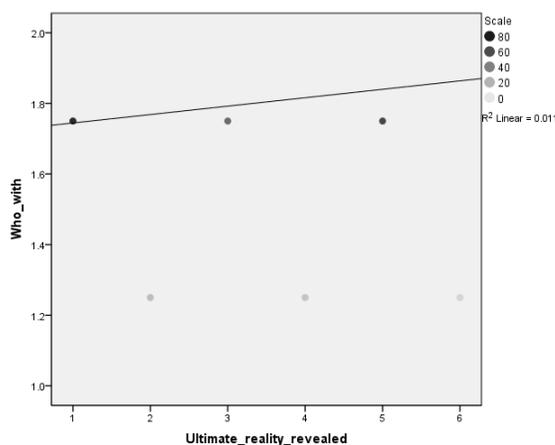


Figure 10. Bivariate Scatterplots to determine linearity - Continued

*Physical setting*



*Who with*



**Multivariate assumptions, transformations and multivariate outliers**

The above scatterplots report the relationship between two items. If the 13 SEM items were considered simultaneously, there would be a large cluster created: that is, a multivariate analysis. Multivariate outliers occur when the scores across all items in one case occur outside of the cluster. SPSS can evaluate multivariate outliers using the statistic Mahalanobis distance. Tabachnick and

Fidell (2007) recommend evaluating this statistic at  $p < 0.001$  for the  $\chi$  value. In this case, there are 31 degrees of freedom and critical values for 30 degrees of freedom are reported as 59.703, indicating that thirty-two cases are multivariate outliers (See Table 37).

*Table 37. Multivariate Outliers*

Mahalanobis Statistic	Case Number
60.17773	43
60.19804	586
60.29300	582
61.49030	509
61.62878	322
61.70031	414
62.28167	396
62.67199	347
62.99823	370
63.25047	226
63.86158	575
64.71603	190
65.61593	229
65.72054	22
66.43867	560
66.98908	356
67.77094	261
68.90346	399
69.18921	462
69.23935	620
69.89340	310
70.99894	363
72.17167	380
74.26124	458
75.31766	109
76.48551	241
80.67265	367
80.78137	71
82.45875	24
85.84463	289
95.33119	470
120.90059	75

## Multicollinearity

With the thirty-two multivariate outlier cases removed, colinearity statistics were run using SPSS. The purpose of this test is to determine if any of the items are a replica or near replica of another item. Due to the size of the output, the colinearity statistics are not reproduced here in full. A high condition index denotes that two or more variables are near facsimiles. In this test, eleven items had condition indexes over 30. Of these eleven, three of these items indicate more than one variance proportion over .5, thus indicating colinearity, or a large amount of shared variance. The items in Table 38 that display colinearity are not surprising, as they are intended to measure the same factor.

*Table 38. Multicollinearity Diagnostics*

Condition Index	Item	Variance proportion
37.650	Lost awareness of time	.70
	Time slowed	.64
66.569	Landscape fascinating	.70
	Natural setting fascinating	.72
146.478	Concerned with others evaluation	.52
	Concerned with others thinking	.95

## Results

### Demographic Information

As shown in Tables 39 and 40, respectively, of the 431 respondents, most were female (63.7%), with the largest age category 35-49 (32.4%). For the categories of partner status, education, and how often respondents spent time in

nature, an open-ended space was provided so that respondents could clarify their answers or articulate why they left a question blank. Some of the information provided in the ‘other’ category allowed for coding into one of the options provided (e.g., wife to ‘partner’ or technical degree to ‘university or college degree’), with the final results indicating that most were partnered or married (66.9%). In general, these respondents were well educated but did not have high earnings. Although the majority of participants had obtained a college or university degree (58.6%), 28% of respondents had a graduate degree (e.g., a Master’s or PhD). Finally, the largest individual income category was \$50,000 to \$74,999 (23.2%), with 44.6% of respondents earning less than \$49,999.

*Table 39. Gender*

	Frequency	Percent	Valid Percent	Cumulative Percent
Female	262	60.8	63.7	63.7
Male	149	34.6	36.3	100.0
Total	411	95.4	100.0	
Missing	20	4.6		
Total	431	100.0		

*Table 40. Age*

	Frequency	Percent	Valid Percent	Cumulative Percent
18 – 24	38	8.8	9.2	9.2
25 – 34	118	27.4	28.7	38.0
35 – 49	133	30.9	32.4	70.3
50 – 64	110	25.5	26.8	97.1
65+	12	2.8	2.9	100.0
Total	411	95.4	100.0	
Missing	20	4.6		
Total	431	100.0		

*Table 41. Partner Status*

	Frequency	Percent	Valid Percent	Cumulative Percent
Married/Partner	275	63.8	66.9	66.9
Single	136	31.6	33.1	100.0
Total	411	95.4	100.0	
Missing	20	4.6		
Total	431	100.0		

*Table 42. Education*

	Frequency	Percent	Valid Percent	Cumulative Percent
Elementary school graduate	3	.7	.7	.7
High school graduate	52	12.1	12.7	13.4
University or college degree	241	55.9	58.6	72.0
Graduate school degree	115	26.7	28.0	100.0
Total	411	95.4	100.0	
Missing	20	4.6		
Total	431	100.0		

*Table 43. Individual Income*

	Frequency	Percent	Valid Percent	Cumulative Percent
Under \$25,000	92	21.3	23.2	23.2
\$25,000 to \$49,999	85	19.7	21.4	44.6
\$50,000 to \$74,999	92	21.3	23.2	67.8
\$75,000 to \$100,000	69	16.0	17.4	85.2
More than \$100,000	59	13.7	14.9	100
Total	397	92.1	100.0	
Missing	34	7.9		
Total	431	100.0		

Respondents were asked three open-ended questions. The first was: “What is your religious affiliation (e.g. Buddhist, Christian, Muslim, None, etc.)?”

Written responses were then coded. As shown in Table 44, the most mentioned

response was 'None' (36%), followed by Christian (28.5%), Spiritual but not Religious (4.9%) and Catholic (4.6%).

Respondents were also asked an open-ended question: "What is your ethnic or cultural background (e.g. Aboriginal, French, British, Canadian, Vietnamese, None, etc.)?" Responses were coded (see Table 45) with the most frequently mentioned answers of Canadian (74.8%), United Kingdom (5.7%), American (5.4%), European (4.9%), and French Canadian (2.1%). Another 5.2% of respondents had non-European backgrounds (e.g. Metis, East Asian).

The third open-ended question, "How often do you spend time in nature", included an 'other' category. Based on the information provided by respondents in this section, another category named 'Seasonal' was added to Table 46, indicating that these individuals spent more time outside during the summer season. The majority of respondents spent five to six days per week in nature (26.5%). Finally, respondents reported (see Table 47) spending this time in nature spaces that were either substantially modified (20.4%) or, conversely, in undisturbed nature (35.9%).

*Table 44. Religion*

	Frequency	Percent	Valid Percent	Cumulative Percent
None	155	38.9	36.0	36.0
Christian	153	38.4	35.5	71.5
Spiritual	21	5.3	4.9	76.3
Atheist	18	4.5	4.2	80.9
Agnostic	10	2.5	2.3	83.2
Buddhism	10	2.5	2.3	85.7
All	5	1.3	1.2	86.8
Muslim	4	1.0	0.9	87.8
Pagan	4	1.0	0.9	88.8
Quaker	3	0.8	0.7	89.5
Jewish	2	0.5	0.5	90.0
Mystic	2	0.5	0.5	90.4
Unitarian	2	0.5	0.5	90.9
Deist	1	0.3	0.2	91.2
Humanist	1	0.3	0.2	91.4
Mennonite	1	0.3	0.2	91.6
Native spirituality	1	0.3	0.2	91.9
Nature	1	0.3	0.2	92.1
New Age	1	0.3	0.2	92.4
Pantheism	1	0.3	0.2	92.6
Shamanism	1	0.3	0.2	92.8
Wiccan	1	0.3	0.2	93.1
Total	398	92.3	92.3	92.1
Missing	33	7.7	7.7	
Total	431	100	100	100

*Table 45. Ethnocultural Identity*

	Frequency	Percent	Valid Percent	Cumulative Percent
Canadian	291	67.5	74.8	74.8
United Kingdom	22	5.1	5.7	80.5
American	21	4.9	5.4	85.9
European	19	4.4	4.9	90.7
French Canadian	8	1.9	2.1	92.8
Metis	4	.9	1.0	93.8
East Asian	3	.7	.8	94.6
German	3	.7	.8	95.4
Asian	2	.5	.5	95.9
Australian	2	.5	.5	96.4
French	2	.5	.5	96.9
Southeast Asian	2	.5	.5	97.4
Aboriginal	1	.2	.3	97.7
Appalachian	1	.2	.3	97.9
Central Asian	1	.2	.3	98.2
Indigenous	1	.2	.3	98.5
Inuvialuit	1	.2	.3	98.7
Latin American	1	.2	.3	99.0
Ojibwe	1	.2	.3	99.2
Polish	1	.2	.3	99.5
West Asian	1	.2	.3	99.7
West Indies	1	.2	.3	100.0
Total	389	90.3	100.0	
Missing	42	9.7		
Total	431	100.0		

*Table 46. How Often Do You Spend Time In Nature?*

	Frequency	Percent	Valid Percent	Cumulative Percent
Every day	15	3.5	3.6	3.6
1 day per week	84	19.5	20	23.6
2 to 4 days per week	45	10.4	10.7	34.3
5 to 6 days per week	111	25.8	26.5	60.8
a few days per month	60	13.9	14.3	75.1
a few days per year	77	17.9	18.4	93.5
Seasonal	27	6.3	6.4	100
Total	419	97.2	100	
Missing	12	2.8		
Total	431	100		

*Table 47. Where Is This Natural Area?*

	Frequency	Percent	Valid Percent	Cumulative Percent
An undisturbed natural area with no evidence of humans	20	4.6	4.9	4.9
A largely undisturbed natural area	148	34.3	35.9	40.8
An area that is somewhat modified but appears natural.	117	27.1	28.4	69.2
A substantially modified area with human made and natural features such as rural or agricultural landscapes	84	19.5	20.4	89.6
An area where roads, buildings, and power lines clearly dominate the landscape	43	10.0	10.4	100.0
Total	412	95.6	100.0	
Missing	19	4.4		
Total	431	100.0		

### PDE information

Geographically, the PDEs took place around the world (see Table 48).

Twelve percent of the relayed experiences occurred within Edmonton city limits, while 48.7% of PDEs occurred within the province of Alberta, and 74.5% within Canada. The rest of the PDEs reported include ten percent that occurred in the United States and six percent outside of North America.

*Table 48. Geographical Location of PDEs*

Region	N	Percent	Valid Percent	Cumulative Percent
Edmonton	52	12.1	12.1	
Alberta	210	48.7	48.7	48.7
British Columbia	56	13.0	13.0	61.7
Northwest Territories	21	4.9	4.9	62.0
Ontario	14	3.3	3.3	66.8
Nunavut	5	1.2	1.2	67.1
Quebec	5	1.2	1.2	68.2
Saskatchewan	4	0.9	0.9	71.5
Yukon	3	0.7	0.7	71.7
Newfoundland	1	0.2	0.2	72.9
Nova Scotia	1	0.2	0.2	73.8
Prince Edward Island	1	0.2	0.2	74.5
<b>Total Canada</b>	321	74.5	74.5	
United States	43	10.0	10.0	84.5
World	28	6.5	6.5	91.0
Not specific	31	6.5	6.5	91.0
Missing	8	7.2	7.2	98.1
Total N	431	1.9	1.9	100.0

Participants were asked to identify the activity they were engaged in during their psychologically deep experiences. They were able to: (a) check more than one category and (b) fill in an open-ended part 'Other' section. Three hundred and thirty nine respondents filled in the checklist and a total of ninety-

two respondents filled in the checklist or the ‘Other’ category. The frequencies for the check-listed activities are shown in Table 49. The highest frequency activities were viewing scenery (42.5%), day hiking (30.9%), walking (27.1%), and viewing wildlife (23.7%). These findings suggest that less active, or more relaxing, activities are the background for many PDE’s.

*Table 49. Frequencies of Activities Associated with PDEs (Listed Alphabetically)*

	Frequency	Percent
Auto/RV	20	4.6
Backcountry camping	63	14.6
Backpacking	46	10.7
Bicycling	25	5.4
Canoeing	53	12.3
Collecting nature products	17	3.9
Dancing	5	1.1
Day hiking/scrambling	133	30.9
Driving for pleasure	29	6.7
Fishing	19	4.1
Four-wheel driving	2	0.5
Frisbee	2	0.4
Horseback riding	3	0.7
Hunting	14	3.2
Meditation	32	7.4
Photography	56	13.0
Picnicking	19	4.4
Relaxation	87	18.8
Running	33	7.1
Socializing	50	10.8
Spending time alone	90	20.9
Swimming	20	4.3
Viewing wildlife	102	23.7
Viewing scenery	183	42.5
Walking	117	27.1
Yoga	9	2.1

As noted above, respondents were able to fill in the ‘Other’ category with an activity that was not listed in the survey. Approximately one-fifth of all

reported activities (see Table 49) fell into his category, with cross-country skiing (2.6%), snowshoeing (1.9%), working (1.4%), and backcountry skiing (0.9%) being the most frequently mentioned.

Table 50. 'Other' Activities

	Frequency	Percent	Valid Percent	Cumulative Percent
Activity from Table 37	339	78.7	78.7	78.7
Animal interactions	2	.5	.5	79.1
Art	3	.7	.7	79.8
Backcountry skiing	4	.9	.9	80.7
Boating	1	.2	.2	81.0
Burying ashes	1	.2	.2	81.2
Canyoneering	2	.5	.5	81.7
Cat skiing	1	.2	.2	81.9
Class	1	.2	.2	82.1
Climbing	2	.5	.5	82.6
Cross country skiing	11	2.6	2.6	85.2
Digging	1	.2	.2	85.4
Diving	3	.7	.7	86.1
Downhill skiing	2	.5	.5	86.5
Float plane tour	1	.2	.2	86.8
Gardening	3	.7	.7	87.5
Golfing	1	.2	.2	87.7
Hot tub	1	.2	.2	87.9
Ice fishing	1	.2	.2	88.2
Kayaking	2	.5	.5	88.6
Listening to music	1	.2	.2	88.9
Looking for fairies	1	.2	.2	89.1
Mountaineering	3	.7	.7	89.8
Music festival	1	.2	.2	90.0
Playing games	2	.5	.5	90.5
Rafting	3	.7	.7	91.2
Reading	1	.2	.2	91.4
Rock climbing	3	.7	.7	92.1
Sailing	2	.5	.5	92.6
Sea kayaking	3	.7	.7	93.3
Skiing	3	.7	.7	94.0
Snorkeling	2	.5	.5	94.4
Snowboarding	1	.2	.2	94.7
Snowshoeing	8	1.9	1.9	96.5
Star gazing	1	.2	.2	96.8

Continued

*Table 49. 'Other' Activities - Continued*

	Frequency	Percent	Valid Percent	Cumulative Percent
Summer camp	2	.5	.5	97.2
Surfing	2	.5	.5	97.7
Talking to plants	1	.2	.2	97.9
Trail maintenance	2	.5	.5	98.4
Tubing	1	.2	.2	98.6
Working	6	1.4	1.4	100.0
Total	431	100.0	100.0	

The majority of respondents (79.8%) indicated that the activity they were engaged in at the time of their PDE was the cause of their PDE (see Table 51).

*Table 51. Was Your Activity the Cause of your PDE?*

	Frequency	Percent	Valid Percent
No	86	20.0	20.0
Yes	344	79.8	79.8
Missing	1	0.2	0.2
Total	431	100.0	100.0

All of the activities were amalgamated into broader categories for further analysis (see Tables 52 and Table 53). These categories represented non-motorized activity, motorized activity, consumptive meditative activities (e.g., fishing), non-consumptive meditative activities (e.g., yoga) and social activities.

*Table 52. Amalgamated Activities*

Amalgam	Activities Included
Non-motorized activity	Backpacking, backcountry camping bicycling, canoeing, camping, dancing, day hiking/scrambling, frisbee, horseback riding, running, swimming, walking
Motorized activity	Driving, four wheel driving, auto/RV camping
Consumptive	Collecting nature products, fishing, hunting
Non-consumptive meditative	Meditation, photography, relaxation, spending time alone, viewing scenery, viewing wildlife, yoga
Social activities	Socializing, picnicking

*Table 53. Participation in Activities*

	N	Percent
Non-Motorized Activity	308	71.5
Non-consumptive meditative	243	56.4
Social	56	13.0
Motorized Activity	47	10.9
Consumptive	40	9.3

Nonmotorized activities (71.5%) and Nonconsumptive meditative (56.4%) were the most prevalent types of activities, while Motorized (10.9%) and Consumptive meditative (9.3%) were the lowest. Almost one third (32.9%) of respondents were with family members at the time of their PDE. This question, ‘Who were you with’, allowed participants to include ‘other’ responses. These responses were coded and two categories were created based on this data (e.g. ‘Coworker/guide/clients’ and ‘Dogs’) (see Table 54). Additionally, when collapsing the categories of ‘Who you were with’, 80.0% were with other people when their PDE occurred whereas only 20.0% were alone (see Table 55).

*Table 54. Who Were You With When Your PDE Occurred?*

	Frequency	Percent	Valid Percent
Family member(s)	138	32	32.9
Alone	82	19	19.6
Partner	76	17.6	18.1
Two friends or more	71	16.5	16.9
One friend	28	6.5	6.7
Coworker, guide, clients	22	5.1	5.3
Dog	2	0.5	0.5
Total	419	97.2	100.0
Missing	12	2.8	
Total	431	100	

*Table 55. Collapsed Categories, Who You Were With*

	Frequency	Percent	Valid Percent	Cumulative Percent
Alone	84	19.5	20.0	20.0
With others	335	77.7	80.0	100.0
Total	419	97.2	100.0	
Missing	12	2.8		
Total	431	100.0		

Nearly half (48.5%) of PDE's occurred in an undisturbed natural area (see Table 56).

*Table 56. Physical Setting Where the PDE Took Place*

	Frequency	Percent	Valid Percent	Cumulative Percent
An undisturbed natural area with no evidence of humans.	51	11.8	11.8	11.8
A largely undisturbed natural area.	209	48.5	48.5	60.3
An area that is somewhat modified but appears natural.	92	21.3	21.3	81.7
A substantially modified area with both human-made and natural features	60	13.9	13.9	95.6
An area where roads, buildings, and powerlines clearly dominate the landscape.	17	3.9	3.9	99.5
Missing	2	.5	.5	100.0
Total	431	100.0	100.0	

The majority of respondents (97.6%) indicated that their PDE was a positive experience at the time it happened and only slightly more (98.8%) reported that it was positive in retrospect (see Tables 57 and 58, respectively).

*Table 57. PDE Was Positive at the Time it Happened*

	Frequency	Percent	Valid Percent	Cumulative Percent
-3	1	.2	.2	.2
-2	2	.5	.5	.7
-1	2	.5	.5	1.2
0	5	1.2	1.2	2.4
1	9	2.1	2.2	4.6
2	50	11.6	12.1	16.7
3	344	79.8	83.3	100.0
Total	413	95.8	100.0	
Missing	18	4.2		
Total	431	100.0		

\*Note: Scale ranges from Negative (-3) to Neutral (0) to Positive (+3)

*Table 58. PDE is Positive in Retrospect*

	Frequency	Percent	Valid Percent	Cumulative Percent
0	5	1.2	1.2	1.2
1	8	1.9	1.9	3.1
2	50	11.6	12.1	15.2
3	351	81.4	84.8	100.0
Total	414	96.1	100.0	
Missing	17	3.9		
Total	431	100.0		

\**Note:* Scale ranges from Negative (-3) to Neutral (0) to Positive (+3).

Participants were also asked how often they had had a similar PDE in urban environments and nature environments. Slightly over 40% of respondents had ‘never’ and 41.8% had ‘rarely’ had a PDE such as the one they described in the survey in urban environments (see Table 59); whereas 26.3% of respondents had ‘sometimes’ and 33.2% had ‘much of the time’ had a PDE similar to the one they described in the survey in a natural environment (see Table 60). The means between these two groups are significantly different, suggesting that respondents are more likely to have PDEs in natural environments (see Table 61). Additionally, the two groups’ responses are positively and moderately correlated, indicating that some individuals are having PDEs in both urban and natural environments (see Table 62).

*Table 59. How Often Have You Had a Similar PDE in Urban Environments?*

	Frequency	Percent	Valid Percent	Cumulative Percent
All the time	3	.7	.8	.8
Much of the time	13	3.0	3.4	4.2
Sometimes	53	12.3	13.8	17.9
Rare	161	37.4	41.8	59.7
Never	155	36.0	40.3	100.0
Total	385	89.3	100.0	
Missing	46	10.7		
Total	431	100.0		

*Table 60. How Often Have You Had a Similar PDE in Nature Environments?*

	Frequency	Percent	Valid Percent	Cumulative Percent
All the time	19	4.4	4.9	4.9
Much of the time	129	29.9	33.2	38.1
Sometimes	102	23.7	26.3	64.4
Rare	123	28.5	31.7	96.1
Never	15	3.5	3.9	100.0
Total	388	90.0	100.0	
Missing	43	10.0		
Total	431	100.0		

*Table 61. Paired T Test, Comparing Means of Urban and Nature Based PDEs*

	M	N	SD	SE Mean	95% Confidence		t	df	S (2 tailed)
					Lower	Upper			
Nature	2.97	377	1.00	0.05					
Urban	4.18	377	0.85	0.04					
Nature - Urban	-1.21		1.03	0.05	-1.31	-1.10	-22.67	376	0.00

*Table 62. Correlation of Nature and Urban Based PDEs*

		Nature	Urban
Nature	Pearson Correlation	1	.39**
	Sig. (2-tailed)		.00
	N	388	377
Urban	Pearson Correlation	.39**	1
	Sig. (2-tailed)	.00	
	N	377	385

\*\*Correlation is significant at the 0.01 level (2-tailed).

### **Confirmatory factor analysis**

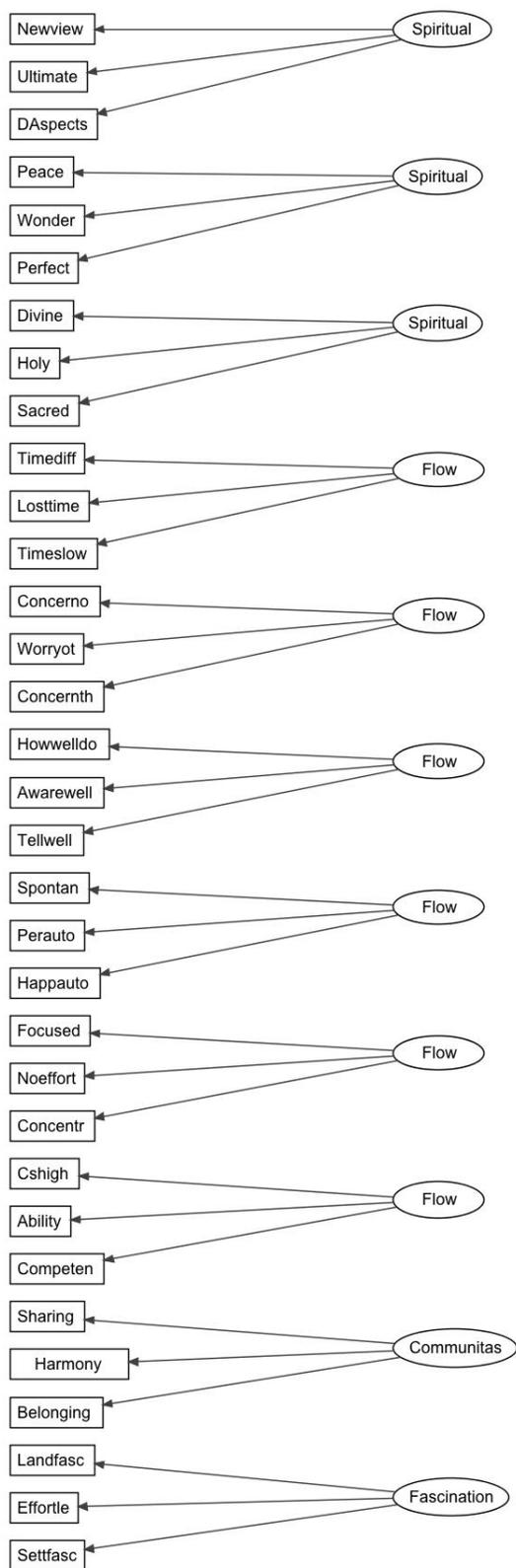
The data were analyzed using pairwise deletion for missing values to create a covariance matrix in SPSS and then using LISREL VIII for the CFA. No variable had no more than four percent missing data (Tabachnick & Fidell, 2007). Potential problems were discovered in the descriptive data results, as three sets of paired items were found in the collinearity diagnostics to have a large amount of shared variance. However, the LISREL program converged, meaning the covariance matrix can be assumed to be nonsingular, as LISREL will not run if there are singularity issues.

### ***The hypothesized model***

The specified CFA PDE model (Figure 11) identifies eleven factors indicated by the green circles (i.e., Noetic, Affect, Spiritual, Transformation of Time, Loss of Self, Unambiguous Feedback, Action Awareness, Concentration, Challenge Skill Balance, Communitas, and Fascination), with rectangles representing measured variables. A line from the factor to the measured variable indicates a hypothesized effect. As reported, three items are hypothesized by the researcher to be determined by each of the eleven factors (see Table 63), which

indicates the factor name and which of the 'Big Four' it measures. Because LISREL can only recognize eight characters, the abbreviated factor name that will be used in all the Figures is also in this Table).

Figure 11. The hypothesized PDE model using CFA



*Table 63. Abbreviated Factor Names*

'Big Four' Concept	Full Factor Name	LISREL Abbreviation
Spiritual	Noetic	NOET
Spiritual	Affect	AFFE
Spiritual	Spiritual	SPIR
Flow	Transformation of Time	TRANS
Flow	Loss of Self	LOSS
Flow	Unambiguous Feedback	UNAM
Flow	Action Awareness	ACTION
Flow	Concentration	CONC
Flow	Challenge Skill Balance	CSBAL
Communitas	Communitas	COMM
Fascination	Fascination	FASC

CFA relies on three matrices: the relationship between the measured variables and the factors (or the factor loadings), the correlations between factors, and the error term associated with each measured variable. Table 64 outlines the measured variables and the individual factors, and the organization of this Table is by groups of three items (i.e., grey and white blocks) and reveals the relationship between the measured variables and the factors.

Table 64. Definition of X and KSI

X	Variable Name	LISREL		Factor
		Name	Factor	Name
X <sub>1</sub>	New view reality	Newview	FACTOR <sub>1</sub>	NOET
X <sub>2</sub>	Ultimate reality revealed	Ultimate	FACTOR <sub>1</sub>	NOET
X <sub>3</sub>	Deeper aspects reality	Daspects	FACTOR <sub>1</sub>	NOET
X <sub>4</sub>	Peaceful state	Peace	FACTOR <sub>2</sub>	AFFE
X <sub>5</sub>	Wonder	Wonder	FACTOR <sub>2</sub>	AFFE
X <sub>6</sub>	All was perfection	Perfect	FACTOR <sub>2</sub>	AFFE
X <sub>7</sub>	Divine	Divine	FACTOR <sub>3</sub>	SPIR
X <sub>8</sub>	Holy	Holy	FACTOR <sub>3</sub>	SPIR
X <sub>9</sub>	Sacred	Sacred	FACTOR <sub>3</sub>	SPIR
X <sub>10</sub>	Time passed differently	Timediff	FACTOR <sub>4</sub>	TRANS
X <sub>11</sub>	Lost awareness of time	Losttime	FACTOR <sub>4</sub>	TRANS
X <sub>12</sub>	Time slowed	Timeslow	FACTOR <sub>4</sub>	TRANS
X <sub>13</sub>	Concerned others evaluation	Concerno	FACTOR <sub>5</sub>	LOSS
X <sub>14</sub>	Worried others thinking	Worryot	FACTOR <sub>5</sub>	LOSS
X <sub>15</sub>	Concerned others thinking	Concernth	FACTOR <sub>5</sub>	LOSS
X <sub>16</sub>	How well I was doing	Howwelldo	FACTOR <sub>6</sub>	UNAM
X <sub>17</sub>	Aware how well doing	Awarewel	FACTOR <sub>6</sub>	UNAM
X <sub>18</sub>	Could tell how well doing	Tellwell	FACTOR <sub>6</sub>	UNAM
X <sub>19</sub>	I did things spontaneously	Spontan	FACTOR <sub>7</sub>	ACTION
X <sub>20</sub>	Performed automatically	Perfauto	FACTOR <sub>7</sub>	ACTION
X <sub>21</sub>	Things happen automatically	Happauto	FACTOR <sub>7</sub>	ACTION
X <sub>22</sub>	Completely focused	Focused	FACTOR <sub>8</sub>	CONC
X <sub>23</sub>	No effort to keep my mind	Noeffort	FACTOR <sub>8</sub>	CONC
X <sub>24</sub>	Total concentration	Concentr	FACTOR <sub>8</sub>	CONC
X <sub>25</sub>	Challenge and skill high	Cshigh	FACTOR <sub>9</sub>	CSBAL
X <sub>26</sub>	Abilities match challenge	Ability	FACTOR <sub>9</sub>	CSBAL
X <sub>27</sub>	Competent meet high demands	Competen	FACTOR <sub>9</sub>	CSBAL
X <sub>28</sub>	Sense of sharing	Sharing	FACTOR <sub>10</sub>	COMM
X <sub>29</sub>	Sense harmony	Harmony	FACTOR <sub>10</sub>	COMM
X <sub>30</sub>	Sense of belonging	Belong	FACTOR <sub>10</sub>	COMM
X <sub>31</sub>	Landscape fascinating	Landfasc	FACTOR <sub>11</sub>	FASC
X <sub>32</sub>	Effortless attention	Effortle	FACTOR <sub>11</sub>	FASC
X <sub>33</sub>	Natural setting fascinating	Settfasc	FACTOR <sub>11</sub>	FASC

### *Identifiability*

Tabachnick and Fidel (2007) recommend checking the identifiability of the proposed model. In this case, with thirty-three variables, there are  $(33(33+1))/2 = 561$  data points, represented by the number of covariances in the sample covariance matrix. The number of parameters, or the number of regression coefficients, variances, and covariances to be estimated is 121. Therefore, the model is overidentified as there are more data points than parameters to be estimated. Overidentification indicates that a number of solutions are possible.

### **Results of the hypothesized eleven factor model**

#### *Fit Statistics*

Fit Statistics for the eleven factor hypothesized model on the test sample ( $n = 224$ ) are reported in Table 65.

*Table 65. Fit Statistics of the Hypothesized Model*

Model	$\chi^2$	df	GFI	AGFI	RMSEA	NFI	CFI	PNFI	PGFI
Test sample	616.18	440	0.86	0.82	0.042	0.94	0.98	0.78	0.67

#### *Absolute Fit*

The absolute fit statistics compare the sample covariance matrix to the model created matrix. Various fit statistics exist, such as Chi-Square. In the case of the CFA PDE model, this statistic is 616.18 and is significant, with  $\chi$  (440,  $N=224$ ),  $p = 0.00$ . Ideally this statistic should not be significant; however, using the 440 degrees of freedom creates a ratio of less than two, indicating the model

may still fit the data (Tabachnick & Fidell, 2007). Other fit statistics include Chi-Square for Independence Model, which tests that the variables are unrelated and should always be significant. With  $\chi^2_{\text{indep}}(528, N=225) = 11036.40$ , the statistic is significant. The Goodness of Fit Index (GFI) is analogous to  $R^2$  in multiple regression (Tanaka & Huba, 1989). GFI measures the weighted proportion of variance in the sample covariance that the estimated model accounts for. The GFI of 0.86 is a good fit, as values larger than .9 indicate a very good fit (Kelloway, 1998). For comparative purposes, the Adjusted Goodness of Fit Index (AGFI) is 0.82. Significant differences between these two indices usually mean that the model includes unnecessary parameters, and this is not the case with this model.

### *Comparative Fit*

The standardized Root Mean Square Error of Approximation (RMSEA) estimates the lack of fit compared to the perfect model. In my CFA this estimate is 0.042, which also indicates a good fit, as Hu and Bentler (1999) recommend a cut-off point near 0.06. Finally, LISREL also provides a test to see if the value of the RMSEA obtained is significantly different than an RMSEA value that indicates a good fit. In this case, the  $P$ -Value for Test of Close Fit ( $\text{RMSEA} < 0.05$ ) = 0.95 and is therefore not significant. Comparative fit statistics include the NFI, or Normed Fit Index, which in this case is 0.94, indicating that the proposed model is 94% better fit than the null model, or a model that does not fit. A statistic of 0.90 or larger indicates a good fit, but the NFI statistic tends to underestimate fit (Kelloway, 1998). The NNFI, or Non Normed Fit Index, adjusts for the degrees of freedom to correct this underestimation, in this case 0.97. Additionally, the

Comparative Fit Index (CFI) is 0.98. It is measured between 0.0 and 1.0 with numbers greater than 0.95 indicating a good estimated model (Tabachnick & Fidell, 2007). Finally, the Parsimony Goodness of Fit Index (PGFI) is 0.67. This index indicates parsimonious models. However, as Kelloway (1998) notes, the PGFI is best used to compare competing models rather than a definitive test of model fit.

### ***Residuals***

Standardized residuals (i.e., standardized measured variables and nonstandardized factors) appear symmetrically distributed as the stemleaf plot illustrates, with the median residual = 0. Residuals greater than plus two or minus two indicate that the model does not adequately explain the relationship between the two variables. The largest positive standardized residual is 4.93 (HAPP AUTO and PERFAUTO) and the largest negative standardized residual is - 3.64 (HAPPAUTO and SPONTAN). LISREL printed a list of the forty-eight residuals that are greater than plus two or less than minus two.

### ***Maximum Likelihood***

Maximum likelihood is a full information strategy, in other words, it allows for simultaneous estimation of all parameters (Kelloway, 1998). Three values are provided under the maximum likelihood: unstandardized regression coefficients, standard error, and *T* scores (which is the regression coefficient divided by the standard error). *T* scores between -1.96 and 1.96 indicate that there is no difference between fixing the variable and allowing it to vary; numbers outside of this range indicate that the coefficients are significant (Joreskog &

Sorbom, 1996). In this case, all  $T$  scores for the measured variables and all  $T$  scores for measurement error variance except for one (i.e., Harmony) are greater than 1.96 or less than -1.96 (see Figure 12). Several factors also have scores within this range. Figure 13 shows the results of the standardized solution and it is clear that the measurement error variance for Harmony is not significant. The standardized solution for the factors has been reproduced in a separate Table (Table 65) due to the visual difficulties of including it in Figure 12. Within this Table, several factor relationships are non-significant. Additionally, several factors have negative factor correlations, in particular, Affect and Loss of Self-Consciousness, Concentration and Loss of Self-Consciousness, and Fascination and Loss of Self-Consciousness. Finally, the Squared Multiple Correlations for  $X$  variables indicates that the latent variables explain the variance in the observed variables quite well, as  $R^2$  ranges from 0.32 to 0.95, with an average of 0.68 (see Table 67).

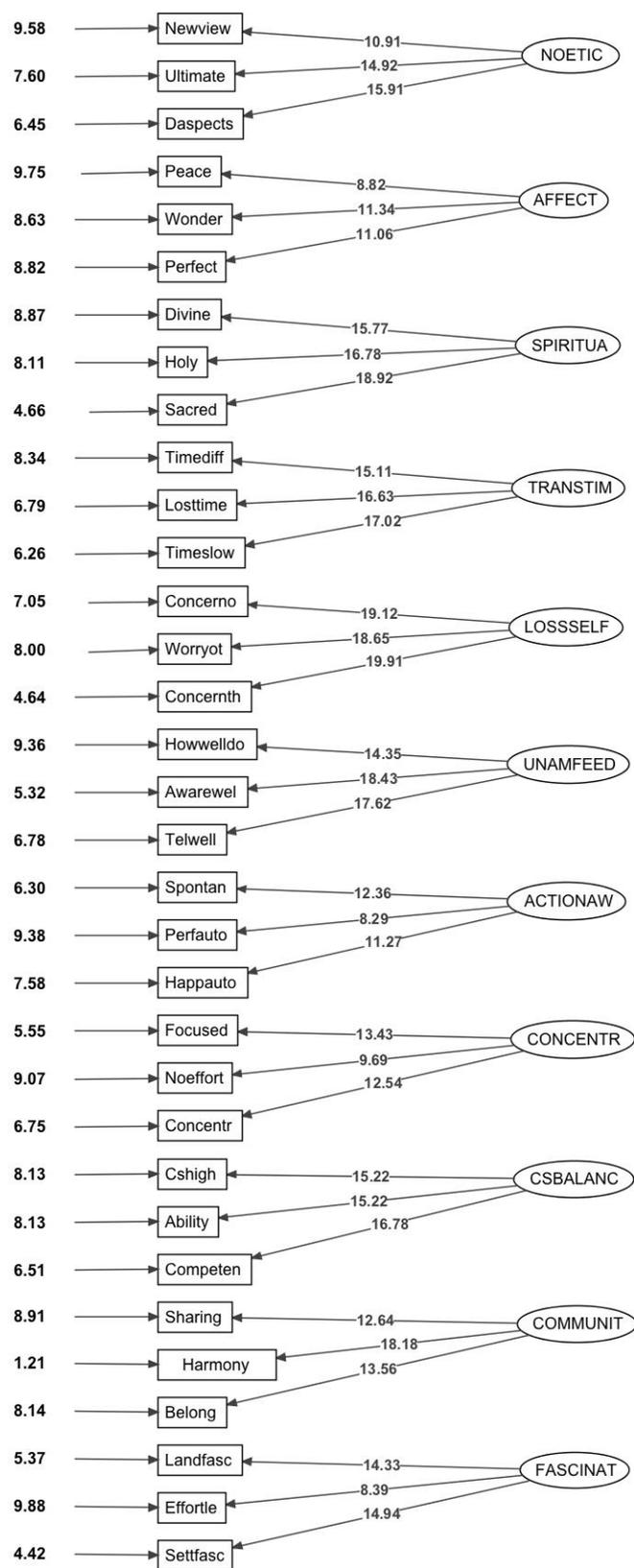
Figure 12. CFA test sample, *T* values

Figure 13. CFA test sample, standardized solution

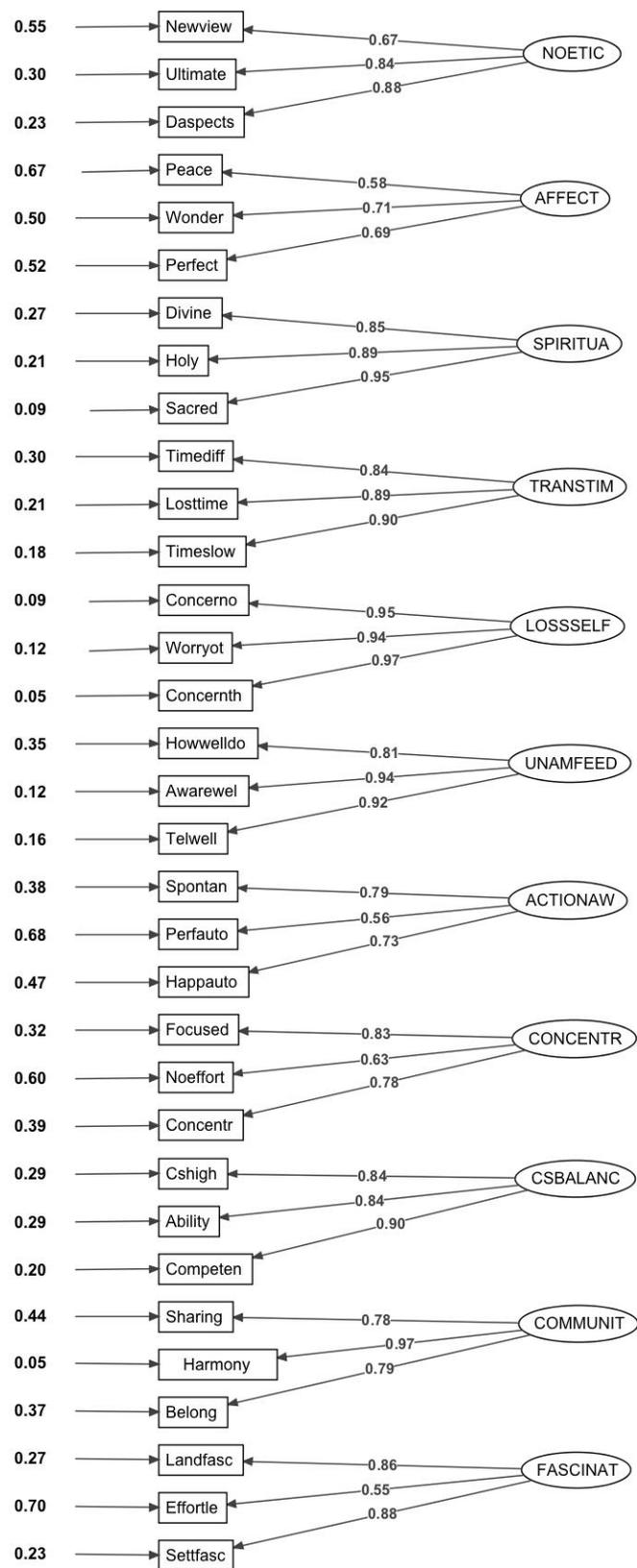


Table 66. Standardized Solution for Factors (Correlation of Factors), Test Sample\*

Factor	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>	F <sub>7</sub>	F <sub>8</sub>	F <sub>9</sub>	F <sub>10</sub>	F <sub>11</sub>
NOET	1.0										
AFFE	0.71	1.0									
SPIR	0.82	0.83	1.0								
TRAN	0.66	0.70	0.57	1.0							
LOSS	<b>0.12</b>	<b>-0.14</b>	<b>.007</b>	<b>0.09</b>	1.0						
UNAM	0.27	<b>0.05</b>	<b>0.10</b>	0.21	0.26	1.0					
ACTIO	0.53	0.51	0.46	0.61	<b>0.09</b>	0.44	1.0				
CONC	0.39	0.35	0.29	0.39	<b>-0.01</b>	0.45	0.53	1.0			
CSBAL	0.28	<b>0.14</b>	<b>0.13</b>	0.21	0.24	0.84	0.46	0.41	1.0		
COMM	0.15	<b>0.14</b>	<b>0.07</b>	<b>0.12</b>	0.19	0.20	<b>0.12</b>	0.19	0.22	1.0	
FASC	0.38	0.59	0.32	0.44	<b>-0.13</b>	<b>0.08</b>	0.35	0.31	0.21	<b>0.06</b>	1.0

\*Note: Bold values are not significant

Table 67. Variance Explained (R Squared), Test Sample

X	VARIABLE NAME	FACTOR NAME	Variation
X <sub>1</sub>	New view reality	NOET	0.45
X <sub>2</sub>	Ultimate reality revealed	NOET	0.70
X <sub>3</sub>	Deeper aspects reality	NOET	0.77
X <sub>4</sub>	Peaceful state	AFFE	0.33
X <sub>5</sub>	Wonder	AFFE	0.50
X <sub>6</sub>	All was perfection	AFFE	0.48
X <sub>7</sub>	Divine	SPIR	0.73
X <sub>8</sub>	Holy	SPIR	0.79
X <sub>9</sub>	Sacred	SPIR	0.91
X <sub>10</sub>	Time passed differently	TRANS	0.70
X <sub>11</sub>	Lost awareness of time	TRANS	0.79
X <sub>12</sub>	Time slowed	TRANS	0.82
X <sub>13</sub>	Concerned others evaluation	LOSS	0.91
X <sub>14</sub>	Worried others thinking	LOSS	0.88
X <sub>15</sub>	Concerned others thinking	LOSS	0.95
X <sub>16</sub>	How well I was doing	UNAM	0.65
X <sub>17</sub>	Aware how well doing	UNAM	0.88
X <sub>18</sub>	Could tell how well doing	UNAM	0.84
X <sub>19</sub>	I did things spontaneously	ACTION	0.62
X <sub>20</sub>	Performed automatically	ACTION	0.32
X <sub>21</sub>	Things happen automatically	ACTION	0.53
X <sub>22</sub>	Completely focused	CONC	0.68
X <sub>23</sub>	No effort to keep my mind	CONC	0.40
X <sub>24</sub>	Total concentration	CONC	0.61
X <sub>25</sub>	Challenge and skill high	CSBAL	0.71
X <sub>26</sub>	Abilities match challenge	CSBAL	0.71
X <sub>27</sub>	Competent meet high demands	CSBAL	0.80
X <sub>28</sub>	Sense of sharing	COMM	0.56
X <sub>29</sub>	Sense harmony	COMM	0.95
X <sub>30</sub>	Sense of belonging	COMM	0.63
X <sub>31</sub>	Landscape fascinating	FASC	0.73
X <sub>32</sub>	Effortless attention	FASC	0.30
X <sub>33</sub>	Natural setting fascinating	FASC	0.77

In summary, at this point in the analysis the hypothesis that the model fits

the data has been mostly supported with a good overall fit exhibited but with some large residuals and non-significant factor relationships.

### **Modification Indices**

LISREL reports modification indices for all the estimated parameters. These coefficients illustrate how much  $\chi^2$  will decrease if the parameter is freed. LISREL indicates that the maximum modification would be 24.35 for the measurement error variance between HAPPAUTO and PERFAUTO.

### ***Cross-validation***

A CFA was performed using the same hypothesized model on the cross-validation sample ( $n = 207$ ). Figure 14 and Figure 15 outline the standardized solution and  $T$  values respectively, while Table 68 compares the fit statistics.



Figure 15. CFA Cross-validation sample, T values

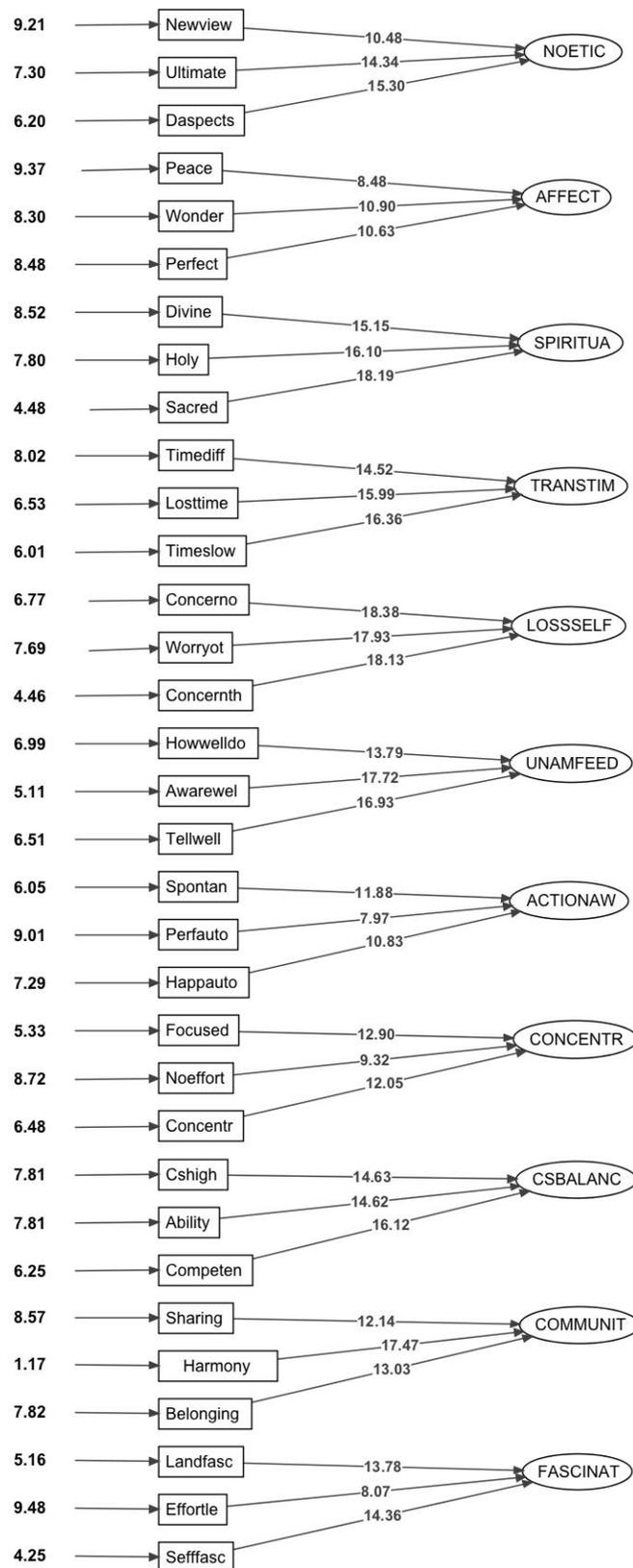


Table 68. Fit Statistics of the Hypothesized Model

Model	$\chi^2$	df	GFI	AGFI	RMS EA	NFI	CFI	PNFI	PGFI	EVIC
Test sample	616.18	440	0.86	0.82	0.042	0.94	0.98	0.78	0.67	3.85
Cross- valid. sample	569.21	440	0.86	0.82	0.038	0.94	0.98	0.78	0.67	5.45

As indicated in Table 68, the cross validation sample produces very similar fit statistics as the test sample, indicating a replicable model. For example, when the CFI, PNFI, and PGFI are compared, the results are identical. PHI indicates consistency as well (See Table 69). The Squared Multiple Correlations for X variables indicates that the latent variables explain the variance in the observed variables quite well once again, as  $R^2$  ranges from 0.30 to 0.95, with an average of 0.68 (see Table 70).

Table 69. Standardized Solution for Factors (Correlation of Factors). Cross Validation Sample\*

Factor	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>	F <sub>7</sub>	F <sub>8</sub>	F <sub>9</sub>	F <sub>10</sub>	F <sub>11</sub>
NOET	1.0										
AFFE	0.71	1.0									
SPIR	0.82	0.83	1.0								
TRAN	0.66	0.70	0.57	1.0							
LOSS	<b>0.12</b>	<b>-0.14</b>	<b>.0.07</b>	<b>0.09</b>	1.0						
UNAM	0.27	<b>0.05</b>	<b>0.10</b>	0.21	0.26	1.0					
ACTIO	0.53	0.51	0.46	0.61	<b>0.09</b>	0.44	1.0				
CONC	0.39	0.35	0.29	0.39	<b>-0.01</b>	0.45	0.53	1.0			
CSBAL	0.28	<b>0.14</b>	<b>0.13</b>	0.21	0.24	0.84	0.46	0.41	1.0		
COMM	0.15	<b>0.14</b>	<b>0.07</b>	<b>0.12</b>	0.19	0.20	<b>0.12</b>	0.19	0.22	1.0	
FASC	0.38	0.59	0.32	0.44	<b>-0.13</b>	<b>0.08</b>	0.35	0.31	0.21	<b>0.06</b>	1.0

\*Note: Bold values are not significant

Table 70. Explained R Squared, Cross Validation Sample

X	VARIABLE NAME	FACTOR NAME	Variation
X <sub>1</sub>	New view reality	NOET	0.45
X <sub>2</sub>	Ultimate reality revealed	NOET	0.70
X <sub>3</sub>	Deeper aspects reality	NOET	0.77
X <sub>4</sub>	Peaceful state	AFFE	0.33
X <sub>5</sub>	Wonder	AFFE	0.50
X <sub>6</sub>	All was perfection	AFFE	0.48
X <sub>7</sub>	Divine	SPIR	0.73
X <sub>8</sub>	Holy	SPIR	0.79
X <sub>9</sub>	Sacred	SPIR	0.91
X <sub>10</sub>	Time passed differently	TRANS	0.70
X <sub>11</sub>	Lost awareness of time	TRANS	0.79
X <sub>12</sub>	Time slowed	TRANS	0.82
X <sub>13</sub>	Concerned others evaluation	LOSS	0.91
X <sub>14</sub>	Worried others thinking	LOSS	0.88
X <sub>15</sub>	Concerned others thinking	LOSS	0.95
X <sub>16</sub>	How well I was doing	UNAM	0.65
X <sub>17</sub>	Aware how well doing	UNAM	0.88
X <sub>18</sub>	Could tell how well doing	UNAM	0.84
X <sub>19</sub>	I did things spontaneously	ACTION	0.62
X <sub>20</sub>	Performed automatically	ACTION	0.32
X <sub>21</sub>	Things happen automatically	ACTION	0.53
X <sub>22</sub>	Completely focused	CONC	0.68
X <sub>23</sub>	No effort to keep my mind	CONC	0.40
X <sub>24</sub>	Total concentration	CONC	0.61
X <sub>25</sub>	Challenge and skill high	CSBAL	0.71
X <sub>26</sub>	Abilities match challenge	CSBAL	0.71
X <sub>27</sub>	Competent meet high demands	CSBAL	0.80
X <sub>28</sub>	Sense of sharing	COMM	0.56
X <sub>29</sub>	Sense harmony	COMM	0.95
X <sub>30</sub>	Sense of belonging	COMM	0.63
X <sub>31</sub>	Landscape fascinating	FASC	0.73
X <sub>32</sub>	Effortless attention	FASC	0.30
X <sub>33</sub>	Natural setting fascinating	FASC	0.77

### Post-hoc testing of the eleven-factor model

Kelloway (1998) cautions post-hoc evaluation of models based on modification indices for several reasons. One possibility is that there may be sample specific variance. Secondly, theory building and theory trimming have Type I error implications. Finally, the improvement of the overall fit via  $\chi^2$  may be trivial. However, there are some changes that can be made to the eleven-factor model that are not only empirically driven by CFA, but also by theoretical concerns. For example, the variable ‘Effortless attention’ exhibits several issues. Cronbach’s Alpha was done to test the internal reliability of the PDE scale. The test assessed whether each respondent similarly scored the three items that measure each of the eleven factors. As evident in Table 71, all the Alpha scores are adequate and above 0.7 (Cortina, 1993).

*Table 71. Cronbach's Alpha*

Factor	Alpha
NOET	0.84
AFFE	0.71
SPIR	0.93
TRANS	0.91
LOSS	0.96
UNAM	0.92
ACTION	0.71
CONC	0.73
CSBAL	0.89
COMM	0.88
FASC	0.80

However, the Cronbach’s Alpha for Fascination (i.e., 0.797) increases substantially when ‘Effortless attention’ is dropped (i.e., 0.848) (See Table 72).

*Table 72. Cronbach's Alpha if Item Deleted*

Factor	Item	Cronbach's Alpha if Item Deleted
FASC	Landscape fascinating	0.69
	Natural setting fascinating	0.66
	Effortless attention	0.85

This makes intuitive sense when we consider that ‘Effortless attention’ measures an aspect of attention, while the other two variables ‘Landscape fascinating’ and ‘Natural setting fascinating’ appear to focus on characteristics of the landscape.

Finally, CFA results suggest modification indices of 13.06 when ‘Effortless attention’ is free to vary with AFFECT. Due to the desire for a parsimonious evaluation of FASCINATION and the model in general, ‘Effortless attention’ was deleted and this modified model was evaluated using both the test and cross-validation samples. Figure 16 and Figure 17 illustrate the standardized solution and *T* values of the test sample and Figure 18 and Figure 19 show the standardized solution and *T* values of the cross-validation sample.

Figure 16. CFA test sample, with 'Effortless Attention' deleted, standardized solution

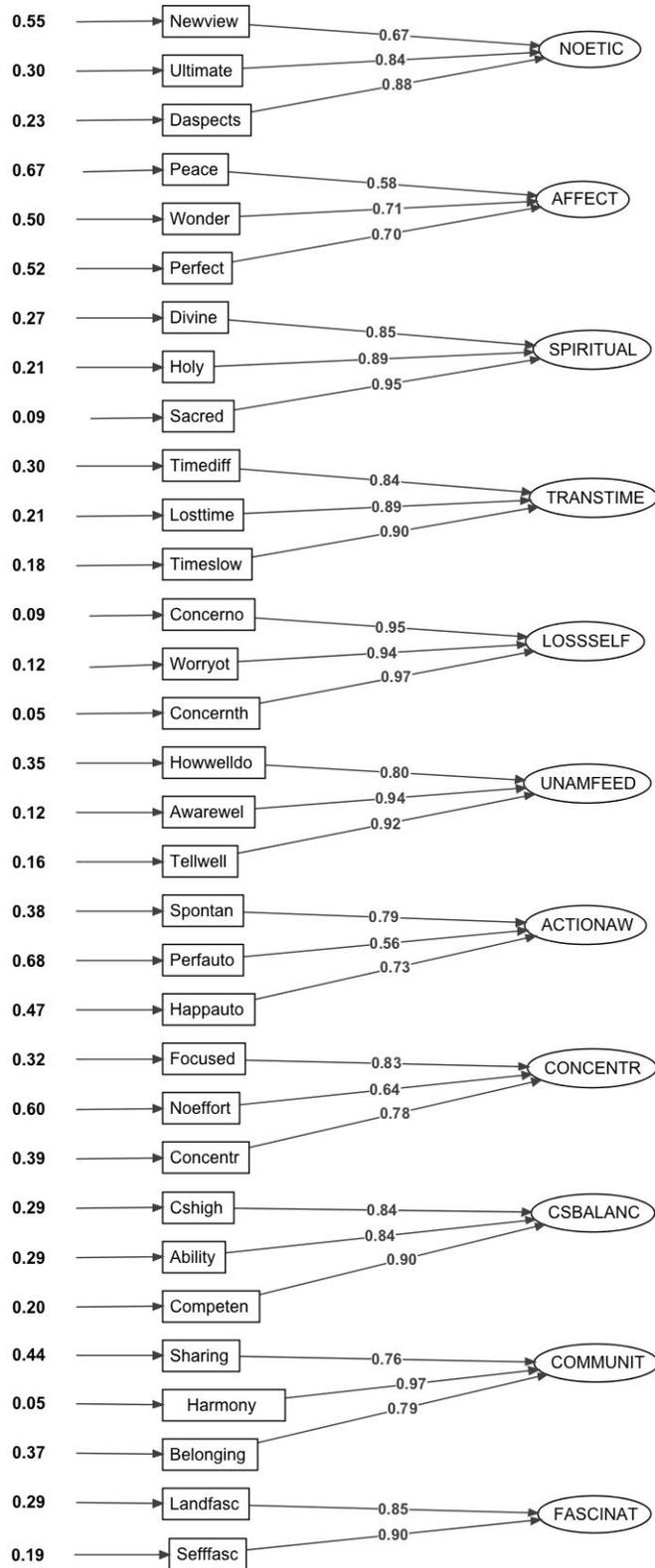


Figure 17. CFA test sample, with 'Effortless Attention' deleted, T values

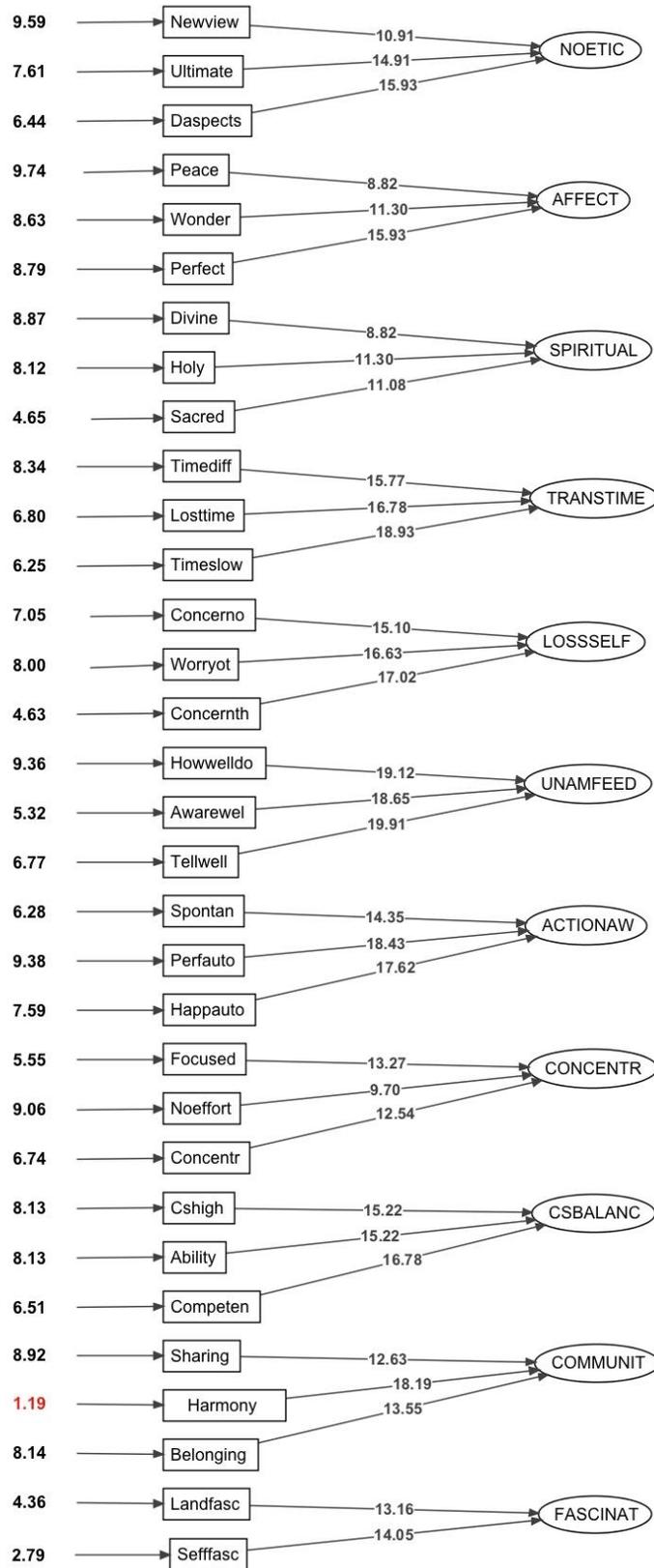
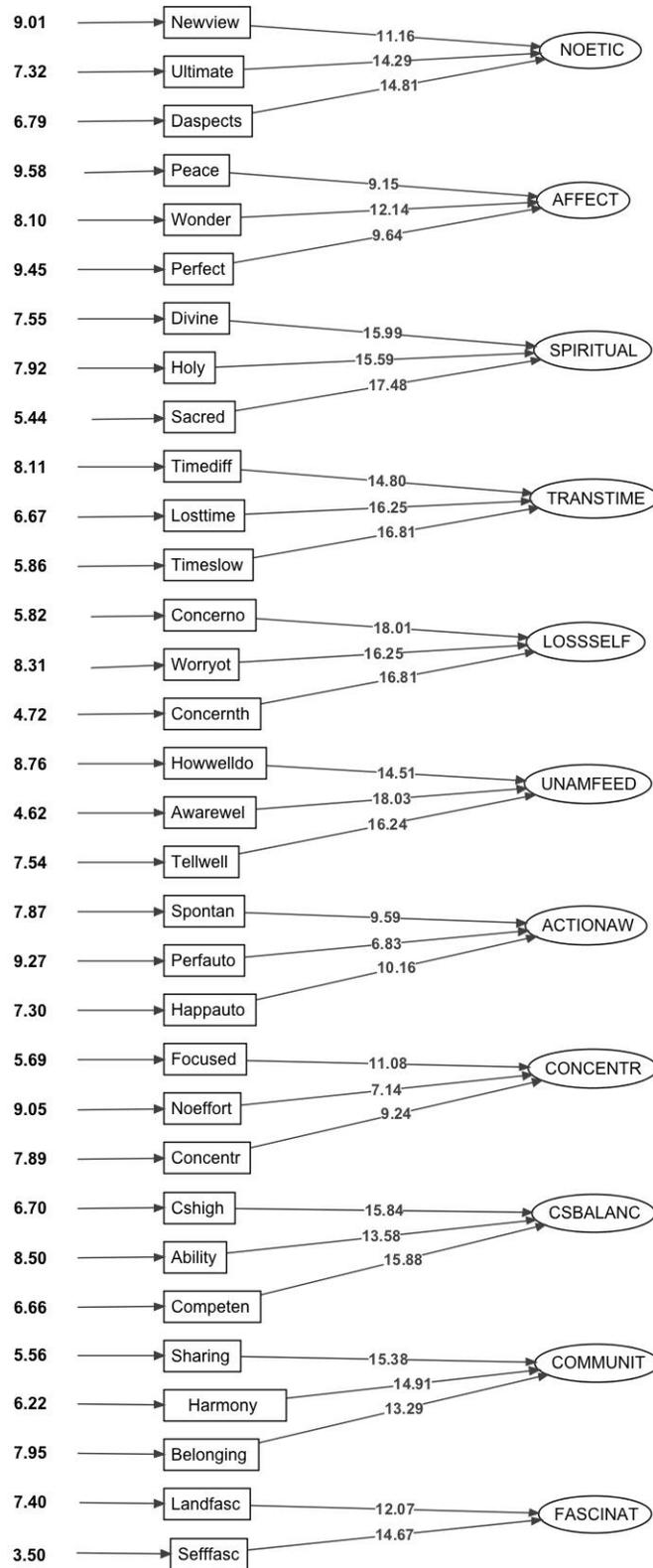




Figure 19. CFA cross-validation sample, with 'Effortless Attention' deleted, *T* values



Kelloway (1998) proposes three methods for finding a good-fitting model:

(a) the absolute fit of the model to the data, (b) the fit of a model to the data relative to other models, or (c) the degree of parsimonious fit of the model relative to other models. Because the second model is not nested in the first (i.e., the data *and* parameters have changed) it is not appropriate to do a  $\chi^2_{\text{diff}}$ , but we can compare other statistics (Tabachnick & Fidell, 2007) (see Table 73).

*Table 73. Comparing Fit Statistics of the Hypothesized Model and Modified Model with 'Effortless Attention' Deleted*

	Test sample	Model modification	Cross validation sample	Model modification
$\chi^2$	616.18	571.79	569.21	667.56
df	440	409	440	409
GFI	0.86	0.86	0.86	0.83
AGFI	0.82	0.82	0.82	0.78
RMSEA	0.042	0.042	0.038	0.055
NFI	0.94	0.94	0.94	0.94
CFI	0.98	0.98	0.98	0.97
PNFI	0.78	0.78	0.78	0.77
PGFI	0.67	0.67	0.67	0.64
ECVI	3.85	3.63	5.45	4.40

Table 73 indicates little to no difference between the original model and the modified model when considering GFI, AGFI, NFI, PNFI and PGFI.

However, the single sample expected cross-validation index (ECVI) is a function of  $\chi^2$  and degrees of freedom that can be used to compare non nested models using the same data set. The number closest to zero is the most stable in the population.

In this case, the modified model is the most stable, with an ECVI of 3.63 in the test sample and 4.40 in the cross validation sample. Therefore, for the sake of parsimony, 'Effortless attention' was dropped from the model for SEM analysis.

Table 74 compares the  $R^2$ , or the amount of variance explained by the factors, across the original and modified test sample and cross validation sample.  $R^2$  is consistent across all four samples, with the poorest variance explained across all of the variables attributed to the AFFECT factor with 0.33 to 0.57 of the variance explained. The single poorest explained variance on a single variable is 'Performed automatically' with the factor 'ACTION' explaining 0.25 to 0.32 of the variance. Once again, PHI produced low values for Loss of Self-Consciousness in the test sample and PHI was not positive definite for the cross validation sample, indicating that multicollinearity may be an issue.

Table 74. The Amount of Variance Explained by the Factors (R Squared)

X	VARIABLE NAME	FACTOR NAME	Original		Modified	
			Test	Cross	Test	Cross
1	New view reality	NOET	0.45	0.45	0.45	0.50
2	Ultimate reality revealed	NOET	0.71	0.70	0.70	0.70
3	Deeper aspects reality	NOET	0.77	0.77	0.77	0.74
4	Peaceful state	AFFE	0.34	0.33	0.33	0.36
5	Wonder	AFFE	0.50	0.50	0.50	0.57
6	All was perfection	AFFE	0.48	0.48	0.48	0.39
7	Divine	SPIR	0.72	0.73	0.73	0.78
8	Holy	SPIR	0.79	0.79	0.79	0.76
9	Sacred	SPIR	0.90	0.91	0.91	0.87
10	Time passed differently	TRANS	0.71	0.70	0.70	0.72
11	Lost awareness of time	TRANS	0.79	0.79	0.79	0.81
12	Time slowed	TRANS	0.81	0.82	0.82	0.84
13	Concerned others evaluation	LOSS	0.90	0.91	0.91	0.89
14	Worried others thinking	LOSS	0.88	0.88	0.88	0.80
15	Concerned others thinking	LOSS	0.94	0.95	0.95	0.92
16	How well I was doing	UNAM	0.66	0.65	0.65	0.69
17	Aware how well doing	UNAM	0.88	0.88	0.88	0.90
18	Could tell how well doing	UNAM	0.85	0.84	0.84	0.80
19	I did things spontaneously	ACTION	0.62	0.62	0.62	0.45
20	Performed automatically	ACTION	0.31	0.32	0.32	0.25
21	Happen automatically	ACTION	0.53	0.53	0.53	0.50
22	Completely focused	CONC	0.69	0.68	0.68	0.60
23	No effort to keep my mind	CONC	0.40	0.40	0.40	0.27
24	Total concentration	CONC	0.61	0.61	0.61	0.43
25	Challenge and skill high	CSBAL	0.71	0.71	0.71	0.79
26	Abilities match challenge	CSBAL	0.71	0.71	0.71	0.64
27	Meet high demands	CSBAL	0.81	0.80	0.80	0.79
28	Sense of sharing	COMM	0.61	0.56	0.56	0.78
29	Sense harmony	COMM	0.94	0.95	0.95	0.75
30	Sense of belonging	COMM	0.62	0.63	0.63	0.64
31	Landscape fascinating	FASC	0.74	0.73	0.71	0.59
32	Effortless attention	FASC	0.30	0.30	-	-
33	Natural setting fascinating	FASC	0.77	0.77	0.81	0.81
			0.68	0.68	0.69	0.67

Table 74

*Standardized Solution for Factors (Correlation of Factors), test sample with effortless attention removed\**

Factor	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>	F <sub>7</sub>	F <sub>8</sub>	F <sub>9</sub>	F <sub>10</sub>	F <sub>11</sub>
NOET	1.00										
AFFE	0.71	1.00									
SPIR	0.82	0.83	1.00								
TRANS	0.66	0.70	0.57	1.00							
LOSS	<b>-0.12</b>	<b>0.14</b>	<b>-0.07</b>	<b>-0.09</b>	1.00						
UNAM	0.27	<b>0.05</b>	<b>0.10</b>	0.21	-0.26	1.00					
ACTION	0.53	0.51	0.46	0.61	<b>-0.09</b>	0.44	1.00				
CONC	0.39	0.35	0.29	0.39	<b>0.01</b>	0.45	0.53	1.00			
CSBAL	0.28	<b>0.14</b>	0.13	<b>0.21</b>	-0.24	0.84	0.46	0.41	1.00		
COMM	0.15	<b>0.14</b>	<b>0.07</b>	<b>0.12</b>	-0.19	0.20	<b>0.12</b>	0.19	0.22	1.00	
FASC	0.37	0.56	0.30	0.42	<b>0.13</b>	<b>0.07</b>	0.31	0.29	0.19	<b>0.04</b>	1.00

\*Note: Bold indicates not significant

The purpose of the CFA was to confirm an eleven-factor structure. The results do indicate support for this structure with the original test sample having an RMSEA of 0.042 and NFI of 0.94 and the cross validation model with an RMSEA of 0.038 and NFI of 0.94. Modifications to the model included dropping ‘Effortless attention’ with no significant improvement in the fit statistics, except for a drop in ECVI, indicating a better-modified model. Therefore, future analysis should consider dropping the item, ‘Effortless attention’ in surveys that include Fascination.

The *t* values were all significant in the original sample except for the variable ‘Harmony’. However, ‘Harmony’ is significant in the modified cross validation sample, suggesting that sample variation may be the cause rather than a faulty model. Across both samples and both the original and modified model the Squared Multiple Correlations for X variables indicated that the latent variables

explain the variance in the observed variables quite well, as  $R^2$  ranged from 0.25 to 0.95, with an average over all four model of 0.67 to 0.69. Of particular interest here is the poorer performance of AFFECT in explaining the variance of the variables, 'Peaceful state', 'Wonder', and 'All was perfection' (See Table 74). Also of interest in this study is the relatively poor performance of the 'Loss of Self-Consciousness' Factor. Even when these typically negatively worded items were worded positively, when viewing the Standardized Solution for the Factors, this factor is only significantly different from 'Challenge Skill Balance', 'Unambiguous feedback' and 'Communitas' (See Table 75).

#### **Frequency of the 'Big Four' and Antecedents**

An amalgamated score was created for each of the 'Big Four' (Communitas, Fascination, Flow, Spiritual) to compare the presence of each experience. For example, the scores for the 18 variables measuring Flow were added together and divided by 18. Means were then calculated for each of the 'Big Four'. It is clear from Table 76 that Fascination has the highest mean, followed by Flow, Spiritual, then Communitas.

*Table 75. Means of the 'Big Four'*

	<i>N</i>	Min	Max	<i>M</i>	<i>SD</i>
Fascination	429	1.5	6.0	5.44	0.85
Flow	431	1.78	6.00	4.27	0.88
Spiritual	431	1.00	6.00	4.07	1.26
Communitas	430	1.00	6.00	3.82	1.77
Valid N (listwise)	428				

Another way to calculate the presence of the 'Big Four' is to note the highest score out of Communitas, Fascination, Flow, and Spiritual for each

respondent. Individuals who had two or more scores that tied for the highest were left out. As reported in Table 77, it is evident that Fascination was the most strongly experienced PDE followed by Communitas, and the Flow and Spiritual.

*Table 76. Frequency of the 'Big Four'*

	Frequency	Percent	Valid Percent
Fascination	286	66.4	66.4
Communitas	44	10.2	10.2
Flow	19	4.4	4.4
Spiritual	19	4.4	4.4
None	63	14.6	14.6
Total	431	100.0	100.0

### **Cluster Analysis**

Finally, a cluster analysis was undertaken to discover which cases grouped together. A cluster analysis groups scores together by predetermined variables and predetermined number of groups. In this case, average scores on each of the 'Big Four' were the variables used. In order to keep the analysis manageable, the data were tested for four groups based on the theory that there are four experiences. A K means cluster, or nonhierarchical method was used, as it is less sensitive to outliers and because the variables included (i.e., the means on the 'Big Four') are certain for their inclusion. SPSS uses parallel threshold, meaning that the initial mean around which each group begins to form is randomly chosen (Grimm & Yarnold, 2000). All of the means for each cluster were tested for their significance, or difference from the other group means in the cluster, for a total of twenty-four paired t tests. Therefore, a Bonferroni correction was used. In order to reduce Type I error, significance was chosen at .05 divided by twenty-four tests,

so that  $p = .0020$  (Field, 2005). Table 77 reflects these tests by identifying significantly different means that are denoted by a different subscript. Number of cases per cluster is also provided.

*Table 77. Final Cluster Centres and Significant Mean Differences*

	Cluster			
	1	2	3	4
Fascination	5.5 <sub>a</sub>	5.8 <sub>a</sub>	5.0 <sub>a</sub>	4.8 <sub>a</sub>
Flow	4.49 <sub>b</sub>	4.69 <sub>b</sub>	3.99 <sub>b</sub>	3.37 <sub>b</sub>
Spiritual	4.93 <sub>c</sub>	4.90 <sub>b</sub>	3.10 <sub>b</sub>	2.39 <sub>c</sub>
Communitas	1.72 <sub>d</sub>	5.16 <sub>c</sub>	4.73 <sub>c</sub>	1.77 <sub>d</sub>
Number of cases	89	170	103	69

Based on significantly different means, the clusters identified have the following major characteristics:

Cluster 1: Primarily Fascination with Spirituality as a secondary PDE

Cluster 2: Primarily Fascination with Flow and Spiritual as a secondary PDE

Cluster 3: Primarily Fascination with Communitas as a secondary PDE

Cluster 4: Primarily Fascination with Flow as a secondary PDE

Noteworthy here is that all four clusters have Fascination as the base experience and are differentiated by their secondary experience. A chi square test was performed to determine if there was a significant relationship between each cluster and the three variables: activity, setting, and the people they were with. The only significant relationship is between Cluster and 'Who with' as indicated in Table 78 and 79. As shown, there is a significant difference between the expected count of being alone and the actual count. Fewer participants than expected were alone in Cluster one (Fascination/Spiritual), and more participants

than expected were alone in Cluster two (Fascination/Flow and Spiritual), Cluster three (Fascination/Communitas), and Cluster four (Fascination/Flow).

*Table 78. Significant Chi Square Test Between Cluster and 'Who With'*

		Cluster 1	Cluster 2	Cluster 3	Cluster 4	Total
Alone	Count	4	38	26	16	84
	Expected	16.8	33.3	20.6	13.2	83.9
	Count	4.76	22.89	25.24	24.24	
With others	Count	80	128	77	50	335
	Expected	67.2	132.7	82.4	52.8	335.1
	Count	95.24	77.11	74.76	75.76	
	Percent	84	166	103	66	419

*Table 79. Significant Chi Square Test Between Cluster and 'Who With'*

	Value	df	Sig. (2-tailed)
Pearson Chi-Square	15.541 <sup>a</sup>	3	.001
Likelihood Ratio	19.628	3	.000
Linear-by-Linear Association	8.836	1	.003
N of Valid Cases	419		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.23.

Participants were asked open-ended questions related to triggers for PDEs. For example, they were asked if there were any significant factors that led to the occurrence of their PDE. The responses were coded using directed content analysis, wherein theory is used to create the coding structure and then frequency statistics are reported (Hsieh, 2005). First, the qualitative information was coded. Then, based on cluster membership, these codes were organized (See Table 80 through Table 83). For Cluster one (Fascination/Spiritual), the most important triggers were nature or the setting they were in (19.2%), intention or focus on the present moment (16.4%), and having access to the location they were in (9.2%).

For Cluster 2 (Fascination/Flow and Spiritual), nature/setting (23.7%) and garnering a new perspective on life (10.2%) were paramount. For Cluster 3 (Fascination/Communitas) it was nature/setting (20.9%) and access (14.8%), and for Cluster 4 (Fascination/Flow,) nature/setting (19.1%), access to the location (13.5%), and having an intention or focus on the present moment (11.8%). In all cases, there were individuals who specifically attributed their triggers as a combination of factors, and this is reflected in the combination categories.

*Table 80. Cluster 1 (Primarily Fascination with Spirituality as Secondary)*

*Triggers*

Trigger	Frequency	Percent
Access	23	9.2
Accomplishment	1	0.4
Combination (Activity and setting)	4	1.6
Combination (Place and activity)	4	1.6
Combination (Setting, activity, weather)	1	0.4
Contrast	3	1.2
Enjoyment	1	0.4
Familiar	4	1.6
Intention/focus	41	16.4
Light	6	2.4
Nature/setting	48	19.2
Negative activity trigger	2	0.8
Novelty	1	0.4
No Trigger	4	1.6
Out of the ordinary	7	2.8
People	3	1.2
Perspective	18	7.2
Physicality	7	2.8
Previous memory	5	2
Remote	8	3.2
Solitude	15	6
Sound	2	0.8
Spontaneous	13	5.2
Stillness	14	5.6
Time	2	0.8
Weather	7	2.8
Wildlife	6	2.4
Total	250	100

*Table 81. Cluster 2 (Primarily Fascination with Flow and Spiritual as Secondary)**Triggers*

Trigger	Frequency	Percent
Access	44	9.3
Accomplishment	14	3.0
Activity	1	0.2
Anticipation	2	0.4
Combination (people and activity)	2	0.4
Combination (people and setting)	3	0.6
Combination (people and weather)	2	0.4
Combination (people, place, weather)	1	0.2
Combination (people, setting, activity)	4	0.9
Combination (setting and activity)	7	1.5
Contrast	4	0.9
Enjoyment	5	1.1
Familiar	1	0.2
Intention/focus	44	9.3
Light	1	0.2
Nature/setting	112	23.7
Negative trigger	2	0.4
No trigger	15	3.2
Novelty	3	0.6
Out of the ordinary	13	2.8
People	28	5.9
Perspective	48	10.2
Physicality	12	2.5
Previous memory	10	2.1
Remote	17	3.6
Season	1	0.2
Solitude	10	2.1
Spontaneous	19	4.0
Stillness	30	6.3
Unexplained	1	0.2
Weather	9	1.9
Wildlife	8	1.7
Total	473	100

Table 82. Cluster 3 (Primarily Fascination with *Communitas* as Secondary)

<i>Triggers</i>		
Trigger	Frequency	Percent
Access	39	14.8
Accomplishment	11	4.2
Adventure	1	0.4
Anticipation	3	1.1
Combination (activity, people, setting)	3	1.1
Combination (activity, setting)	1	0.4
Combination (people and activity)	1	0.4
Combination (people and setting)	4	1.5
Combination (people and weather)	1	0.4
Combination (people, place, weather)	2	0.8
Combination (people, setting, weather)	1	0.4
Combination (people, time, setting)	1	0.4
Combination (weather and activity)	1	0.4
Combo (Activity, setting, weather, people)	1	0.4
Contrast	3	1.1
Familiar	2	0.8
Intention/Focus	24	9.1
Light	3	1.1
Nature/setting	55	20.9
No trigger	11	4.2
Out of the ordinary	10	3.8
People	15	5.7
Perspective	16	6.1
Physicality	5	1.9
Previous memory	2	0.8
Remote	6	2.3
Season	1	0.4
Solitude	6	2.3
Sound	1	0.4
Spontaneous	10	3.8
Stillness	12	4.6
Weather	6	2.3
Wildlife	5	14.8
	263	100

*Table 83. Cluster 4 (Primarily Fascination with Flow as Secondary) Triggers*

Trigger	Frequency	Percent
Access	24	13.5
Accomplishment	7	3.9
Activity	1	0.6
Combination (people and setting)	1	0.6
Combination (people, setting, activity)	1	0.6
Combination (Place and activity)	1	0.6
Combination (time, weather, location)	1	0.6
Combination (weather and scenery)	1	0.6
Contrast	1	0.6
Enjoyment	1	0.6
Familiar	2	1.1
Intention/focus	21	11.8
Light	2	1.1
Nature/setting	34	19.1
No trigger	3	1.7
Novelty	1	0.6
Out of the ordinary	6	3.4
People	4	2.3
Perspective	6	3.4
Physicality	4	2.3
Previous memory	1	0.6
Remote	7	3.9
Season	1	0.6
Solitude	6	3.4
Spontaneous	10	5.6
Stillness	11	6.2
Weather	9	5.1
Wildlife	11	6.2
Total	178	100

All codes were then amalgamated into super codes. A super code is a term that is used in qualitative research, and in the qualitative program Atlas ti in

particular, to mean an overarching code that houses other codes that are similar. In this case, super codes were created based on the theoretical framework provided by mode: activity, physical setting, and social (D. R. Williams, 1988). Another super code was created based on the possibility that mind states was a significant trigger and the importance of spiritual experiences previously illustrated in the literature (Trainor & Norgaard, 1999). This super code included all codes affecting an individual's mind state such as intention, perspective, or stillness.

To illustrate the meaning of the super codes, the following paragraphs give examples of respondent statements. Statements from respondents that address intention or focus are as follows:

The environment, and the ability to pay attention, caused the experience, not the activities (Respondent 29, Cluster 1)

The meditation was deep and powerful and I heard the hum of the night creatures (Respondent 39, Cluster 4)

I believe my presence, my being in the moment, allowed me to be open to the experience (Respondent 112, Cluster 3)

Another state of mind code included 'perspective', when participants mentioned a connection to a higher power, universe, or a changed perspective:

When I am in nature, I often feel more connected to God (Respondent 265, Cluster 1)

It opened up a context in which my everyday life concerns and worries were shifted to the background. It has as much to do with temporality as with the sensory awareness of vast expanses and natural beauty. The ebb and flow of time is different in those wild spaces it's not regimented and there is no schedule. One feels in touch with a temporality that exceeds one's own lifespan. So the context mentioned above is both spatial and temporal (Respondent 216, Cluster 4)

I had a time to think about myself and organize my life (Respondent 471, Cluster 2)

Others mentioned the stillness of the natural environment that created the opportunity for their PDE:

The views, the peace and tranquility (Respondent 384, Cluster 4)

It was the stillness of the surroundings (Respondent 610, Cluster 2)

Four codes were not included in the previous four super codes. Solitude, although a part of the social realm, was deemed an important and independent aspect of the social experience and worth reporting on its own. Two codes, negative triggers or no triggers, as well as the code spontaneous, were also reported individually. Table 84 outlines how the original codes relate to the super codes, while Table 85 reports the super codes by Cluster.

*Table 84. Relationship Between Codes and Super Codes*

Code	Super code
Accomplishment	Activity
Activity	Activity
Adventure	Activity
Anticipation	Activity
Enjoyment	Activity
Physicality	Activity
Intention/focus	Mind
Perspective	Mind
Stillness	Mind
Negative	Negative
No trigger	No trigger
Access	Setting
Contrast	Setting
Familiar	Setting
Light	Setting
Nature/setting	Setting
Novelty	Setting
Remote	Setting
Season	Setting
Sound	Setting
Time	Setting
Weather	Setting
Wildlife	Setting
People	Social
Previous memory	Social
Solitude	Solitude
Out of the ordinary	Spontaneous
Spontaneous	Spontaneous

*Table 85. Super Codes by Cluster*

Super Code	One: Fascination and Spiritual	Two: Fascination, Flow and Spiritual	Three: Fascination and Communitas	Four: Fascination and Flow
Activity	7.17	10.26	10.42	8.11
Setting	44.22	43.06	47.92	54.05
Mind	29.08	24.55	18.06	25.95
Negative	0.8	0.4	0	0
No trigger	1.59	3.22	3.82	1.62
Social	3.19	10.06	10.76	3.78
Solitude	5.98	2.01	2.08	3.24
Spontaneous	7.97	6.44	6.94	3.24
Total	100	100	100	100

As shown in the above Table, the natural setting is a dominant trigger for all four Clusters (44.2%, 43.1%, 47.9%, and 54.1%), but especially for those who experience Fascination and Flow (54.1%). Mind state triggers (i.e. intention, perspective, or stillness) are highest for those who experience Fascination and Spiritual (29.1%) and lowest for those who experience Fascination and Communitas (18.1%). Social triggers are highest for those who experience Fascination and Communitas (10.8%; albeit only slightly more so than Fascination, Flow, and Spiritual, at 10.1%), with Fascination and Spiritual and Fascination and Flow being much lower (3.2% and 3.8%, respectively). Activity triggers are highest for those who experience Fascination and Communitas (10.4%) and Fascination, Flow, and Spiritual (10.3%), with Fascination and Spiritual and Fascination and Flow being much lower (7.2% and 8.1%, respectively).

### **Structural equation modeling**

The purpose of structural equation modeling (SEM) is to confirm an a priori specification of a measurement model (i.e., variables) and relationships among latent variables (i.e., factors); it is a simultaneous confirmation of structure and prediction of relationships between factors (Schreiber, Nora, Stage, Barlow, & King, 2006). The structural equation model is primarily developed based on previous research or theory, as well as hunches or intuition (Kelloway, 1998). The purpose of this imposed or implied structure is to hypothesize how factors are correlated in a particular way. The resulting fit indices show how well the implied covariance matrix (i.e., the covariance matrix that is influenced by the imposed structure) fits the original covariance matrix.

In effect, SEM is a simultaneous Confirmatory Factor Analysis (CFA) and multiple regression analysis (Tabachnick & Fidell, 2007). The CFA tests the factor solution and the regression analyzes prediction (Kelloway, 1998). In the case of this dissertation, I want to confirm which items (i.e., scale items) belong to which factors (i.e., Flow experiences, etc.). The advantage of using SEM is that measurement error is removed, leaving only common variance in the analysis. Additionally, complex relationships can be examined simultaneously. The disadvantage of using SEM is the increased ambiguity in interpretation (Tabachnick & Fidell, 2007).

SEM was particularly useful in this analysis to evaluate the hypothesis that: (a) that Flow could solely be represented by the three challenge/skill balance indicators, (b) that Spiritual could be solely represented by the three spiritual indicators, and (c) that there is a relationship among Communitas, Fascination,

Flow, Spiritual, Who people were with, and the surrounding landscape.

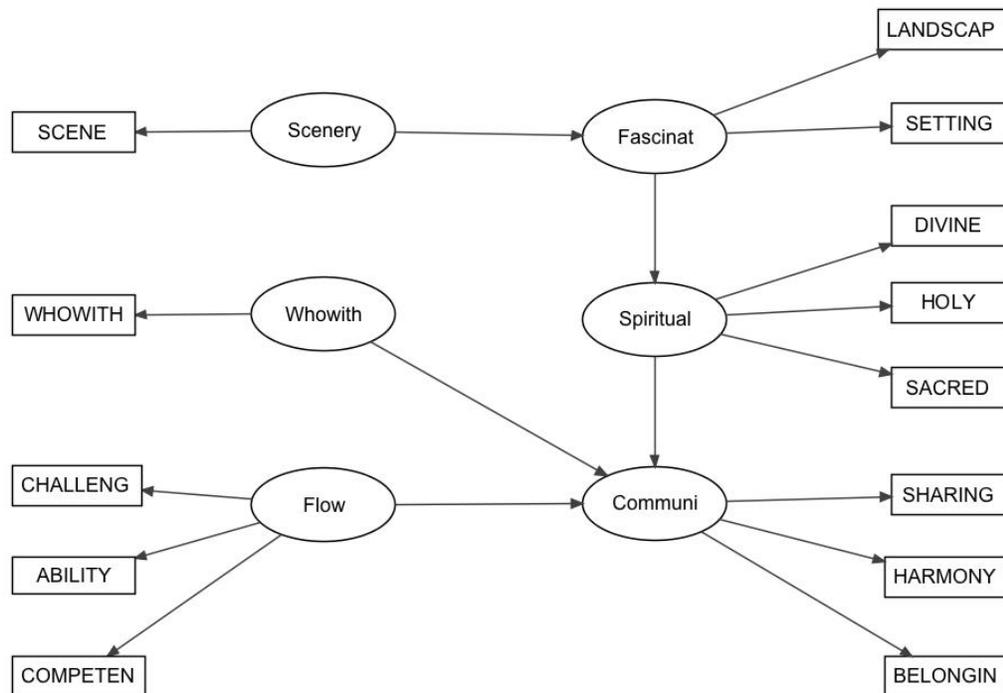
The hypothesized relationships among the 'Big Four' are based on the conclusions from the interview process. For example, the importance of *Communitas* during Spiritual experiences, the potential relationship between Spiritual experiences and Fascination, and the experience of *Communitas* during Flow experiences. Who people were with was hypothesized to have a relationship with *Communitas* and the scenery that people were viewing was also hypothesized to have a relationship to Fascination.

The hypothesized relationships between the measurement model and the factors are informed by the results from the CFA that indicate a good fitting model. To simplify the model both Flow and Spiritual were reduced to one factor with three measured variables. Previous research has relied on Challenge/Skill balance as a representation of the Flow experience (Csikszentmihalyi & Csikszentmihalyi, 1988). Additionally, Divine, Holy, and Sacred, were used to represent Spiritual experiences, empirically because they had the highest standardized estimates of all the Spiritual experience factors in the CFA, and theoretically because they are elements of the spiritual connection to a higher power. The hypothesized structural relationships are informed by the interview data, which suggested that: (a) Fascination is a potential precursor to Spiritual experiences, (b) *Communitas* is important for Spiritual experiences, and (c) *Communitas* is important for Flow.

SEM is concerned with two types of variables: exogenous (the variables that influence) and endogenous (the variables that are influenced). Endogenous variables may serve as predictor variables as well as predicting variables;

however, the exogenous variables only serve as predictor variables. The hypothesized structural equation model is represented in Figure 21. The exogenous variables are the green circles (i.e., Scenery, Who with, and Flow) with grey rectangles for the measurement model, while the endogenous variables are yellow circles (i.e., Fascination, Spiritual, and Communitas) with turquoise rectangles for the measurement model. Both 'Scenery' and 'Who with' have single indicators, an acceptable practice in SEM (Hayduk, 1996). The model structure hypothesizes that the scenery one encounters is an antecedent for Fascination, while Fascination is an antecedent to Spiritual experiences. Who with, Flow, and Spiritual experiences are proposed to be antecedents to Communitas.

*Figure 20. The hypothesized structural equation model*



### **Identification**

Identification of the SEM indicates whether a unique solution can be found. Because all the arrows in the hypothesized model are going in the same direction (i.e., a recursive model) the model is thus overidentified.

### **Estimation**

LISREL VIII and Maximum Likelihood estimation was used with a covariance matrix to construct the implied covariance matrix. Maximum Likelihood is a full information technique, meaning that all parameters are considered simultaneously (Kelloway, 1998). A sample size of 200 is appropriate for SEM (Kelloway, 1998), or a ratio of parameters to cases between 1:5 and 1:10 (Hu & Bentler, 1999). In this case, with 34 parameters, the ratio is 1:6 for a sample size of 207 and 1:12 for a sample size of 431. The use of split samples in SEM is “strongly recommended if we [sic] anticipate a period of model development that is data coordinated” (Hayduk, 1983, p.177). In this case, three samples were used to test the model: the full sample of 431, and a split sample of 224 and 207. The data were analyzed using LISREL VIII using pairwise deletion for missing values. There was no more than four percent missing data for any one variable (Tabachnick & Fidell, 2007) and one indicator for each factor was weighted with ‘one’ to run the analysis (Hayduk, 1983).

### **Testing fit**

Model fit statistics assess how close the implied covariance matrix fits the

original covariance matrix using Maximum Likelihood techniques to estimate the parameters (Kelloway, 1998). In Table 86 fit statistics are presented for all three samples.

*Table 86. Comparing Fit Statistics of the Hypothesized Model*

	Sample with $N =$ 431	Sample with $N =$ 224	Sample with $N =$ 207
$\chi^2$	542.80	278.22	268.26
df	57	57	57
GFI	0.84	0.84	0.83
AGFI	0.74	0.74	0.73
RMSEA	0.14	0.13	0.13
NFI	0.79	0.78	0.84
CFI	0.80	0.80	0.87
PNFI	0.58	0.57	0.62
PGFI	0.52	0.53	0.52
ECVI	1.42	1.55	1.63

It is clear from Table 86 that many of the fit statistics are stable across samples within this data set. Even though  $\chi^2$  appear to be lower in sample 224 and sample 207,  $\chi^2$  is heavily influenced by sample size. Model respecifications will be done on the  $N=431$  sample to use the larger sample. Figures 22, 23, and 24 describes the standardized solution,  $T$  values, and modification indices for the sample of comprised of 431 participants. As is clear from these Figures, only two relationships in the hypothesized model are significant: 'Who with' on the experience of 'Communitas', and 'Spiritual' on 'Communitas'.

Figure 21. SEM sample N=431 standardized solution

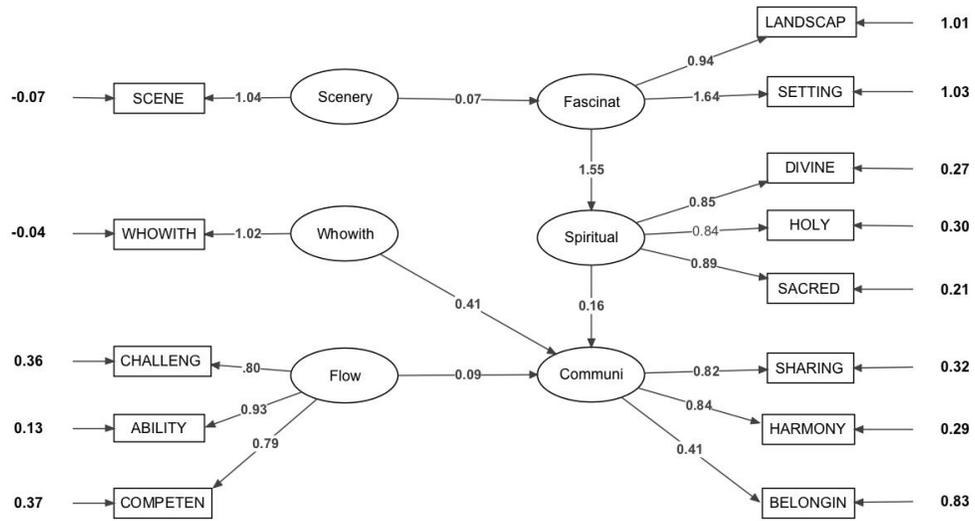


Figure 22. SEM sample N=431 T values

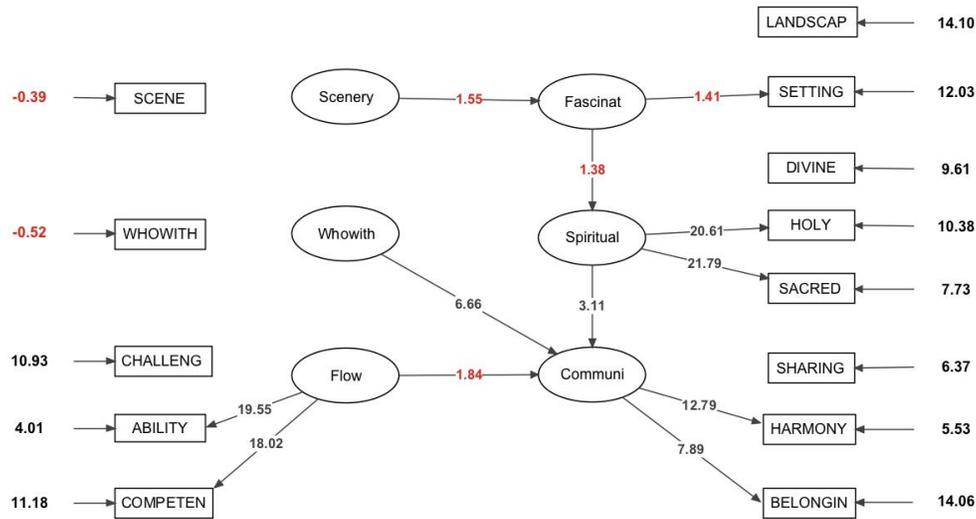
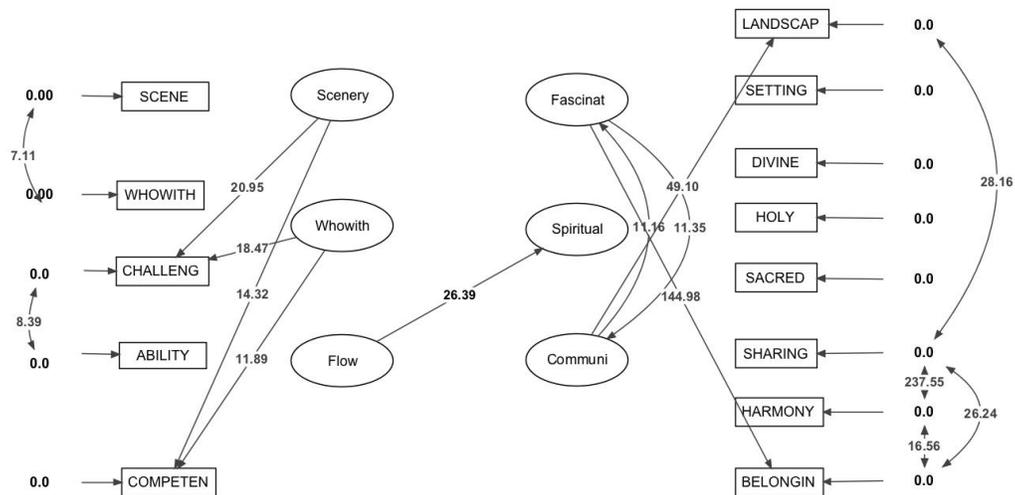


Figure 23. SEM sample N=431 modification indices



### Respecification

The goal of model respecification is to improve the fit indices, or increase the parsimony of the model by deleting nonsignificant pathways or adding pathways based on empirical evidence. However, due to the post-hoc nature of respecification, all changes must be validated on independent samples. Kelloway (1998) cautions that post-hoc modifications must be theoretically based and

replicated. Additionally, as Hayduck (2007) states, “model modifications should be nine-tenths theory driven and only one-tenth data driven” (p. 177). At this juncture, one modification is proposed that is theoretically sound. This modification is to address the large amount of shared variance between two of the three variables that measure Communitas: “Sharing” and “Harmony”. This modification means deleting “Sharing” from the original model.

### Modifications

The modification dropped ‘Sharing’ from the model (See Figure 25).

Figure 24. SEM modified with sharing deleted

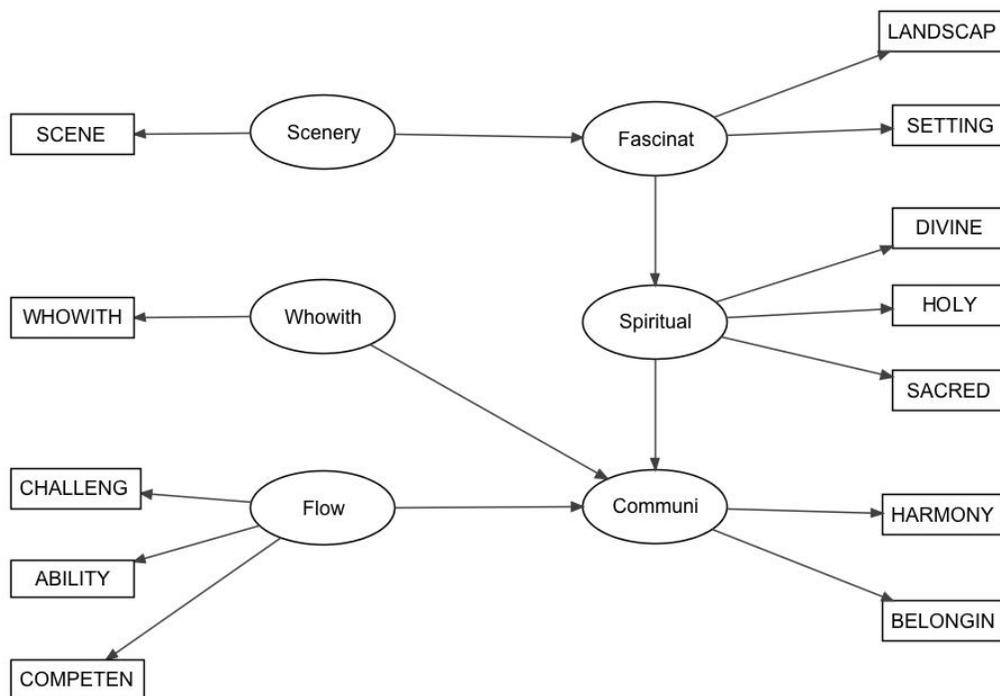


Figure 25. SEM modified with sharing deleted, sample  $N=431$   $T$  values

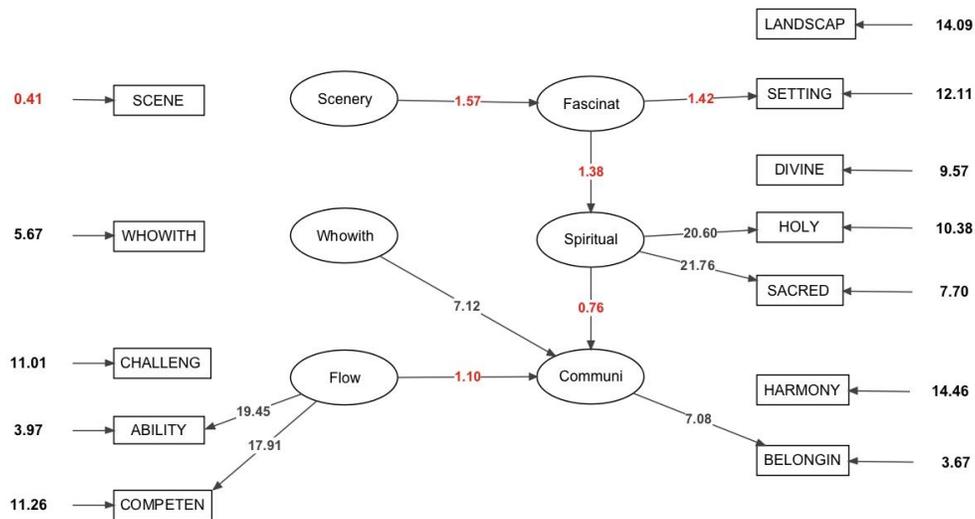


Table 87 compares the modification to the original. The modification is not a nested model in that variables and pathways are deleted from the original model (Kelloway, 1998). Schreiber (2006) outlines that the ECVI statistic is appropriate for non-nested model comparison. In this case, we can see that the modification that eliminates ‘Sharing’ is a better model with the lowest ECVI of 0.61 (See Figure 31). The Goodness of Fit Index is 0.93 with the Sharing-deleted model, indicating a good fit. Additionally, the difference between GFI and AGFI decreases between the original and modified Sharing-deleted model, indicating that unnecessary parameters have been eliminated. The NFI improves with the modified Sharing-deleted model and CFI is .94 for the modified Sharing-deleted model, indicating a good fit as well. While overall fit is better for the modified sharing model, the intricacies of the model are more problematic as the  $T$  values for Spiritual on Communitas are no longer significant for the modified ‘Sharing’ model.

*Table 87. Fit Statistics: Comparing the Modified Model and the Original Model*

	Original	Share
$\chi^2$	542.80	196.92
df	57	46
GFI	0.84	0.93
AGFI	0.74	0.88
RMSEA	0.14	0.087
NFI	0.79	0.93
CFI	0.80	0.94
PNFI	0.58	0.65
PGFI	0.52	0.55
ECVI	1.42	0.61

*Table 88. Squared Multiple Correlations*

	Original	Sharing
Fascination	-0.45	-0.47
Spiritual	-0.03	-0.03
Communitas	0.42	0.99

It is interesting to note that in the original and sharing model there are multiple negative values. (Joreskog, 1999) indicates that when using single indicators, constraints on the measurement model can translate directly into constraints on the structural model, which might lead to this kind of result.

The original SEM of 431 cases indicated a reasonable fitting model with a GFI of 0.84, RMSEA of .14 and ECVI of 1.42. However, the modified model with 'Sharing' deleted outperforms the original model. The 'Sharing' deleted model is perhaps the best fitting model when the ECVI statistic is compared, with 1.42 for the original model and 0.61 for the 'Sharing' deleted model, although ECVI is meant to be compared across similarly sized samples. However, the 'Sharing' deleted model has negative  $R^2$  values. The researcher surmises that the single dichotomous indicator for 'Who with' may be problematic. Additionally, the 'Sharing' deleted model reveals that there is only one significant  $t$  value: the

positive influence of 'Who with' on 'Communitas'.

Future analyses should consider maintaining a broader 'Who with' category with more than two options. The original intent behind using a dichotomous 'Who with' variable in this study was to capture if being alone or with other people during a PDE was an influential aspect. However, the dichotomous variable may be causing problems within the model as the negative  $R^2$  values in the original model and the 'Sharing' deleted model would suggest.

### **Chapter Seven: Discussion and Conclusion**

Research indicates that nature-based recreation experiences often involve spiritual aspects (Brayley & Fox), physically challenging activities (K. Williams & Harvey, 2001), passive moments or activities (McDonald, Wearing, & Ponting, 2009), and fascination (Kaplan, 1995), as well as connections to other people and the land (Wall, 2009)—all components of the 'Big Four'. This study addresses a gap in this literature as much previous research does not make any attempt to differentiate between antecedents and the immediate conscious experience (e.g., Kim et al., 2012; Merrick & Vinning, 2012; Stringer & McAvoy, 1992). For example, Merrick and Vinning (2012) explore what they call 'environmental epiphanies', those nature experiences that change or shift perspectives. They code the responses of their interviewees into descriptive categories including emotion, travel, physical activities, objects of interest, spiritual issues, environmental issues, nature and place-based issues, and consequences of the experience. While all of these elements are present in this research project in the form of triggers and through the 'Big Four', there was no attempt by Merrick and Vinning to

acknowledge or explicate the temporal aspects of these descriptions in terms of what role each of these elements plays in the unfolding of a nature epiphany and, perhaps more importantly, nor do they rely on previous research to develop their categories.

Additionally, many studies that explore memorable experiences in nature settings do so from the perspective of a single PDE, for example Spiritual experiences (e.g., Fredrickson & Anderson, 1999), or Fascination (e.g., Hartig et al., 2003). This is the first study of its kind to bring together four different theories from the disciplines of anthropology, environmental psychology, psychology, and religion (i.e., Communitas, Fascination, Flow, and Spiritual, respectively) to compare and contrast the antecedents and lived conscious experience within a nature setting. Additionally, this study addresses gaps in the literature identified by Heintzman (2010b). Specifically, the need for researchers to consider urban nature, use quantitative methodologies, particularly scale development, and work to differentiate various characteristics of nature experiences. Finally, this is one of the few studies on memorable nature experiences that does *not* rely on university students as its sample. Having described the unique aspects of this dissertation, the remainder of this chapter will briefly discuss participants' demographic information before addressing the four main research questions' results and implications.

### **Demographics**

Respondents were well educated, with 84.6% of individuals having a university or graduate degree. This percentage is well above the Alberta provincial average of 28% (Statistics Canada, 2006), and even above levels found

in previous nature-based research (e.g., Borrie & McCool, 2007). This study intentionally included those who experienced nature beyond the boundaries of what would be considered remote ‘wilderness’ by, for example, seeking out individuals who were gardeners and urban bird watchers. Previous research asserts that urban nature enthusiasts *and* remote wilderness users have been found to be more highly educated than the average public (Watson et al., 1992). Respondents’ income was below the Alberta provincial average of \$85,380 (Statistics Canada, 2011) as at least 67.8% of respondents had income below \$74,999. The majority of respondents were women (63.7%), twice as many as reported in a 2004 report of wilderness users, (Borrie & McCool, 2007). This result may, perhaps, have been due to my study’s focus on urban nature users. Additionally, the three most popular age categories (i.e., 25 to 34, 35 to 49, and 50 to 64) were equally represented in this study, while current research has found that fifty percent of wilderness visitors are now over age forty-five (Borrie & McCool).

### **Theoretical implications**

#### ***RQ1: How frequently do nature-based PDEs occur?***

In Chapter Two, speculative relationships among PDEs were outlined (see Table 9) as a typology based on relative frequency, relative intensity, and relative effort. The results of this study support a taxonomy (i.e., conceptual relationships that are confirmed through the use of empirical data; Bailey, 1994). While there is previous empirical and theoretical support for intensity and effort as differentiating phenomena, this project adds empirical support to considering the

relative frequency of PDEs. It was hypothesized that Flow would be experienced more than Communitas. However, the results indicate that the frequency of PDEs, in order of most experienced to least experienced, was in fact Fascination, Communitas, Flow, and Spiritual. This frequency is further supported through the results of the cluster analysis, as Fascination was the primary experience in each cluster, and Communitas the secondary experience in the largest cluster. Based on the literature review we can make sense of this data, as Fascination was developed and tested based on the premise that the natural environment inherently induces Fascination (e.g., Kaplan & Kaplan, 1989; Berto, 2005; Chang et al., 2008), while the other elements of the 'Big Four' have a much broader focus (e.g. sport). If Fascination is most often or the most frequently experienced PDE, perhaps individuals visit nature spaces due to the restorative effects of Fascination that they experience. This is a question that has not previously been well explored in the literature. For example, although the Recreation Experience Preference (REP) scales include items that address the landscape (Manfredo & Driver, 1996), they are focused on the activity of viewing it rather than on its restorative qualities. Leisure and recreation researchers who ask introspective questions about participants' nature experiences heavily focus on Spiritual experiences, spirituality, and spiritual benefits, and not the restorative mental and psychological benefits of the landscape (e.g., Brayley & Fox, , 1988; Fredrickson & Anderson, 1999; Loeffler, 2004; Marsh, 2008; Stringer & McAvoy, 1992; Trainor & Norgaard, 1999). Perhaps this is due to the influence of recent and prolific exploration of leisure as a spiritual experience (e.g., Heintzman, 2009b; Heintzman, 2010a; Heintzman & Mannell, 2003). Thus, the leisure and recreation

field could benefit from the field of environmental psychology, which focuses on testing the restorative qualities of the environment and the benefits of restoration. On the other hand, environmental psychology holds that Fascination is an integral part of nature experiences (Hartig et al., 2003; Hartig, Korpela, et al., 1997; A. Taylor et al., 2001), but the current study did not find that participants reported Fascination was a reason for why they were drawn to nature environments. In summary, the results of this study show support for an increased focus or exploration of the experience of Fascination through studying the reasons for, immediate conscious experience during, and benefits of, nature-based recreation.

***RQ2: Are PDEs more or less common in remote nature or urban natural spaces?***

Participants were asked how often they have had a similar PDE to the one they described in the survey, either in urban nature or remote nature. Respondents indicated they were more likely to have PDEs in remote nature environments. However, the two categories (i.e., urban PDEs and remote PDEs) are positively and moderately correlated, indicating that some PDEs occurred in urban nature environments. Evidence of memorable nature experiences in urban nature is lacking in previous literature (e.g., Farber & Hall, 2007; McDonald et al., 2009; Stringer & McAvoy, 1992). Those individuals who are able to obtain the benefits of PDEs in less remote nature spaces have the opportunity to cultivate them more often, simply due to the proximity of urban nature space. This proximity also has implications for reducing carbon emissions that are necessary when experiencing far away nature, as most people drive to, for example, Jasper National Park. This

proximity is an even more important consideration when ‘Access’ to the nature space was a significant trigger for 9.2% to 14.8% of respondents in this study (i.e., if I had not been in the place I was, the PDE would not have happened). Further discussion of PDEs in urban nature will occur in the practical implications section.

***RQ3: What proximal ‘triggers’ result in a nature-based PDE occurring?***

Previous qualitative research exists on memorable nature experiences (e.g., Farber & Hall, 2007; Jefferies & Lepp, 2012; Stringer & McAvoy, 1992). However, with few exceptions, these works do not attempt to distinguish between the lived conscious experience and its antecedents. One exception to this is Farber and Hall’s (2007) study. These researchers asked participants to write about an extraordinary experience they had along the Alaska Highway. Their coding structure reveals that the main triggers for these extraordinary events were, in descending order: viewing scenery (54%), viewing wildlife (50%), recreational activities (29%), novelty (21%), and social interaction (18%). In this study, triggers across all four clusters were scenery (44.2% to 54.1% of all codes), social interaction (3.8 to 10.8% of all codes) and recreational activity (7.2% to 10.4% of all codes); percentages that appear to be similar to the results obtained by Farber and Hall. One difference is that this study does not strongly outline activity as a trigger. Although this initially seems puzzling, one participant’s comment that: “the activity was mundane, and occurs regularly” (Respondent 364) suggesting that perhaps rare activities trigger PDEs. Additionally, very few individuals from

the entire sample noted that it was the novelty of the nature space (five participants did so, about one percent of the sample) or the contrast of the setting to their daily lives (12 participants mention, or about 4.5%) that was a trigger for their PDE, although in contradiction, nearly two thirds of the participants indicated that they have PDEs in more remote nature. Interestingly, Familiarity (less than 2% of all codes) was also not a trigger, either indicating that individuals are not cognizant of the role that novelty and familiarity play in triggering PDEs, or that these variables do not play a strong role. Other differences include much less wildlife viewing as a trigger in this study (29 mentioned, about 6.7%). These differences might be explained by the geographical location of Farber and Hall's research (i.e., along the Alaska Highway), while 12% of the experiences in this study occurred within Edmonton city limits. Perhaps the most interesting difference in this study is the prevalence of mind state triggers (i.e., intention, perspective, or stillness, 18.1% to 29.1% of all codes), an antecedent that is completely missing from much of the previous research (See Heintzman, 2010 for an overview of this weak representation in the literature). Lastly, what is curious about the triggers mentioned in this study is the infrequent reports of emotion, although exceptions include between 0.8% and 7.4% of all codes (i.e., Accomplishment, Adventure, Anticipation, and Enjoyment of activity). This becomes relevant with the recent trend of surveys on memorable experiences that include positive and negative emotions as scale items, although researchers do not indicate the prevalence of these emotions (Kim et al., 2012).

***RQ4: What is the ‘lived conscious experience’ of a nature-based PDE? How are the ‘Big Four’ similar and different?***

An exploration of the lived conscious experience of the ‘Big Four’ can further strengthen what is known about each of these experiences and how they are similar and different. This was done in two ways: (a) through a Confirmatory Factor Analysis (CFA) and, (b) using Structural Equation Modeling (SEM).

**Confirmatory Factor Analysis (CFA)**

The CFA confirms an eleven-factor structure with very good fit statistics in both the test sample and the cross validation sample. The parsimony of the model was slightly improved by dropping the Fascination item ‘Effortless Attention’ entirely. The following four sections discuss each of the ‘Big Four’ separately and relate the results from this study to previous research.

**Communitas**

Recent research on family camping indicates the strong presence of Fascination and Communitas in nature experiences, through reports of the importance of restoration and social bonding (Garst, Williams, & Roggenbuck, 2009). The incidence of Communitas in this study supports these previous findings and has managerial implications for providing recreation settings that support interaction (e.g., picnic Table and resting sites), a suggestion that other previous research also supports (Heywood, 1989).

However, as a word of caution, the Communitas items in this study are by far the weakest theoretical link. In spite of this, the potential for Communitas to

add to the literature on nature-based recreation there has been very little work to determine the validity and reliability of the Communitas items and only one study begins this process. Specifically, McGinnis, Gentry, and Tao Gao (2008) developed a Communitas, Enduring Involvement, and Flow Scale to assess whether the benefits of bonding with others or the experience of deep concentration led to prolonged commitment to the sport of golfing. The results of their EFA indicate that the Flow and Communitas items belong with their respective factors as all the Communitas items have factor loadings between 0.65 and 0.74. Additionally, the Flow and Communitas are moderately and positively correlated (0.47). In this study, all the Communitas items were reworded to reflect being in nature rather than playing golf. Even so, in the CFA reported here, the items had higher factor loadings in both the test sample (0.78 to 0.97) and the cross validation sample (0.78 to 0.97), indicating a strong association between the factor and items (i.e., construct validity) as well as reliability (Messick, 1989). However, the correlations between Communitas and the other factors are positive but weak to moderate in both the test sample (0.06 to 0.22) and the cross validation sample (0.06 to 0.22).

What this means conceptually is that the relationship between the experience of Communitas is not strongly associated with the experience of Flow, Spiritual and Fascination experiences. In essence, there might be some issues with criterion validity (Messick, 1989). In the test sample, two of the Spiritual factors, 'Spiritual' and 'Affect', were not significantly correlated with Communitas, and two of the Flow factors, 'Transformation of Time' and 'Action Awareness' were also not significantly correlated with Communitas.

It is recommended that future research explore additional factor dimensions for the *Communitas* aspect of this scale as I suspect its content validity (i.e., are all aspects of the construct included?) may also be an issue. I posit that the three *Communitas* items included in this study reflect a factor that is ‘General Connection to Others’ through the items Sharing, Harmony, and Belonging that are based on McGinnis, Gentry, and Tao Gao (2008). Future items should also explore the spontaneity of the experience, feelings of empowerment and magic, as well as a mutual understanding of others through honesty and openness (Turner, 1982). All of these elements were deemed important by my interviewees and were discussed in the literature review. I posit that two additional domains for *Communitas* should be considered: (a) Special Connection to Others, through the items: ‘My connection to others was spontaneous’, ‘My connection to others was magical’, and ‘My connection to others was empowering’) and, (b) Mutual Understanding of Others, through the items: ‘I was relating honestly’, ‘I was relating openly’, and ‘I could see past roles and status’.

### **Fascination**

The concept of Fascination is embedded within Attention Restoration Theory (ART; Kaplan & Kaplan, 1989). The ART framework is made up of four constructs, Fascination (i.e., effortless attention), Being Away (i.e., getting away from one’s routine), Coherence (i.e., a calming environment), and Compatibility (i.e., the environment supports my goals). Previous research has focused on developing a Perceived Restoration Scale (PRS) by determining how many items are needed and which items best represent each of the constructs. Additionally,

Confirmatory Factor Analysis has been used to validate a four-factor model that represents ART through the above four constructs (Hartig, Kaiser et al., 1997). The current research project adds to this literature in three ways: (a) Previous research indicates that Fascination is a unique construct when compared to the other three components of ART. Fascination is further validated in this study because the CFA indicates that Fascination is a unique construct when compared to the ten other factors of the 'Big Four' (with weak to moderate correlations to the other Factors between 0.04 and 0.59), (b) the overall means for the 'Big Four', the Frequency of the 'Big Four', and the cluster analysis indicate that Fascination is not only an important element of nature experiences, it is fundamental, and (c) the CFA indicates that Fascination items: 'My attention was effortlessly drawn to many interesting things', 'The natural setting or landscape was fascinating', and 'The natural setting had fascinating qualities' is potentially measuring two constructs, one based on effortless attention, and one based on the fascinating qualities of the natural environment, and 4) the current study moves beyond using slides, laboratory settings, and relying on university students as much of the previous research has (e.g., Berto, 2005; Purcell et al., 2001).

Because Fascination was the most frequently reported experience it makes sense that the natural setting is a trigger for PDEs, as previous research outlines the intimate and inextricable relationship between Fascination and the surrounding landscape (e.g., Berto, 2005; Chang et al., 2008). This same research also indicates that attention fatigue is a precondition for Fascination. However, attention fatigue as an antecedent to Fascination is a theoretical supposition that has not been explored empirically. To clarify, early Fascination research explored

nature preferences (R. Kaplan & Kaplan, 1989), while more recent work explores the applicability of the ART through the PRS, which includes Fascination, Being Away, Coherence, and Compatibility (Chang et al., 2008; S. Kaplan, 1995). What is interesting in this study is that none of the respondents mentioned attention fatigue as a trigger for the experience of Fascination. Rather, they talked about ‘mind states’ that afforded new perspectives or a sense of stillness. It is not empirically evident whether attention fatigue is actually an antecedent for Fascination. Perhaps participants were unable to articulate this, or if they were reporting attention fatigue they were using different language (e.g., ‘I experienced a change in focus’).

While the PRS measures Fascination as a single construct through three items (‘My attention was effortlessly drawn to many interesting things’, ‘The natural setting or landscape was fascinating’, and ‘The natural setting had fascinating qualities’) it is clear from this work that ‘My attention was effortlessly drawn to many interesting things’ does not fit with the other two items, although they are related. This research suggests that ‘My attention was effortlessly drawn to many interesting things’, or the attention aspect of the theory, is different from the fascinating qualities associated with the surroundings in the two other items: ‘The natural setting or landscape was fascinating’ and ‘The natural setting had fascinating qualities’. As recalled from the CFA data, while the  $T$  scores are significant for all three items, the  $R^2$  (i.e., variation explained) is quite low for ‘My attention was effortlessly drawn to many interesting things’ (0.30 versus 0.73 and 0.77). Additionally, Cronbach’s alpha increases when the ‘Effortless Attention’ item is dropped. It is therefore recommended that future research drop

the attention item from this factor, and add another item that measures the fascination of the landscape. However, care must be taken in the development of Fascination items, as these items are currently all phrased using the word ‘fascinating’. Although Cronbach’s Alpha is only .80 with ‘Effortless Attention’ removed, if the items are almost exactly similar there is danger of duplication and singularity issues. Therefore, the proposed new items are listed below.

Fascination is a multidimensional construct that needs further exploration. For example, the theory’s attention aspect should measure an expansive and effortless attention with the ability to reflect on life at the same time, a supposition that is also supported by my interviewees’ comments. An ‘Expansive Attention’ factor would help to further differentiate Fascination from Flow, which requires a merging of action and awareness, a “one-pointedness of mind” (Csikszentmihalyi, 1997, p.9). Therefore, it is suggested that Fascination be explored as three constructs with three items each. The first would focus on attention, the second on the landscape, and the third on mind state. For example, Attention items would be comprised of: ‘My attention was effortlessly drawn to many interesting things’, ‘My focus was expanded’, and ‘I was able to reflect on life at the same time’. Landscape items would be comprised of: ‘The natural setting or landscape was fascinating’, ‘The natural setting had captivating qualities’, and ‘I was mesmerized by the scenery’. Finally, the Mind States items would be comprised of: ‘I experienced a change in focus’, ‘I was intentional about my relaxation’, and ‘I was present or meditative’.

## Flow

Flow (Csikszentmihalyi, 1975) is the most researched of the ‘Big Four’ concepts included in this study, and has been examined in regard to both work and leisure (e.g., video games and whitewater kayaking). Previous research on Flow using CFA confirms a nine-factor structure (Jackson & Marsh, 1996; Vlachopoulos et al., 2000). Related to the above, Jackson, Martin, and Eklund (2008) contend that, although the flow concept has been well researched, future studies should measure “a diverse range of constructs [that] could be compared with flow” (p. 583). This project addresses this research gap. Due to the need to lessen the number of items included in the survey, this research only included six Flow domains. The focus of this survey was on the ‘immediate conscious experience’ and therefore included those domains that Csikszentmihalyi (2000) labeled as such: a merging of action and awareness, deep concentration, loss of self-consciousness, transformation of time, and unambiguous feedback. One additional domain, Challenge/Skill balance, was included given that it was considered the essence of the Flow experience in early research on this topic (Csikszentmihalyi & Csikszentmihalyi, 1988).

In this study, all the *T* values for the Flow variables are significant, meaning that each of the items included is caused by the respective factor. Additionally, the explained variance of the six Flow factors ranged from 0.31 to 0.95, and averaged 0.71. The lower range reported here is only slightly lower than what other research has reported (e.g., Jackson et al., 2008). However, there are some concerns. The Loss of Self-Consciousness items: ‘Worried what others

thinking', 'Concerned others evaluation', and 'Concerned others thinking' performed well in the item to factor relationship (i.e., the  $T$  values were significant and  $R^2$  indicates 0.80 to 0.95), but there are problems with the relationship of each factor to the other factors. In the PHI matrix (i.e., the matrix that reports the correlation among the factors in the model), most of the coefficients for Loss of Self-Consciousness are not significant, indicating that the factor is weakly or not at all related to the other factors. Even when these typically negatively worded items were positively re-worded, when viewing the Standardized Solution for the Factors, this factor is only significantly different from Challenge/Skill Balance, Unambiguous Feedback, and Communitas. Previous studies have also noted issues with the factor Loss of Self-Consciousness, mainly weak correlations with the other eight Flow factors (Jackson & Marsh; Vlachopoulos et al., 2000).

Vlachopoulos, Karageorghis, and Terry (2000) and Jackson and March (1996) also identified issues with the relationship between the Transformation of Time factor and other Flow factors, although the former group of researchers speculated that because their participants were listening to music their sense of time was regulated by the beat. This weak correlation of Transformation of Time is not reflected in this data, perhaps due to the strong relationship of changes in time perception with the experience of Communitas, Fascination, and Spiritual Experiences.

I am aware of one other study that compared Flow to other constructs, but the researchers involved did not use Jackson and Eklund's (2004) well established items nor other well known foundational work (McGinnis et al., 2008). It is with

some amount of confidence, therefore, that this study verifies the construct and criterion validity of Flow, with the exception of Loss of Self-Consciousness.

### **Spiritual experiences**

Few previous studies report the ethnicity and religious background of their participants. Schmidt and Little (2007) are one exception, with most of their participants identify as some variation of Christian (e.g., non-church attending). In this study, 36% of participants did not indicate a religious affiliation. This may be a reflection of a growing ‘spiritual but not religious’ culture, as American statistics report that 40% of Americans have no connection to organized religion (Fuller, 2001). A further 38.4% of participants self-identified as Christian (i.e., Christian, Catholic, Mennonite, Quaker, Roman Catholic, Unitarian, or Greek Orthodox). The results of this study, therefore, may only be generalizable to a spiritual but not religious sample that is influenced by Christian roots.

This study used Hood’s (1975) M scale as the basis to measure spiritual experiences. This scale was originally constructed based on Stace’s (1960) conceptualization of mystical experiences. In the M scale’s original form, thirty-two items were retained and tested for their factor validity. Eight factors were validated, including the three that were used in this work (i.e., Spiritual, Affect, and Noetic). Further research has demonstrated that these three factors are subsumed under a larger factor called ‘Interpretation’, a domain that reflects all spiritual experiences, and the other factors are subsumed under ‘Introvertive Mysticism’ or ‘Extrovertive Mysticism’ (Hood et al., 2001; Hood et al., 1993). No studies to date has incorporated Hood’s M scale into a multi experience scale, nor

has there been much research beyond Hood's (1975) original work that explores the factorial validity of the three domains (i.e., Noetic, Spiritual, and Affect). This study confirms that the nine items represent their respective factors well, with standardized coefficients from 0.58 to 0.95. The three factors are highly correlated as expected (0.71 to 0.83) and moderately correlated with some of the Flow factors (except for Challenge/Skill Balance, Unambiguous Feedback, and as previously discussed, Loss of Self-Consciousness), moderately correlated with Fascination, but weakly correlated to Communitas, which contradicts the experience of two of my interviewees. Bill and Nathan's spiritual nature experiences were heavily steeped in elements of both Communitas and the Spiritual. Although Hood's M scale has items that measure Ego Quality (i.e., Loss of Self-Consciousness) and Timelessness (i.e., Transformation of Time), these items are particular to the Extrovertive and Introvertive experiences respectively, meaning that not all Spiritual experiences are comprised of these concepts. As evident from the results, the Loss of Self-Consciousness factor is weakly correlated with the Spiritual factors, and Transformation of Time is strongly correlated. This means that the Transformation of Time may play a larger role in all Spiritual experiences and not just the Introvertive, as previous research has hypothesized (Hood et al., 2001).

It is clear that the three Spiritual domains of Spiritual, Noetic, and Affect were differentiated yet highly correlated to most of the other 'Big Four' factors. Also clear from the above analysis is that the best performing Flow domains were Transformation of Time, Deep Concentration, and Action Awareness Merging. What this research suggests is that there might be relevance for shortening the

PDE scale by reducing the Flow domains from six factors to the above three. This would allow for further expansion and development of *Communitas* and *Fascination* items and domains.

### **Structural equation model (SEM)**

The Structural Equation Model is a theoretical claim by the researcher about the relationships between latent variables. The researcher imposes a relationship structure and then calculates the similarity of the imposed covariance matrix to the original covariance matrix. Matrices that are nearly identical have a statistically ‘good fit’. The SEM model in this study is unique in that although there has been SEM’s using Flow with behaviours (Novak et al., 2000), there has been little work in the way of incorporating Flow into a SEM with other experiential concepts such as *Communitas*, *Fascination*, and *Spiritual* experiences.

The SEM indicated that only 3% of the variance in *Spiritual* is explained by how *Fascinated* an individual was with the surrounding landscape. To suggest why this might be the case would be speculation as there is currently no research that explicitly explores the relationship between *Fascination* and *Spiritual* experiences. While being in a natural environment (either remote or urban) may provide a platform for the ‘Big Four’ and be the reason for their correlations, the antecedents and the immediate conscious experience of the ‘Big Four’ may still be differentiated, although they may be related (e.g. all four components of ART are indicated in Heintzman’s (2010b) antecedent components and recreation components for nature-based *Spiritual* experiences).

While having an open mind or receptivity is an integral precursor for *Spiritual* experiences (Heintzman, 1999), and while the data from this study

indicate a possible similarity to Fascination triggers, in that a change in focus or internal stillness is important, Spiritual experiences usually happen to the individual, and are “experiences that beat their way in upon the organism”(Cleary, 1996, p.183) without planning on the part of the individual. In contrast, the individual more actively cultivates Fascination and, as evident in the qualitative data, an overwhelming trigger for Fascinating experiences was an *intentional* focus on the present moment.

This research on the ‘Big Four’ shows support for the presence of Communitas, Fascination, Flow, and Spiritual experiences during nature-based recreation and in some cases the simultaneous experience of more than one. This makes sense when one considers Heintzman’s (2010b) meta-analysis on the setting and recreation components of nature-based spiritual experiences that shows the complexity of these experiences. The components of ART (Being away, Fascination, Extent, and Compatibility) are all listed as important to Spiritual experiences in nature, through Setting Components and Recreation Components. The other setting component that Heintzman (2010b) listed, Place Processes, was not well supported in this study, as less than two percent of the sample indicated Familiarity as a trigger. However, Place Processes were not directly addressed in this study through place attachment or other sense of place theories. Heintzman’s (2010b) other recreation components include Solitude and Group Experiences, both of which are supported by this study as 2.1 to 6% of participants reported that solitude was a trigger and 1.2 to 5.9% indicated the people they were with was a trigger. This study does not show support for Heintzman’s Facilitation, component, however, likely because the majority of

participants were not in guided situations where facilitation is prevalent.

### **Practical Implications**

Current research emphasizes the cognitive benefits of nature-based recreation such as escape, challenge, new opportunities, natural awe and beauty, solitude (Pohl et al., 2000), psychophysiological health benefits such as lowering stress (Ulrich et al., 1991), lowering blood pressure (Orsega-Smith et al., 2004), influencing positive moods (Tarrant & Manfredi, 1994), restoring concentration (Tennessen & Cimprich, 1995) and reducing aggression (Kuo & Sullivan, 2001). This research further confirms the importance of nature experiences in addressing components of wellness that span the physical, social, intellectual, psychological, and spiritual spheres through the 'Big Four' (Adams, Bezner, & Steinhardt, 1997).

There is a connection between people getting away from a hectic pace and slowing the mind by experiencing stillness, intention, focus, and solitude and the resulting experience of, for example, Fascination. As stated in Chapter Seven, altered mind states (e.g., intention, perspective, or stillness) are significant triggers for Fascination, the most common PDE. Research suggests that it is possible for individuals to cognitively induce these altered mind states through the active negotiation of challenge and skill, the emotional labour of connection to others, and intentional openness to experience (Jackson, 1992; Maslow; Sharpe, 2005). Other research supports this through claims that nature scenes inevitably produce a receptive state through Fascination and stress reduction. For example, Ulrich's (1984) research showed that hospital patients who had a window with a view of deciduous trees subsequently spent less time in the hospital, had fewer negative comments in their records, and took fewer medications. If individuals are able to

intentionally place themselves in a receptive state to experience nature based PDEs within urban environments, there are positive health implications (See Table 90). Additionally, education campaigns that emphasize that individuals have the ability to influence a receptive state and then receive the health benefits of outdoor recreation can have an impact. For example, Morita et al. (2007) outline that the Japanese government initiated a 'walking in the forest' campaign in the 1990's.

However, although there is merit in discussing an individual's control over internal mind states, as there is also variability in how much control over spiritual experiences that an individual has. To illustrate, spiritual experiences often impose upon the receiver without warning. Although many individuals attribute the natural environment as an important trigger to these experiences, the imposed spiritual experience can just as easily happen in other contexts as well, for example, dancing, listening to music, or during sex (Cleary, 1996).

*Table 89. Benefits of the 'Big Four'*

Mode	Experience	Benefits
Activity	Flow	Self-esteem (Csikszentmihalyi, 1990) Happiness (Csikszentmihalyi, 2002) Well being (Bryce & Haworth, 2002) Intrinsic motivation (Schuler & Brunner, 2009)
Place	Fascination	Reduced irritability, aggression, and violence (Kuo & Sullivan, 2001) Increased concentration and mental energy (Hartig et al., 2003) Improved performance in work and school (A. F. Taylor et al., 2002)
Social	Communitas	Sense of community, belonging, and allegiance to family, friends, and others (Arnould & Price, 1993; E.K. Sharpe, 2005)
	Spiritual	Connection to the divine, new ways of seeing and understanding the world, sense of peace and wonder, a feeling of oneness (Fredrickson & Anderson, 1999)

One third (i.e., 33.2%) of respondents previously had similarly intense PDEs in urban nature compared to the one they were referencing in the survey. The importance of urban nature-based recreation is also recognized in recent government policy such as the Active Alberta policy. The focus of this policy is on nature-based recreation, active living, and sport for the “physical, social, and emotional health and wellbeing of Albertans” (Government of Alberta, 2010, p.1). The explicit desired outcome is to have ‘more Albertans, more active, more often’ and for Albertans to be ‘connected to nature and able to explore the outdoors’. Within the document, the roles of several stakeholders are outlined, including charging post-secondary institutions with more research on human-nature relationships. While sport and active living are very established within Alberta, there is currently a need for more emphasis on outdoor recreation. This study offers support for the Active Alberta policy with the explicit exploration of the

psychological response to nature by detailing the ‘landscape’ of the experience, the triggers that cause it, as well as the asserting the importance of urban nature. Municipalities can support the experience of PDEs through community based recreation and infrastructure design. For example, local government can ensure that all people have access to a park within walking distance of home. Currently, this is not a reality for fifteen percent of Albertans (Alberta Recreation and Parks Association, 2007). Park spaces can emphasize greenery, water, views, and can block out the sounds of urban environments while simultaneously providing spaces for activities and places for families and friends to gather for extended periods of time.

Previous reports indicate that 74% of Albertans frequently or occasionally use public parks (Alberta Recreation and Parks Association, 2007). The fact that 18% of participants in this study experienced PDEs in urban environments gives merit to the support of urban parks, particularly given the recent Parks Canada project, Rouge National Urban Park. The proposed National Park project is currently a municipal park in one of the last relatively untouched ravines in Toronto. It is nicknamed the ‘peoples park’ due to its urban accessibility. The goals of the park are not only to preserve the last of the Carolinian forest, but also to reconnect urbanites to nature. In this study, ‘Access’ to scenery, nature, and special places played an important role in the occurrence of PDEs (between 9.2% and 14.8% of all participants). In other words, getting there in the first place was acknowledged as something that was enough of a hurdle to mention as part of the process. Nearby urban parks, therefore, can play an important role in the health

and wellness of city dwellers, as the familiarity of a nature place is an important antecedent for transcendent nature experiences (Williams & Harvey, 2001).

Although this study has implications for urban parks where individuals can ‘disappear’ into quieter and seemingly removed landscapes, there are also possible implications for urban greenery. Popular culture is currently enamoured with ‘Biophilic cities’ (Beatley, 2011). This restoration movement occurs where greenery is cultivated and plants are placed strategically for their restorative powers; a restoration movement. Biophilic cities seamlessly incorporate nature and cities, such as the green wall at the Edmonton airport and the living wall at the University of Alberta between the Tory and Business buildings, which has over 1800 plants. Although Fascination has been studied primarily with regard to uninterrupted landscapes (Berto, 2005; Chang et al., 2008; Purcell et al., 2001), there is some research that illustrates that the same internal experience occurs when individuals are not physically a part of the landscape, but looking out a window at greenery (Kaplan, 2001).

With respect to more remote nature contexts, Parks Canada’s mandate is “to facilitate *memorable experiences* [italics added] in a way that ensures the protection of the ecological integrity of national parks” (Parks, 2008). The importance of National Parks being able to better serve the Canadian population is imperative; shrinking visitor numbers means that there is a shrinking constituency that will fight to protect the parks themselves (Jager & Halpenny, 2012). The implications of this study for managers who attempt to facilitate memorable experiences are numerous. Some of the triggers, such as weather, are completely out of the control of managers. However, although mind states are difficult to

program for, there may be merit in leaders, teachers, or park staff modeling a relaxed pace so that visitors themselves may be compelled to slow down, a suggestion that can also be found in the outdoor education literature (Mitten, 1995).

The effect of slowing down may have a positive effect on the mind states of park visitors and make them more receptive to Fascination. Additionally, due to the large number of participants in this study who were engaged in nonconsumptive meditative and non motorized activities during their PDEs it may be worth considering refocusing not only on more traditional activities (e.g., canoeing) but also on activities such as yoga, meditation, photography, relaxation, viewing scenery, viewing wildlife, and even hunting and fishing, instead of the educational or classroom-like activities park staff now generally provide.

Similarly, for guides working in the nature tourism industry, very often the scenery is immediately accessible due to the remote context. While Sharpe (2005a; 2005b) outlines how trained trip leaders can establish common goals and create environments of authenticity to enhance the experience of *Communitas*, this research lends credibility to the need for outdoor leaders to slow down, do relaxed pace hiking, focus less on reaching mountain peaks and more on the surrounding environment, and rely on “green skills” (Henderson & Potter, 2001), where leaders communicate cultural, historical, and environmental knowledge.

While suggestions for client/guide interactions are beneficial to producing some of the conditions necessary for PDEs, particularly when the importance of the social environment is illuminated, there also must be consideration for managing the ecological landscape. Many researchers state that nature-based

research lends support to increasing the preservation of landscapes, but do not provide any suggestions for the management of the environmental aesthetic (e.g., Merrick & Vinning, 2012; Gray, Duwors, Villeneuve, Boyd & Legg, 2003), such as managing for innate environmental preferences such as savannah-like landscapes (Kaplan, 1989). In part, Parks Canada and other land managers need to survey their constituents to find out what places are special or meaningful to the nature-goer and protect them, as place attachment has been documented as an integral precursor to memorable nature events (e.g., Merrick & Vinning, 2012). However, it is also difficult to expound upon what this preservation should look like because the adaptive management techniques that Parks Canada employs may conflict with the desired visual aesthetic of the treed mountainous valley, for example, by allowing forest fires to burn as long as infrastructure and people are not in danger, as well as cutting trees to attempt to ameliorate the advances of the pine beetle (Gobster, 1999). As a possible solution, Gobster and Westphal (2004) contend that urban parks in particular can be managed for cleanliness (e.g., an absence of litter), naturalness (e.g., trees and wildlife), aesthetics (e.g., solitude that contrasts urban living), safety (e.g., clean water to drink and low crime), access (e.g., removing fences), and appropriateness of development (e.g., few entertainment based developments). However, the visual landscape is just one aspect of the aesthetic. Other issues include managing for reducing automobile sounds and the noise from other users as well as light pollution from, for example, parking lots.

This research project can also inform other disciplines such as the tourism industry, although there is merit in critiquing the commodification of the 'Big

Four'. Marketing industries are moving away from offering services to clients to providing experiences. As Gilmore and Pine (2002) stated, "the way to reach your customers is to create an experience *within* them" (Gilmore & Pine, 2002` p.3). Alberta Tourism currently has a marketing campaign that relies on the slogan "Remember to Breathe" and complementary videos that show expansive landscapes and individuals experiencing joy through physical and cultural activities. Although the expansive landscape photography shows the intuitive understanding of the importance of scenery to the nature experience, the tourism industry could also increase their focus on the showing the magic of *Communitas*.

### **Limitations**

Research that undertakes the study of PDEs must recognize the discourse that inherently surrounds the subject and implicates the research questions as well as the findings. PDEs are embedded within a cultural nature rhetoric that is influenced by a larger cultural discourse. To further explain, we all experience immensely positive and extremely difficult life situations or experiences and everything in between. However, normative culture typically denies, subverts, or trivializes the harrowing or immensely challenging life changing negative experience (e.g., mental illness, depression, or cancer). Positivity is idealized (e.g., I am fine, life is good) to the detriment of speaking openly and honestly about negative experiences such as pain, death and dying, and other more superficial negative emotions such as disgust or discomfort. In essence, it is a cultural policing and self-denial of some aspects of our natural psychological and physiological experiences.

Nature rhetoric is influenced by this discourse as well, and experiences in nature are therefore bound to be expressed by nature ‘enthusiasts’ in such terms as ‘awe’, ‘peace’ and ‘wonder’. Researchers, also bound by discourse, focus on positive and pleasurable nature experiences. Additionally, the PDE insinuates a depth of experience that happens from the core of our being (e.g., through the items ‘a new or expanded view of reality was revealed to me’). Although there are those individuals who experience PDE’s from this depth, it is also possible that, influenced by the larger nature rhetoric, some individuals who are reporting these experiences are reporting more superficial or shallow experiences (e.g., fun or pleasurable) and yet using the language of the PDE (e.g., life changing or profound) in the interviews or identifying with the PDE items in the survey. If PDEs are superficially experienced by some yet are represented by words that insinuate a depth of experience, then through superficiality and inauthenticity PDEs become commodified, where the words are ‘sold’ (i.e., become rhetoric) but the real experience elusive. Therefore, a valid critique of this work is that it adds to the growing body of research that only focuses on the most ecstatic experiences (e.g., Farber & Hall, 2007; K. Williams & Harvey, 2001). While an important beginning, research needs to move beyond this to less remote wilderness and less immensely positive experiences.

The purpose of the previous paragraphs is to position this research within the larger cultural framework in order to reveal its limitations (i.e. the influence and impact of a positive and pleasurable lens). This is not to say that there are not enormous benefits to studying PDEs as mostly pleasurable. The intentional or

accidental cultivation of PDEs, either through personal agency (e.g. driving to the mountains) or through institutional structure (e.g. an office window with a view of trees), and the experience of PDEs, whether superficial or deep, may give people relief from stress and tools to cope with every day living. The study of these experiences through their expression and triggers may help more people to cultivate PDEs in their own lives or to experience them more often so that the documented benefits may be attained.

Limitations that are more specific to the research process include the following. Although individuals in this study were asked to focus on only one experience, some individuals were not that specific in their responses. This problem of describing more than one event is not atypical of memorable nature research, as other researchers have found this to be a problem as well (e.g., Farber & Hall, 2007). This may be a problem that is exacerbated by the fact that the data that were collected after the experience has already happened. It may essentially be a problem of memory attrition, although vivid memories are more easily and more accurately recalled regardless of how old the memory is (Talarico et al., 2004; White, 2002). Additionally, although memory decay is often cited as a limitation, asking participants about events that have happened in the recent past is a common practice in Flow studies (Jackson et al., 2008) and transcendent experiences in nature (K. Williams & Harvey, 2001). Further to this point, it can also be construed that individuals are not necessarily experiencing memory decay per se, but that participants are simply interpreting and reinterpreting events over time. This viewpoint on memory is often used in the psychology of religion. For

example, McIntosh (1997) outlines the interpretation process as a filter that is based on our perspectives and called a 'schema'. The schema, for example, a religious belief, is the lens through which we interpret our experiences.

Memorable events have the potential to alter our schemas, which then changes how we interpret events from the past. A memorable or life changing nature based event would have the potential to allow individuals to interpret and then re interpret the event over time.

Though this study moves beyond the current norm of using university students, the respondents in this study were a convenience sample, which threatens the generalizability of the findings. However, the sample in this study over represents the highly educated, those from Christian religious backgrounds, and European heritage, providing a limited perspective. It is common for nature researchers to *not* report the ethnic background of participants (Fredrickson & Anderson, 1999; Schmidt & Little, 2007; Stringer & McAvoy, 1992), and this is a problematic practice because it assumes the homogeneity of experiences across cultures. Future research needs to take more care to report these demographics and to purposefully seek out underrepresented or marginalized groups. Also, this research reflects a distinctly urban population with potentially limited applicability for a more rural population. It also replicates a focus on Christian forms of spirituality as evident by the sample, but also through the use of Hood's (1993) M scale and relies on spiritual research based in leisure, which is somewhat removed from the larger spiritual and religious scholarly realm. Finally, regarding the method itself, the survey was internet based, possibly

skewing the income and age distributions in terms of who had access to the survey in the first place, although the sample was evenly distributed across age.

There are also numerous limitations in the survey instrument. For example, the *Communitas* items were developed based on the experience of golf and the *Flow* items are based on sport and competition. Both of these constructs are used in different contexts, although the results indicate that all of the items represent their respective factors, adding to the construct validity of the items across contexts (Messick, 1989). Additionally however, both *Fascination* and *Communitas* are only measured with three items each, leading the researcher to believe that they are under-represented within the survey. Finally, 'Worried what others thinking', 'Concerned others evaluation', and 'Concerned others thinking' and 'The natural setting or landscape was fascinating', and 'The natural setting had fascinating qualities' indicated outliers. These items were transformed, creating potential problems with interpretation.

While SEM and CFA are helpful statistical tools to extract meaning from relationships among the data, they are still theoretically imposed techniques based on the knowledge and intuition of the researcher and knowledge of the field. The same can be said for the cluster analysis in terms of the number of clusters chosen for the analysis. Theoretical imposition upon the data is a combination of science and art and is useful in so far as the models are retested and verified, a goal of future research for this researcher.

### **Future research**

Support from a community of thoughtful scholars has pushed me to consider that much of this work, and in fact the leisure field in general, has

overwhelmingly positioned nature experiences as universally and inevitably positive, spiritual, and in Christian terms (i.e., individualistic; involve peace, awe, or wonder; are a connection to the divine). Future work should consider more diverse understandings of the Spiritual, more urban nature spaces, and include more diverse Canadians such as new Canadians and immigrants. Previous research indicates that immigrant populations experience nature as more social, not only in the form of cookouts and family gatherings (Larson, 2012), but also that nature itself is conceptualized as a space where people, houses, and other infrastructure is found (Lange, Vogels, & Jamal, 2011). For example, using the Experience Sampling Method, Moneta (2004) claims that collectivist societies experience flow in “mastery” situations (i.e., high skill/low challenge) instead of high challenge and high skill scenarios. In contrast, Asakawa’s (2004) study of Japanese students found that Flow was experienced in high challenge/high skill situations.

Future work should also compare purposeful samples of meditative activities (e.g. viewing scenery) and active activities (e.g. hiking) as well as urban nature (e.g. backyard) and remote nature (e.g. mountainous). The purpose of doing this would be to further tease apart the relationship between physical activity and place as triggers for PDE’s, a complexity identified in previous research (Hull & Michael, 1995).

As noted previously, Heintzman’s (2010b) holds that negative phenomena are under explored in the leisure literature. As an example, Sharpe’s (Sharpe, 2005a; Sharpe, 2005b) work on the experiences of *Communitas* with participants on extended wilderness trips does not illuminate Turner’s (1982) negative

antecedents of suffering and humiliation, which is interesting given the potential for rain, wind, cold, bugs, and interpersonal issues. Nor does Yarnal's (2006) exploration of the Red Hat society discusses negative triggers. Previous research in general acknowledges little in the way of fear or anxiety. For example, the most frequently mentioned negative emotion in Farber and Hall's (2007) study was only expressed by 3.3% of respondents. Although the survey data in this project indicated that there was very little in the way of negative triggers, future research needs to further explore the role of negative emotion and adverse feelings in the production of positive experiences. As evidence of this need, the interview project included two individuals who had intense negative memorable experiences. Further, although the remaining nine interviewees did not identify their experiences as negative, some negotiated feelings of fear, anxiety, or discomfort. Better understanding of these negative triggers and experiences are important to gain a realistic picture of memorable nature experiences.

Additionally, although this research project emphasized the triggers and immediate conscious experience of memorable events, in practice the temporal aspects of PDEs are difficult to articulate in definitive terms. It is tricky to discern how the proximal (i.e., the conditions needed) and distal (e.g., personality and upbringing) antecedents differ from the lived experience, particularly when some individuals report distal triggers as antecedents and some report proximal triggers as antecedents, without expressing the difference between the two. More research is needed to tease apart the temporality of PDEs.

Although this project outlines four different types of experiences, research in the realm of physiology has outlined dozens of different types of

consciousness. For example, Austin (1998) aligns experiential states with internal physiology and provides a chart of the many types of alternative states, for example, Ordinary and Meditative States of Consciousness, Extraordinary Alternate States of Consciousness, and Advanced Extraordinary Alternate States of Consciousness. While comparing the ‘Big Four’ to these categories is a potential avenue for future exploration, the chosen methodology for this project (i.e., surveys and interviews that rely on participant feedback) is more conducive to exploring the ‘Big Four’ through psychological and experiential means.

Finally, using survey methods is only one way to elicit information about PDEs. Other methods include asking participants to provide pictures of their favourite nature moments and having them explain the experience behind the photo. This format would greatly complement an interview process and has been used previously in outdoor research (e.g., Loeffler, 2004). Or, participants can be asked to draw their favourite nature scene and explain the experiences they have had there as other researchers have done (e.g., Lang, Vogels, & Jamal, 2011).

Given the above, as part of a future research program after the completion of my PhD, I hope to undertake the following related studies:

1. The PDE survey collected information on PDEs as well as pro environmental behavior (PEB). The survey data on PEB’s will be analyzed to gain further understanding of the relationship between PEBs and PDEs.
2. Future research using the PDE survey should incorporate the findings from this study. Further work on the survey can include the incorporation and testing of *Communitas* as three domains

and nine items, Fascination as three domains and nine items, Spiritual as three domains and nine items and Flow as three domains and nine items.

3. Future research should also include Hood's (1993) item that measures awe, as in Farber and Hall's (2007) study 26% of participants mentioned awe as an integral emotion. This is common in other studies as well (Fredrickson & Anderson, 1999; Schmidt & Little, 2007; Stringer & McAvoy, 1992).
4. Alberta Education is currently revising curriculum across all subjects. Environmental educators are lobbying for inclusion of curriculum across many subject areas. Further research that supports the benefits of nature-based recreation for children is imperative and can support these changes. Reconceptualizing the PDE survey as a tool for children, possibly by asking kids to draw and explain their experiences, can accomplish this research goal.
5. The interview data obtained from this study was quite rich. Although the interviews support PDE's (i.e. their existence, legitimacy, and importance), they also outlined nuances that will require more time to explore. For example, one participant described her ideal nature as an 'aesthetic', and another participant outlines how, when telling others about her spiritual experiences, people say that she is lying. Both of these instances outline experiences that support as well as challenge normative

ideas of how the Wilderness Ideal (i.e., nature as far away, and pristine) is conceptualized as a spiritual space.

6. Directly following the previous study on the conceptualization of the spiritual within the Wilderness Ideal, I will undertake a focus group and interview project that seeks to understand how normative Western culture positions the wilderness experience as overwhelmingly yet perhaps superficially positive. As an example, when river guides talk about their summer jobs, many people respond with how ‘fun’ this must be. The reality is usually quite different and involves much hard work, and stress, as well as positive emotion and social bonds. This project will be the beginning of a line of research into negative experiences and wilderness.

## **Conclusion**

Mannell (1996) described PDEs as experiences “as special, out-of-the-ordinary, or meaningful” and experiences that typically involve altered perceptions of time, self, and surroundings (p. 405). This research suggests that out of the ordinary nature-based experiences do indeed involve altered perceptions of time and surroundings. This research also provides compelling evidence for the triggers to PDEs, which include scenery, social interaction, and recreational activity, corroborating D. R. Williams’ (1988) method of categorizing the mode of nature experiences. Further, there is empirical support for the presence of all of the ‘Big Four’: Communitas, Fascination, Flow and Spiritual experiences indicating the importance of PDEs to individuals as they negotiate

their daily lives. The benefits associated with each of the 'Big Four' have been well documented as stress reduction and increased concentration, for example. Therefore, the results of this study lend credence to nature-based recreation as being foundational for physical (i.e., Flow), mental (i.e., Fascination), and spiritual (i.e., Spiritual) and psychological (i.e., Communitas) health and wellness. Fascination was by far the most experienced PDE, which lends important support for the current nature restoration movement that emphasizes well-placed plants and the cultivation of urban nature spaces for stress relief and attention restoration.

One of the major purposes of this research project was to develop a comprehensive PDE scale. Results from the confirmatory factor analysis indicate support for this scale. Other researchers who are interested in the effects of nearby nature (e.g. backyards) versus far away nature (e.g. National Parks), the impact of the activity versus the impact of the natural surrounding, or cross-cultural comparisons would be potentially interested in using the PDE survey to help illuminate these differences. Study results can also be used as a building block to support current environmental education curriculum changes and parks initiatives, particularly those initiatives that are emphasize nearby nature. In short, this study provides evidence for the importance of nature-based recreation and the need for provision of nearby nature.

## References

- Adams, T., Bezner, J., & Steinhardt, M. (1997). The conceptualization and measurement of perceived wellness: Integrating balance across and within dimensions. *American Journal of Health Promotion, 11*, 208-218.
- Aiken, L. R. (1985). Three coefficients for analyzing the reliability and validity of ratings. *Educational and Psychological Measurement, 45*(1), 131-142. doi: 10.1177/0013164485451012
- Alberta Recreation and Parks Association. (2007). *In Alberta... Recreation and Parks Matter! Research summary on public perceptions on use and benefits of local government recreation and parks services.*
- Anthony, F., Hermans, C.A., & Sterkins, C. (2010). A comparative study of mystical experience among Christian, Muslim, and Hindu students in Tamil Nadu, India. *Journal for the Scientific Study of Religion, 49*(2), 262-277.
- Arnould, E. J., & Price, L. L. (1993). River magic: Extraordinary experience and the extended service encounter. *Journal of Consumer Research, 20*(1), 24-45.
- Asakawa, K. (2004). Flow experience and autotelic personality in Japanese college students: How do they experience challenges in daily life? *Journal of Happiness Studies, 5*(2), 123-154.
- Austin, J. H. (1998). *Zen and the Brain: Toward an Understanding of Meditation and Consciousness.* Cambridge: Massachusetts Institute of Technology.
- Bailey, K.D. (1994). *Typologies and taxonomies: An introduction to classification techniques.* Thousand Oaks, CA: Sage Publications.
- Bakker, A.B. (2008). The work-related flow inventory: Construction and initial validation of the WOLF. *Journal of vocational behavior, 72*(3), 400-414.
- Bason, M.R., & Frase, L. (2004). Creating optimal work environments: Exploring teacher flow experiences. *Mentoring and Tutoring, 12*(2), 241-258.
- Beatley, T. (2011). *The Nature of Cities.* T. Productions.
- Behan, J. R., Richards, M.T., & Lee, M. E. (2001). Effects of tour jeeps in a wildland setting on non-motorized recreationist benefits. *Journal of Park & Recreation Administration, 19*(2), 1-19.
- Belk, R. W., Wallendorf, M., & Sherry Jr, J. F. (1989). The sacred and the profane in consumer behavior: Theodicy on the odyssey. *Journal of Consumer Research, 16*(1), 1-38.
- Berman, M. G., Jonides, J., & Kaplan, S. (2008). The cognitive benefits of interacting with nature. *Psychological Science, 19*(12), 1207-1212.
- Berto, R. (2005). Exposure to restorative environments helps restore attentional capacity. *Journal of Environmental Psychology, 25*(3), 249-259.
- Borrie, W., & McCool, S.F. (2007). Describing change in visitors and visits to the "Bob". *International Journal of Wilderness, 13*(3), 28-33.
- Brayley, R. E., & Fox, K. M. (1998, 1998). *Introspection and spirituality in the backcountry recreation experience.* Paper presented at the Abstracts for the 1998 Symposium on Leisure Research, Ashburn, VA.

- Brooks, J. J., Wallace, G.N., & Williams, D.R. (2006). Place as relationship partner: An alternative metaphor for understanding the quality of visitor experience in a backcountry setting. *Leisure Sciences*, 28(4), 331-349.
- Bryce, J., & Haworth, J. (2002). Wellbeing and flow in sample of male and female office workers. *Leisure Studies*, 21(3), 249-263.
- Budd, M. (1998). Delight in the natural world. Kant on the aesthetic appreciation of nature, Part III: The sublime in nature. *British Journal of Aesthetics*, 38(3), 233-250.
- Carli, M., DelleFave, A., & Massimini, F. (1988). The quality of experience in flow channels: Comparison of Italian and U.S. students. In M. Csikszentmihalyi & I. Csikszentmihalyi (Eds.), *Optimal experience: Psychological Studies of Flow in Consciousness* (pp. 288-306): Cambridge University Press.
- Chang, C., Hammitt, W.E., Chen, P., Machnik, L., & Su, W. (2008). Psychophysiological responses and restorative values of natural environments in Taiwan. *Landscape and Urban Planning*, 85(2), 79-84. doi: 10.1016/j.landurbplan.2007.09.010
- Ching-hua, H., Sasidharan, V., Elmendorf, W., Willits, F.K., Graefe, A., & Godbey, G. (2005). Gender and ethnic variations in urban park preferences, visitation, and perceived benefits. *Journal of Leisure Research*, 37(3), 281-306.
- Cleary, T. S. (1996). *Abraham Maslow and the farther reaches of human nature: The plateau*. (Unpublished dissertation), University of Hawaii, Manoa, Hawaii.
- Cortina, J.M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, 78(1), 98 - 104.
- Csikszentmihalyi, M. (1975a). *Between boredom and anxiety*. San Francisco, CA: Jossey-Bass.
- Csikszentmihalyi, M. (1975b). Play and intrinsic rewards. *Journal of Humanistic Psychology*, 15(3), 41.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: Harper & Row.
- Csikszentmihalyi, M. (1992). A reponse to the Kimiecik, Stein and Jackson papers. *Journal of Applied Sport Psychology*, 4(2), 181-183. doi: 10.1080/10413209208406460
- Csikszentmihalyi, M. (1997). Flow and education. *NAMTA*, 22(2), 3-35.
- Csikszentmihalyi, M. (2000). The contribution of flow to positive psychology. In J. E. Gillham (Ed.), *The science of optimism and hope* (pp. 389-395). Philadelphia: Templeton Foundation Press.
- Csikszentmihalyi, M. (2002). *Flow: The classic work on how to achieve happiness*. New York: Harper and Row.
- Csikszentmihalyi, M., & Csikszentmihalyi, I. (1988). *Optimal experience: Psychological Studies of Flow in Consciousness*. New York: Cambridge Press.
- Csikszentmihalyi, M., & LeFevre, J. (1989). Optimal experience in work and leisure. *Journal of personality and social psychology*, 5, 815 - 822.

- Csikszentmihalyi, M., & Nakamura, J. (1989). The dynamics of intrinsic motivation: A study of adolescents. In R. Ames & C. Ames (Eds.), *Handbook of Motivation Theory and Research* (Vol. 3, pp. 45-71). New York: Academic Press.
- Csikszentmihalyi, M., & Robinson, R. (1990). *The art of seeing: An interpretation of the aesthetic encounter*. Santa Monica, CA: Getty Center for Education in the Arts.
- Custadoro, L. (1998). Observing flow in young people: Music learning. *General Music Today*, 12(1), 21-27.
- Custadoro, L. (2002). Seeking challenge, finding skill: Flow experience and music education. *Arts Education Policy Review*, 103(3), 3-9.
- De Rivera, J. (1977). A structural theory of the emotions. In J. De Rivera (Ed.), *Psychological Issues* (Vol. 10). New York: International University Press.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Delaney, C. (2005). The spirituality scale: Development and psychometric testing of a holistic instrument to assess the human spiritual dimension. *Journal of Holistic Nursing*, 23, 145-167.
- Dillman, D.A. (2000). *Mail and internet surveys: The tailored design method*. New York: Wiley.
- Drenger, J., Gaus, H., & Jahn, S. (2007). *Image effects of marketing events: The impact of flow experiences*. Paper presented at the 2007 AMA Winter Educators' Conference: Marketing Theory and Applications, Chicago, IL.
- Driver, B.L., Dustin, D., Baltic, T., Elsner, G., & Peterson, G. (1999). *Nature and the human spirit: Toward an expanded land management ethic*. State College, PA: Venture Publishing.
- Driver, B.L., Tinsley, H.E., & Manfredi, M.J. (1991). The paragraphs about leisure and recreation experience preference scales: Results from two inventories designed to assess the breadth of the perceived psychological benefits of leisure. In B. L. Driver, P. J. Brown & G. L. Peterson (Eds.), *Benefits of Leisure* (pp. 263-286). State College Pennsylvania: Venture Publishing.
- Dunn, J.G. H., Bouffard, M., & Rogers, W. T. (1999). Assessing item content-relevance in sport psychology scale-construction research: Issues and controversies. *Measurement in Physical Education & Exercise Science*, 3(1), 15.
- Eisenberger, R., Jason, R. J., Stinglhamber, F., Shanock, L., & Randall, A.T. (2005). Flow experiences at work: For high need achievers alone? *Journal of Organizational Behavior*, 26(7), 755-775.
- Ellard, A., Nickerson, N. P., & Dvorak, R. (2009). The spiritual dimension of the montana vacation experience. *Leisure/Loisir: Journal of the Canadian Association for Leisure Studies*, 33(1), 269-289.
- Ellis, G.D., & Voelkl, J.E. (1994). Measurement and analysis issues with explanation of variance in daily experience using the flow. *Journal of Leisure Research*, 26(4), 337.

- Fabrigar, L. R., Wegener, D.T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4(3), 272-299.
- Farber, M.E., & Hall, T.E. (2007). Emotion and environment: Visitors' extraordinary experiences along the Dalton highway in Alaska. *Journal of Leisure Research*, 39(2), 248-270.
- Felsten, G. (2009). Where to take a study break on the college campus: An attention restoration theory perspective. *Journal of Environmental Psychology*, 29(1), 160-167. doi: 10.1016/j.jenvp.2008.11.006
- Field, A. (2005). *Discovering statistics using SPSS*. London: SAGE publications.
- Fitness, J., & Fletcher, G. (1993). Love, hate, anger, and jealousy in close relationships: A prototype and cognitive appraisal analysis. *Journal of Personality and Social Psychology*, 65, 942-958.
- Fox, R. (1999). Enhancing spiritual experience in adventure programs. In J. C. Miles & S. Priest (Eds.), *Adventure Programming*. State College, Pennsylvania: Venture Publishing.
- Fredrickson, L.M., & Anderson, D.H. (1999). A qualitative exploration of the wilderness experience as a source of spiritual inspiration. *Journal of Environmental Psychology*, 19(1), 21-39.
- Fuller, R.C. (2001). *Spiritual but not religious: Understanding unchurched America*. New York: Oxford University Press.
- Garst, B.A., Williams, D.R., & Roggenbuck, J.W. (2009). Exploring early twenty-first century developed forest camping experiences and meanings. *Leisure Sciences*, 32(1), 90-107. doi: 10.1080/01490400903430905
- Gavanas, A. (2008). Grasping communitas. *Ethnos: Journal of Anthropology*, 73(1), 127-133. doi: 10.1080/00141840801927566
- Gilmore, J.H., & Pine, J. (2002). *The Experience is the Marketing*: BrownHerron Publishing.
- Gobster, P.H. (1999). An ecological aesthetic for forest landscape management. *Landscape Journal*, 18(1), 54-64.
- Gobster, P.H., & Westphal, L.M. (2004). The human dimensions of urban greenways: planning for recreation and related experiences. *Landscape and Urban Planning*, 68, 147-165.
- Gorsuch, R.L. (1983). *Factor analysis* (Vol. 2). Hillsdale, NJ: Erlbaum.
- Government of Alberta. (2010). *Active Alberta*. Province of Alberta.
- Gray, P.A., Duwors, E., Villeneuve, M., Boyd, S., & Legg, D. (2003). The socioeconomic significance of nature-based recreation in Canada. *Environmental Monitoring and Assessment*, 86, 129-147.
- Griffin, J. (2003). The effects of an adventure based program with an explicit spiritual component on the spiritual growth of adolescents. *The Journal of Experiential Education*, 25(3), 351.
- Grimm, L.G., & Yarnold, P.R. (2000). *Reading and understanding more multivariate statistics*. Washington: American Psychological Association.
- Haluza-Delay, R. (2000). Green fire and religious spirit. *The Journal of Experiential Education*, 23(3), 143.

- Haluza-Delay, R. (2001). Nothing here to care about: Participant constructions of nature following a 12-day wilderness program. *Journal of Environmental Education, 32*(4), 43.
- Han, K. (2007). Responses to six major terrestrial biomes in terms of scenic beauty, preference, and restorativeness. *Environment and Behavior, 39*(4), 529-556. doi: 10.1177/0013916506292016
- Hansmann, R., Hug, S., & Seeland, K. (2007). Restoration and stress relief through physical activities in forests and parks. *Urban Forestry & Urban Greening, 6*(4), 213-225. doi: 10.1016/j.ufug.2007.08.004
- Hartig, T., Evans, G.W., Jamner, L.D., Davis, D.S., & Garling, T. (2003). Tracking restoration in natural and urban field settings. *Restorative Environments, 23*(2), 109-123.
- Hartig, T., Kaiser, F. G., & Bowler, P. A. (1997). Further development of a measure of perceived environmental restorativeness. *Institute for Housing Research, Working paper no. 5*.
- Hartig, T., Kaiser, F.G., & Bowler, P.A. (2001). Psychological restoration in nature as a positive motivation for ecological behavior. *Environment and Behavior, 33*(4), 590-607. doi: 10.1177/00139160121973142
- Hartig, T., Korpela, K., Evans, G.W., & Garling, T. (1997). A measure of restorative quality in environments. *Scandinavian Housing and Planning Research, 14*, 175-194.
- Hau, K., & Marsh, H. W. (2004). The use of item parcels in structural equation modelling: Non-normal data and small sample sizes. *British Journal of Mathematical & Statistical Psychology, 57*(2), 327-351.
- Hayduk, L. (1983). *Structural equation modeling with LISREL*. Baltimore: The John Hopkins University Press.
- Hayduk, L. (1996). *LISREL issues, debates, strategies*. Baltimore: John Hopkins University Press.
- Heintzman, P. (1999). *Leisure and spiritual well-being relationships: A qualitative study*. Paper presented at the 9th Canadian conference on leisure research, Wolfville, Nova Scotia.
- Heintzman, P. (2003). The wilderness experience and spirituality: What recent research tells us. *The Journal of Physical Education, Recreation & Dance, 74*(6).
- Heintzman, P. (2009a). Introduction to special issue on leisure and spirituality *Leisure/Loisir, 33*(1), 5-10.
- Heintzman, P. (2009b). The spiritual benefits of leisure. *Leisure/Loisir, 33*(1), 419-445.
- Heintzman, P. (2010a). Leisure studies and spirituality: A Christian critique. *Journal of the Christian Society for Kinesiology and Leisure Studies, 1*(1), 19-31.
- Heintzman, P. (2010b). Nature-based recreation and spirituality: A complex relationship. *Leisure Sciences, 32*, 72-89.
- Heintzman, P., & Mannell, C. (2002). *A model of leisure style and spiritual well-being relationships*. Paper presented at the 10th Canadian Congress on Leisure Research, Edmonton, Alberta.

- Heintzman, P., & Mannell, R. (2003). Spiritual functions of leisure and spiritual well-being: Coping with time pressure. *Leisure Sciences*, 25(2), 207.
- Henderson, B., & Potter, T. (2001). Outdoor adventure education in Canada: Seeking the country way back in. *Canadian Journal of Environmental Education*, 6, 225-242.
- Henderson, K. (1990). An oral life history perspective on the containers in which American farm women experienced leisure. *Leisure Studies*, 9(2), 121-133. doi: 10.1080/02614369000390111
- Henderson, K., Scalin, M. M., Whitaker, L. S., Thurber, C., Marsh, P., Burkhardt, M., & Bialeschki, M. D. (2005). *Intentionality and youth development through camp experiences*. Paper presented at the Eleventh Canadian Congress on Leisure Research, Nanaimo, B.C.
- Heywood, J. (1989). Recreation opportunity: The social setting. *Australian Parks and Recreation*, 25(2), 18-20.
- Hinch, T., Jackson, E. L., Hudson, S., & Walker, G. J. (2005). Leisure constraint theory and sport tourism. *Sport in Society: Cultures, Commerce, Media, Politics*, 8(2), 142-163.
- Hinde, R.H. (1999). Religious experience. In R. H. Hinde (Ed.), *Why Gods persist: A scientific approach to religion* (pp. 185-198). London: Routledge.
- Hodge, D.R. (2003). The intrinsic spirituality scale. *Journal of Social Service Research*, 30, 1-41.
- Hoge, D.R. (1972). A validated intrinsic religious motivation scale. *Journal for the Scientific Study of Religion*, 11, 369-376.
- Hood, R. W. (1975). The construction and preliminary validation of a measure of reported mystical experience. *Journal for the Scientific Study of Religion*, 14(1), 29.
- Hood, R. W., Ghorbani, N., Watson, P. J., Ghramaleki, A., Bing, Mark N., Davison, H., & Morris, R. J. (2001). Dimensions of the mysticism scale: Confirming the three-factor structure in the United States and Iran. *Journal for the Scientific Study of Religion*, 40(4), 691-705.
- Hood, R. W., Morris, R. J., & Watson, P. J. (1993). Further factor analysis of Hood's mysticism scale. *Psychological Reports*, 73, 1176-1178.
- Hood, R.W. (1970). Religious orientation and the report of religious experience. *Journal for the Scientific Study of Religion*, 9, 285-291.
- Hood, R.W. (1978). Anticipatory set and setting: Stress incongruities as elicitors of mystical experience in solitary nature situations. *Journal for the Scientific Study of Religion*, 17(3), 279-287.
- Hormuth, S. (1986). The sampling of experiences in situ. *Journal of Personality*, 54(1), 262 - 293.
- Hsieh, H. & Shannon, S.E. (2005). Three approaches to qualitative analysis. *Qualitative Health Research*, 15(9), 1277-1288.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1-55.

- Hull, R., & Michael, S. (1995). Nature-based recreation, mood change, and stress restoration. *Leisure Sciences, 17*(1), 1-14. doi: 10.1080/01490409509513239
- Hull, R., Michael, S., Walker, G. J., & Roggenbuck, J. (1996). Ebb and flow of brief leisure experiences. *Leisure Sciences, 18*(4), 299-314. doi: 10.1080/01490409609513290
- Ingham, A.G., & McDonald, M.G. (2003). Sport and community/communitas. In R. C. Wilcox (Ed.), *Sporting dystopias: The making and meanings of urban sport cultures* (pp. 16-35). New York: SUNY Press.
- Iso-Ahola, S. (1999). Motivational foundations of leisure. In E. Jackson & T. Burton (Eds.), *Leisure studies: Prospects for the twenty-first century* (pp. 35-51). State College, PA: Venture.
- Jackson, S. (1992). Athletes in flow: A qualitative investigation of flow states in elite figure skaters. *Journal of Applied Sport Psychology, 4*(2), 161-180. doi: 10.1080/10413209208406459
- Jackson, S. (1995). Factors influencing the occurrence of flow state in elite athletes. *Journal of Applied Sport Psychology, 7*(2), 138-166. doi: 10.1080/10413209508406962
- Jackson, S. A., & Eklund, R. C. (2002). Assessing flow in physical activity: The Flow State Scale-2 and Dispositional Flow Scale-2. *Journal of Sport & Exercise Psychology, 24*(2), 133-150.
- Jackson, S. A., & Marsh, H. W. (1996). Development and validation of a scale to measure optimal experience: The Flow State Scale. *Journal of Sport & Exercise Psychology, 18*(1), 17-35.
- Jackson, S., Kimiecik, J., Ford, S., & Marsh, H. (1998). Psychological correlates of flow in sport. *Journal of Sport & Exercise Psychology, 20*(4), 358-378.
- Jackson, S., Martin, A., & Eklund, R. (2008). Long and short measures of flow: The construct validity of the FSS-2, DFS-2, and new brief counterparts. *Journal of Sport & Exercise Psychology, 30*(5), 561-587.
- Jackson, S.A., & Eklund, R.C. (2004). *The flow scales manual*. Morgantown, WV: Fitness Information Technology, Inc.
- Jager, E., & Halpenny, E. (2012). Supporting the CBD AICHI biodiversity conversation targets through park tourism: A case study of Parks Canada's visitor experience programme. *Parks, 18*(2), 78-92.
- Jagers, R.J., & Smith, P. (1996). Further examination of the spirituality scale. *Journal of Black Psychology, 22*, 429-442.
- James, W. (1892). *Psychology: The briefer course*. New York: Holt.
- James, W. (1997). *The varieties of religious experience*. New York: Simon & Shuster.
- Jantzen, G. (1995). *Power, gender, and Christian mysticism*. Cambridge: Cambridge University Press.
- Jefferies, K., & Lepp, A. (2012). An investigation of extraordinary experiences. *Journal of Park & Recreation Administration, 30*(3), 37-51.
- Jencson, L. (2001). Disasterous rites: Liminality and communitas in a flood crisis. *Anthropology and Humanism, 26*(1), 46-58.

- Jones, C., Hollenhurst, S., Perna, F., & Selin, S. (2000). Validation of the flow theory in an on-site whitewater kayaking setting. *Journal of Leisure Research*, 32(2), 247-261.
- Joreskog, K. (1999). What is the interpretation of R2? Retrieved March 28, 2013, from <http://www.ssicentral.com/lisrel/techdocs/WhatistheinterpretationofR2.pdf>
- Joreskog, K., & Sorbom, D. (1996). *LISREL 8: User's reference guide*. Chicago: SSI Scientific Software International.
- Kaplan, R. (2001). The nature of the view from home. *Environment and Behavior*, 33(4), 507-542. doi: 10.1177/00139160121973115
- Kaplan, R., & Kaplan, S. (1989). *The experience of nature: A psychological perspective*. Cambridge: Cambridge University Press.
- Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Green Psychology*, 15(3), 169-182.
- Kawabata, M., Mallett, C.J., & Jackson, S.A. (2008). The Flow State Scale-2 and dispositional Flow Scale-2: Examination of factorial validity and reliability for Japanese adults. *Psychology of Sport and Exercise*, 9(4), 465-485.
- Keller, J., & Bless, H. (2008). Flow and regulatory compatibility: An experimental approach to the flow model of intrinsic motivation. *Personality and Social Psychology Bulletin*, 34(2), 196-209. doi: 10.1177/0146167207310026
- Kelloway, K. E. (1998). *Using LISREL for structural equation modeling: A researcher's guide*. London: SAGE publications.
- Kemp, S.F. (1999). Sled dog racing: The celebration of co-operation in a competitive Sport. *Ethnology*, 38(1), 81.
- Kim, H. (2004). *Serious leisure, participation and experience in tourism: Authenticity and ritual in a renaissance festival*. (Unpublished doctoral dissertation), Texas A & M University.
- Kim, J., Ritchie, J. R., & McCormick, B. (2012). Development of a scale to measure memorable tourism experiences. *Journal of Travel Research*, 51(1), 12-25. doi: 10.1177/0047287510385467
- Kleiber, D., Walker, G. J., & Mannell, R. (2010). *A social psychology of leisure* (2nd ed.). State College, PA: Venture.
- Kluge, S. (2000). Empirically grounded construction of types and typologies in qualitative social research. *Forum: Qualitative Social Research*, 1(1). Retrieved September 24<sup>th</sup>, 2010 from <http://www.qualitative-research.net/index.php/fqs/article/viewArticle/1124/2499>
- Knopf, R. (1987). *Human behavior, cognition, and affect in the natural environment*. New York: A Wiley-Interscience Publication, .
- Korpela, K. M., Hartig, T., Kaiser, F. G., & Fuhrer, U. (2001). Restorative experience and self-regulation in favorite places. *Environment and Behavior*, 33(4), 572-589. doi: 10.1177/00139160121973133
- Kowal, J., & Fortier, M.S. (1999). Motivational determinants of flow: Contributions from self-determination theory. *Journal of Social Psychology*, 139(3), 355-368.

- Kraus, B.N. (2003). *Musicians in flow: Optimal experience in the wind ensemble rehearsal*. (Unpublished doctoral dissertation), Arizona State University.
- Kuo, F.E., & Sullivan, W.C. (2001). Aggression and violence in the inner city. *Environment and Behavior*, 33(4), 543-571. doi: 10.1177/00139160121973124
- Lange, E., Vogels, P., & Jamal, Z. (2011). Learning a language, learning the land: Newcomers, parks, and language learning (pp. 129). Edmonton, AB: St. Francis Xavier University.
- Larson, R. (2012). *State park use and outdoor recreation benefits across demographically diverse populations in Georgia*. (Unpublished doctoral dissertation), University of Georgia.
- Laski, M. (1961). *Ecstasy: A study of some secular and religious experiences*. New York: Greenwood pubgroup.
- Loeffler, T. A. (2004). A photo elicitation study of the meanings of outdoor adventure experiences. *Journal of Leisure Research*, 36(4), 536-556.
- Louv, R. (2005). *Last child in the woods: Saving our children from nature deficit disorder*: Algonquin books of Chapel Hill.
- Lugosi, P. (2007). Queer consumption and commercial hospitality: Communitas, myths and the production of liminoid space. *International Journal of Sociology and Social Policy*, 27(3/4), 163-174.
- Lugosi, P. (2008). Hospitality spaces, hospitable moments: Consumer encounters and affective experiences in commercial settings. *Journal of Foodservice*, 19(2), 139-149. doi: 10.1111/j.1745-4506.2008.00092.x
- Luminet, O., & Curci, A. (2009). *Flashbulb memories: New issues and perspectives*. New York: Psychology Press.
- Lynn, M. R. (1986). Determination and quantification of content validity. *Nursing Research*, 35(6), 382-386.
- MacCallum, R.C., Browne, M.W., & Sugawara, H.M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, 1(2), 130-149.
- MacDonald, D. A., LeClair, L., Holland, C. J., Alter, A., & Friedman, H. L. (1995). A survey of measures of transpersonal constructs. *Journal of Transpersonal Psychology*, 27, 171-235.
- Manfredo, M. J., & Driver, B.L. (1996). Measuring leisure motivation: A meta-analysis of the Recreation Experience Preference Scales. *Journal of Leisure Research*, 28(3), 188.
- Mannell, R. (1980). Social psychological techniques and strategies for studying leisure experiences. In S. E. Iso-Ahola (Ed.), *Social Psychological Perspectives on Leisure and Recreation* (pp. 62-88). Springfield, Illinois: Charles C. Thomas.
- Mannell, R. (1996). Approaches in the social and behavioral sciences to the systematic study of hard-to-define human values and experiences. In D. D. B.L. Driver, T. Baltic, G. Elsner, & G. Peterson (Ed.), *Nature and the human spirit* (pp. 405-415). State College, PA: Venture Publishing, Inc.
- Mannell, R., & Iso-Ahola, S.E. (1987). Psychological nature of leisure and tourism experience. *Annals of Tourism Research*, 14(314-331).

- Mannell, R., & Kleiber, D. (1997). *A Social Psychology of Leisure*. State College, PA: Venture.
- Mannell, R., Zuzanek, J., & Larson, R. (1988). Leisure states and "flow" experiences: Testing perceived freedom and intrinsic motivation hypothesis. *Journal of Leisure Research*, 20(4), 289-304.
- Markula, P., Grant, B. C., & Denison, J. (2001). Qualitative research and aging and physical activity: multiple ways of knowing. *Journal of Aging & Physical Activity*, 9(3), 245-264.
- Marsh, H.W., & Jackson, S.A. (1999). Flow experience in sport: Construct validation of multidimensional, hierarchical state and trait. *Structural Equation Modeling*, 6(4), 343-372.
- Marsh, P.E. (2008). Backcountry adventure as spiritual development: A means-end study. *Journal of Experiential Education*, 30(3), 290-293.
- Maslow, A.H. (1964). *Religions, values and peak-experiences*. New York: Penguin.
- Massimini, F., & Carli, M. (1988). The systematic assessment of flow in daily experience. In I. Csikszentmihalyi & M. Csikszentmihalyi (Eds.), *Psychological studies of flow in consciousness* (pp. 266-287). New York: Cambridge University Press.
- Mathes, E.W., Zevon, M. A., Roter, P.M., & Joerger, S.M. (1982). Peak experience tendencies: Scale development and theory testing. *Journal of Humanistic Psychology*, 22(3), 92-108.
- Mathwick, C., & Rigdon, E. (2004). Play, flow, and the online search experience. *Journal of Consumer Research*, 31(2), 324-332.
- McDonald, B., & Schreyer, R. (1991). Spiritual benefits of leisure participation and leisure settings. In B. Driver, J. Brown & G. Peterson (Eds.), *Benefits of Leisure*. State College, Pennsylvania: Venture Publishing, Inc.
- McDonald, M., Wearing, S., & Ponting, J. (2009). The nature of peak experience in wilderness. *Humanistic Psychologist*, 37(4), 370-385. doi: 10.1080/08873260701828912
- McGinnis, L. P., Gentry, J. W., & G., Tao. (2008). The impact of flow and communitas on enduring involvement in extended service encounters. *Journal of Service Research*, 11(1), 74-90. doi: 10.1177/1094670508319046
- McGinnis, L.P., & Gentry, J.W. (2004). Examining the mediating relationship of "play" on ritual enduring involvement. *Advances in Consumer Research*, 31(1), 405-411.
- McIntosh, D.N. (1997). Religion-as-schema, with implications for the relation between religion and coping. In Spilka, B. & McIntosh, D.N. (Eds.), *The Psychology of Religion: Theoretical Approaches* (pp. 171-183). Boulder, Colorado: WestviewPress.
- Messick, S. (1989). Validity. In L. R. Linn (Ed.), *Educational Measurement* (pp. 13-43). New York: Macmillan Publishing Company.
- Mills, A.S., & Butler, T.S. (2005). "Flow" experience among Appalachian Trail thru-hikers. Paper presented at the Proceedings of the 2005 Northeastern Recreation Research Symposium, Bolton Landing, New York.

- Mitten, D. (1995). Building the group: Using personal affirming to create healthy group process. *Journal of Experiential Education*, 18(2), 82-90.
- Moneta, G.B. (2004). The flow model of intrinsic motivation in Chinese: Cultural and personal moderators. *Journal of Happiness Studies*, 5(2), 181-217.
- Morita, E., Fukuda, S., Nagano, J., Hamajima, N., Yamamoto, H., & Iwai, Y. (2007). Psychological effects of forest environments on healthy adults: Shinrin-yoku (forest-air bathing, walking) as a possible methods of stress reduction. *Journal of the Royal Institute of Public Health*, 121, 54-63.
- Moyers, B. (1987). Joseph Campbell and the power of myth, *The seminal PBS series on world mythology*: Athena.
- Neulinger, J. (1974). *The psychology of leisure*. Springfield, IL: Charles C. Thomas.
- Nisbet, E. K., Zelenski, J. M., & Murphy, S. M. (2009). The nature relatedness scale. *Environment and Behaviour*, 41(5), 715-740.
- Novak, T. P., Hoffman, D.L., & Duhachek, A. (2003). The influence of goal-directed and experiential activities on online flow experiences. *Journal of Consumer Psychology*, 13(1/2), 3-16.
- Novak, T.P., Hoffman, D.L., & Yung, Y.i. (2000). Measuring the customer experience in online environments: A structural modeling approach. *Marketing Science*, 19(1), 22-42.
- Olaveson, T. (2001). Collective effervescence and communitas: Processual models of ritual and society in Emile Durkheim and Victor Turner. *Dialectical Anthropology*, 26(2), 89-124.
- Orsega-Smith, E., Mowen, A.J., Payne, L.L., & Godbey, G. (2004). The interaction of stress and park use on psycho-physiological health in older adults. *Journal of Leisure Research*, 36(2), 232-256.
- Parks Canada. (2008). Parks Canada Mandate. Retrieved September 30, 2008, from [http://www.pc.gc.ca/docs/pc/plans/plan2007-2008/sec1/page03\\_E.asp](http://www.pc.gc.ca/docs/pc/plans/plan2007-2008/sec1/page03_E.asp)
- Parry, D. C. (2009). Dragon boat racing for breast cancer survivors: Leisure as a context for spiritual outcomes. *Leisure/Loisir: Journal of the Canadian Association for Leisure Studies*, 33(1), 317-340.
- Patton, M. Q. (2002). *Qualitative evaluation and research methods* (Vol. 3). Thousand Oaks, California: Sage.
- Peterman, A.H., Fitchett, G., Brady, M., Hernandez, L., & Cella, D. (2002). Measuring spiritual well-being in people with cancer: The functional assessment of chronic illness therapy *Annals of Behavioral Medicine*, 24(1), 49-58.
- Pohl, S. L., Borrie, W. T., & Patterson, M. E. (2000). Women, wilderness, and everyday life: A documentation of the connection between wilderness recreation and women's everyday lives. *Journal of Leisure Research*, 32(4), 415-434.
- Privette, G. (1983). Peak experience, peak performance, and flow: a comparative analysis of positive human experiences. *Journal of Personality and Social Psychology*, 45(6), 1361-1368.

- Purcell, T., Peron, E., & Berto, R. (2001). Why do preferences differ between scene types? *Environment and Behavior*, 33(1), 93-106. doi: 10.1177/00139160121972882
- Quarrick, G. (1989). *Our Sweetest Hours: Recreation and the Mental State of Absorption*. London: McFarland & Company.
- Quinn, R.W. (2005). Flow in knowledge work: High performance experience in the design of national security technology. *Administrative Science Quarterly*, 50(4), 610-641.
- Rathunde, K., & Csikszentmihalyi, M. (2005). Middle school students motivation and quality of experience: A comparison of Montessori and traditional school environments. *American Journal of Education*, 111(3), 341-371.
- Reis, H.T., & Judd, C.M. (2000). *Handbook of Research Methods in Social and Personality Psychology*. Cambridge: Cambridge University Press.
- Ritt-Olson, A., Unger, J.B., Trinidad, D., Teran, L., Dent, C.W., & Sussman, S. (2004). The protective influence of spirituality and "health as-a-value" against monthly substance use among adolescents varying in risk. *Journal of Adolescent Health*, 34, 192-199.
- Roche, S. M., & McConkey, K. M. (1990). Absorption: Nature, assessment, and correlates. *Journal of Personality & Social Psychology*, 59(1), 91-101.
- Rosegrant, J. (1976). The impact of set and setting on religious experience in nature. *Journal for the Scientific Study of Religion*, 15(4), 301-310.
- Russell, J. A., Ward, L. M., & Pratt, G. (1981). Affective quality attributed to environments. *Environment and Behavior*, 13(3), 259-288. doi: 10.1177/0013916581133001
- Salanova, M., Bakker, A.B., & Llorens, S. (2006). Flow at work: Evidence for an upward spiral of personal and organizational resources. *Journal of Happiness Studies*, 7(1), 1-22. doi: 10.1007/s10902-005-8854-8
- Saroglou, V., Buxant, C., & Tilquin, J. (2008). Positive emotions as leading to religion and spirituality. *Journal of Positive Psychology*, 3(3), 165-173. doi: 10.1080/17439760801998737
- Schafer, J., & Graham, J.W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, 7(2), 147-177.
- Schmidt, C., & Little, D. (2007). Qualitative insights into leisure as a spiritual experience. *Journal of Leisure Research*, 39(2), 222-247.
- Schouten, J.W., McAlexander, J.H., & Koenig, H.F. (2007). Transcendent customer experience and brand community. *Journal of the Academy of Marketing Science*, 35, 357-378.
- Schreiber, J. B., Nora, A., Stage, F.K., Barlow, E.A., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *Journal of Educational Research*, 99(6), 323-337.
- Schuler, J., & Brunner, S. (2009). The rewarding effect of flow experience on performance in a marathon race. *Psychology of Sport & Exercise*, 10(1), 168-174. doi: 10.1016/j.psychsport.2008.07.001
- Schulz, J., & Auld, C. (2009). A social psychological investigation of the relationship between Christianity and contemporary meanings of leisure: An Australian perspective. *Leisure/Loisir: Journal of the Canadian Association for Leisure Studies*, 33(1), 121-146.

- Sharpe, E. K. (2005a). "Going above and beyond:" The emotional labor of adventure guides. *Journal of Leisure Research*, 37(1), 29-50.
- Sharpe, E.K. (2005b). Delivering communitas: Wilderness adventure and the making of community. *Journal of Leisure Research*, 37(3), 255-280.
- Shernoff, D.J., Csikszentmihalyi, M., Shneider, B., & Shernoff, E. (2003). Student engagement in high school classrooms from the perspective of flow theory. *School Psychology Quarterly*, 18(2), 158-176.
- Smith, S. (2007). Leisure Travel. In R. McCarville & K. MacKay (Eds.), *Leisure for Canadians*. State College: Pennsylvania: Venture Publishing.
- Spencer, J., Hersch, G., Aldridge, J., Anderson, L., & Ulbrich, A. (2001). Daily life and forms of communitas in a personal care home for elders. *Research on Aging*, 23(6), 611-632. doi: 10.1177/0164027501236001
- St John, G. (2004). *Rave Culture and Religion*. London/New York: Routledge.
- Stace, W.T. (1960). *Mysticism and philosophy*. Philadelphia: Lippincott.
- Stack, K., & Shultis, J. (2013). Implications of attention restoration theory for leisure planners and managers. *Leisure/Loisir*, 37(1), 1-16. doi: 10.1080/14927713.2013.776747
- Stringer, A.L., & McAvoy, L.H. . (1992). The need for something different: Spirituality and wilderness adventure. *The Journal of Experiential Education*, 15(1), 13-20.
- Sullivan, W.C., & Kuo, F.E. (1996). Do trees strengthen urban communities, reduce domestic violence? : USDA Forest Service.
- Sweatman, M. M., & Heintzman, P. (2004). The perceived impact of outdoor residential camp experience on the spirituality of youth. *World Leisure Journal*, 46(1), 23-31.
- Tabachnick, B.G., & Fidell, L.S. (2007). *Using multivariate statistics* (5th ed.). Boston: Allan and Bacon.
- Taft, R. (1970). Peak experiences and ego permissiveness. *Personality: An international journal*, 1, 163-184.
- Talarico, J.M., LaBar, K.S., & Rubin, D.C. (2004). Emotional intensity predicts autobiographical memory experience. *Memory & Cognition*, 32(7), 1118-1132.
- Tanaka, J.S., & Huba, G.J. (1989). A general coefficient of determination for covariance structure models under arbitrary GLS estimation. *British Journal of Mathematical and Statistical Psychology*, 42, 233-239.
- Tarrant, M.A., & Manfredi, M.J. (1994). Recollections of outdoor recreation experiences: A psychophysiological perspective. *Journal of Leisure Research*, 26(4), 357.
- Taylor, A. F., Kuo, F. E., & Sullivan, W. C. (2002). Views of nature and self-discipline: Evidence from inner city children. *Journal of Environmental Psychology*, 22(1-2), 49-63.
- Taylor, A., Kuo, F., & Sullivan, W. (2001). Coping with ADD: The surprising connection to green play settings. *Environment and Behavior*, 33, 54-77.
- Tellegen, A., & Atkinson, G. (1974). Openness to absorbing and self-altering experiences ("absorption"), a trait related to hypnotic susceptibility. *Journal of Abnormal Psychology*, 83(3), 268-277.

- Tennessen, C., & Cimprich, B. (1995). Views to nature: effects on attention. *Journal of Environmental Psychology, 15*, 71-85.
- Thapa, B., Graefe, A., & James, D. (2002). Information needs and search behaviors: A comparative study of ethnic groups in the Angeles and San Bernardino National Forests, California. *Leisure Sciences, 24*(1), 89-107.
- Tourangeau, R., Rips, L., & Rasinski, K. (2000). *The psychology of survey response*. Cambridge: Cambridge University Press.
- Trainor, S., & Norgaard, R.B. (1999). Recreation fees in the context of wilderness values. *Journal of Park and Recreation Administration, 17*(3), 100-115.
- Tramacchi, D. (2000). Field tripping: Psychedelic communitas and ritual in the Australian bush. *Journal of Contemporary Religion, 15*(2), 201.
- Turner, J. C., & Meyer, D.K. (2004). A classroom perspective on the principle of moderate challenge in mathematics. *The Journal of Educational Research, 97*(6), 311-318.
- Turner, V. (1969). *The ritual process: Structure and anti-structure*. Hawthorne, NY: Aldine De Gruyter.
- Turner, V. (1982). *From ritual to theatre: The human seriousness of play*. New York: Performing Arts Journal Publications.
- Ulrich, R. S. (1984). View through a window may influence recovery from surgery. *Science, 224*(4647), 420-421.
- Ulrich, R. S. (2002). *Health benefits of gardens in hospitals*. Paper presented at the Plants for people conference, Florida.
- Ulrich, R. S., Simons, R. F., Losito, B.D., Fiorito, E., Miles, M. A., & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology, 11*(3), 201-230.
- Ulrich, R.S. (1981). Natural versus urban scenes: Some psychophysiological effects. *Environment and Behavior, 13*, 523-556.
- Underwood, L.G., & Teresi, J.A. (2002). The daily spiritual experience scale: Development, theoretical description, reliability, exploratory factor analysis, and preliminary construct validity using health-related data. *Annals of Behavioural Medicine, 24*(1), 22-33.
- Van Gennep, A. (1960). *The rites of passage*. London: Routledge and Kegan Paul.
- Vella-Brodrick, D. A., & Allen, F. C. L. (1995). Development and psychometric validation of the mental, physical, and spiritual well-being scale. *Psychological Reports, 77*(2), 659-674. doi: 10.2466/pr0.1995.77.2.659
- Vining, J., & Merrick, M. (2012). Environmental Epiphanies: Theoretical Foundations and Practical Applications. In S. Clayton (Ed.), *The Oxford Handbook of Environmental and Conservation Psychology* (pp. 485-508). Oxford: Oxford University Press.
- Vlachopoulos, S. P., Karageorghis, C. I., & Terry, P. C. (2000). Hierarchical confirmatory factor analysis of the Flow State Scale in exercise. *Journal of sports sciences, 18*(10), 815-823.
- Voelkl, J. E., & Ellis, G. D. (1998). Measuring flow experiences in daily life: An examination of the items used to measure challenge. *Journal of Leisure Research, 30*(3), 380.

- Walker, G. J., Hull, R., & Roggenbuck, J. (1998). On-site optimal experiences and their relationship to off-site benefits. *Journal of Leisure Research*, 30(4), 453.
- Walker, G.J. & Virden, R.J. (2005). Constraints on outdoor recreation. In E. L. Jackson (Ed.), *Constraints to leisure* (pp. 201-219). State College, PA: Venture Publishing.
- Wall, K. (2009). Across distances and differences: Aboriginal pilgrimage at Lac Ste. Anne. *Leisure/Loisir: Journal of the Canadian Association for Leisure Studies*, 33(1), 291-315.
- Wallace, T. (2006). Working of the train gang: Alienation, liminality and communitas in the UK preserved railway sector. *International Journal of Heritage Studies*, 12(3), 218-233. doi: 10.1080/13527250600604167
- Watson, A. E., Williams, D. R., Roggenbuck, J. W., & Daigle, J. (1992). Visitor characteristics and preferences for three national forest wilderness in the South. (pp. 27). Ogden, UT: USDA Forest Service Research Paper.
- Wells, N.M., & Evans, G. W. (2003). Nearby nature. *Environment and Behavior*, 35(3), 311-330. doi: 10.1177/0013916503035003001
- White, R. (2002). Memory for events after twenty years. *Applied Cognitive Psychology*, 16(5), 603-612. doi: 10.1002/acp.819
- Whitmore, J., & Borrie, W. (2009). *Exploring the usefulness of the dispositional flow scale for outdoor recreational activities*. Paper presented at the Proceedings of the 2005 Northeastern Recreation Research Symposium, Bolton Landing, NY.
- Wild, T. C., Kuiken, D., & Schopflocher, D. (1995). The role of absorption in experiential involvement. *Journal of Personality & Social Psychology*, 69(3), 569-579.
- Williams, D. R. (1988). Measuring perceived similarity among outdoor recreation activities: A comparison of visual and verbal stimulus presentations. *Leisure Sciences*, 10, 153-166.
- Williams, K., & Harvey, D. (2001). Transcendent experience in forest environments. *Journal of Environmental Psychology*, 21(3), 249-260.
- Yarnal, M. (2006). The Red Hat society: Exploring the role of play, liminality, and communitas in older women's lives. *Journal of Women & Aging*, 18(3), 51-73.

## Appendix A: Interview Guide

### Special, Out-of-the-Ordinary, and Meaningful Nature Experiences

In emails prior to interview, ask interviewees to think about one experience they want to talk about and to read the consent form.

Please sign the consent form.

#### 1. Introduction:

Please take a minute to think about the various times you have been in a natural setting over the past six months. During any of these times, did you have an experience you would describe as being special, out-of-the-ordinary, or meaningful that was transient or fleeting? If you can think of more than one, please focus on the most memorable.

The following questions will be about this experience. Then I will ask you for feedback on a preliminary scale and a few wrap up questions.

#### 2. Experience-Focused Questions:

What was this experience? Where were you? What were the parameters around this experience?

- a. Please describe the lived experience characteristics as it unfolds.

Probes:

- i. What were your feelings during this experience?
- ii. What was going through your mind?
- iii. Why was this experience so special?
- iv. At the time, would you have described this experience as being positive or negative? Why? How was it positive or negative?

- b. What initiated or caused this experience?

Probes:

- i. What initiated/triggered this experience?
- ii. What contributed or sustained the experience?
- iii. What completed/ended the experience?
- iv. Who were you with? What activity (or activities) were you engaged in when this experience occurred?
- v. What was your mood? How were you feeling?
- vi. Were any of the above triggers to the experience?

vii. Were there negative triggers? (i.e., fatigue related to runner's high)

c. What role did nature play in triggering this experience?

Probes:

- i. Can you describe the natural physical setting where this experience took place? (e.g. Wooded? Grasslands?)
- ii. Was human influence evident? Were there buildings or other human structures?
- iii. Are there any characteristics of nature spaces in particular that are important to this experience?

d. Frequency

- i. How frequently does this specific type of experience happen to you in nature? In built environments? (Other types of nature experiences?)

3. **Paragraphs:** Could you please read the following four different types of experiences? Underline the parts that resonate with your experience.

This paragraph focuses on the **activity** you were engaged in:

I felt that I was focused, and that time passed without notice. In fact, I was so focused that I did not realize how absorbed I was until the experience was over. I felt a loss of self-consciousness. This loss of self-consciousness allowed me to act on my instinct with confidence, without worrying about what other people were thinking. I knew what I needed to do to meet my goals. I could actively create this experience.

This paragraph focuses on **where** you were:

I had an experience in which my attention was effortless, where I couldn't really focus. This may have happened after my ability to concentrate was diminished. In particular, this experience happened when I was in a natural environment where I did not have to focus, yet my attention was captivated effortlessly. I was also able to reflect on life at the same time.

This paragraph focuses on connection to a **higher power**:

I had an experience that I have had difficulty describing. I was absorbed in the experience and felt reverence and awe, joy and bliss. The experience felt sacred, I felt connected to a higher power, and when I try to express this experience, I sometimes use the words associated with my religion. I felt at one, or at union, with all things.

This paragraph focuses on your relationship to the **people** you were with:

I felt intensely connected to other people – it was quite magical and relationships seemed to occur spontaneously. I was able to see people for who they really are and look past things like roles, status and reputation. I felt that we were relating with honesty and openness.

- a. Do any of the above descriptions match your special, out-of-the-ordinary or meaningful nature experience? Which one/ones?
- b. Does the entire description of the one(s) you chose seem accurate to you?
- c. Have you had any of the other experiences? How frequently in nature? How frequently in urban areas?
- d. What is the relationship between these experiences (e.g. Does one cause another)?

4. What is your definition of nature?

5. What is your definition of a pro environmental behavior?

6. **Pro Environmental Behaviours**

- a. Do you think your nature experiences affect your pro-environmental behaviors? (e.g. household decisions, signing petitions, belonging to an eco organization, protests/demonstrations). How? Or, is it your lifestyle that affects your PEB's?
- b. Do you think that the special, out-of-the-ordinary and meaningful experience you described influence your environmental behaviors? How?
- c. Do people have to have nature experiences to influence PEB's.

7. **Comprehensive PDE Scale:**

As part of this project, I have developed a scale that measures different types of special, out-of-the-ordinary, or meaningful experiences. I would like you to complete the scale, answering each item based on how well it describes your own experience. Any feedback you can provide on the scale's readability and parsimony would be appreciated (Please tick any that are confusing and offer alternative language). Please answer the scale

as if the previous discussion has not happened. Are there other PEB's I should use instead?

Specific questions here: Does setting = landscape? Does physical setting = physical geographical setting?

3. **Religion**

What is your religious affiliation? How does your religious background influence the way you talk about AND experience nature?

2. **Other comments:**

Are there any other comments you would like to make about your experience? About this study? Can I contact you for further clarifications? Can you suggest others I can interview?

Thank you for participating!!!

## Appendix B: Expert Review

Thank you for taking the time to be an expert reviewer for the development of a survey on psychologically deep experiences in nature. Mannell (1996) defined psychologically deep experiences (PDE's) in nature as “special, out-of-the-ordinary, or meaningful” events that typically involve altered perceptions of time, self, and surroundings. In this survey I am examining the lived conscious experience in terms of four PDE's: **Communitas**, **Fascination**, **Flow**, and **Spirituality**. Briefly stated, **flow** is an experience of deep concentration within which a person becomes absorbed in the moment and loses track of time (Csikszentmihalyi, 1990). **Spiritual** experiences are feeling connections to a higher power (Schmidt & Little, 2007; Stringer & McAvoy, 1992; Williams & Harvey, 2001), strong feelings of wonder and awe, and a sense of timelessness and ineffability (Fredrickson & Anderson, 1999; Loeffler, 2004; Williams & Harvey, 2001). **Fascination** involves effortless attention in nature spaces, typically after concentration is depleted (Kaplan, 1995). Finally, **communitas** is an intense, magical, and synergistic connection to other people (Turner, 1982).

Each of these four psychological experience constructs is represented by items and/or factors. Please familiarize yourself with the definitions provided in Table 1 that describe the factors of the four psychological experiences (Communitas, Fascination, Flow, and Spiritual). Once you are familiar please use Table 2 and do the following:

a) Match each item with the best factor and the second best factor.

b) Rate on a unipolar scale of 1 (poor) to 5 (excellent) the adequacy of the item in matching the best factor and the second best factor you have chosen.

c) If you wish, provide a written explanation of your choice or any feedback you feel would be useful.

**Table One: Descriptions of Factors.**

**Action and awareness merging:** I was in the zone and things seemed to happen spontaneously.

**Affect:** I felt overwhelming positive emotions.

**Challenge/skill balance:** I perceived the experience to be challenging, but not beyond my abilities.

**Concentration on the task at hand:** I was very focused.

**Communitas:** I felt intensely connected to other people – the experience was quite magical and relationships seemed to flow spontaneously.

**Fascination:** This experience happened when I was in a natural landscape where I did not have to focus; yet my attention was captivated effortlessly. I was also able to reflect on life at the same time.

**Loss of self-consciousness:** I felt free from self-consciousness, and I was doing things instinctively and confidently without concern for others.

**Noetic:** This experience engaged alternate forms of knowledge or reality.

**Spiritual:** I felt mystery and reverence; a connection to a higher power

**Transformation of time:** Time either speeds up or slows down.

**Unambiguous feedback:** Immediate and clear feedback is received, usually from the activity itself.

**Item 1:** I had an experience in which a new view of reality was revealed to me.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 2:** I experienced a perfectly peaceful state.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 3:** I experienced a sense of sharing with the people I was with.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 4:** I performed automatically, without thinking too much.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 5:** I experienced a sense of harmony with other people.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 6:** I experienced something as being “divine” in a spiritual sense.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 7:** The way time passed seemed to be different than normal.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 8:** The natural setting or landscape was fascinating.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 9:** Things just seemed to happen automatically.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 10:** My abilities matched the high challenge of the situation.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 11:** I was concerned with how others were evaluating me.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 12:** I had total concentration on the activity or task that I was doing.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 13:** I had an experience in which deeper aspects of reality were made evident.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 14:** I was worried about what others were thinking of me.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 15:** My attention was effortlessly drawn to many interesting natural things.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 16:** I had an experience that I knew to be “sacred” in a spiritual sense.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 17:** I was concerned with what others were thinking about me.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

\_\_\_\_\_

**Item 18:** I had an experience that left me with a feeling of wonder.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

\_\_\_\_\_

**Item 19:** I had a good idea, while I was engaged in the activity, how well I was doing in it.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 20:** I had an experience in which ultimate reality was revealed to me.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 21:** I felt I was competent enough to meet the high demands of the situation.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 22:** I was aware of how well I was doing the activity.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 23:** I did things spontaneously and automatically without having to think.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 24:** I could tell by the way I was doing the activity how well I was doing.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 25:** I was completely focused on the task or situation at hand.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 26:** I had an experience that seemed “holy” in a spiritual way.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 27:** I experienced a sense of belonging with other people.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

\_\_\_\_\_

**Item 28:** I lost my normal awareness of time.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

\_\_\_\_\_

**Item 29:** The natural setting had fascinating qualities.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 30:** The challenge and my skills were at an equally high level.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 31:** I had an experience in which I felt that all was perfection.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 32:** Time seemed to alter (either slowed down, or sped up, or I had a sense of timelessness).

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

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**Item 33:** It was no effort to keep my mind on what was happening.

**Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Second Best Factor (Please bold):** Action/awareness, Affect, Challenge/skill, Concentration, Communitas, Fascination, Loss of self, Noetic, Spiritual, Transformation of time, Unambiguous feedback.

	Poor	Fair	Good	Very Good	Excellent
<b>Degree of match (Please bold):</b>	1	2	3	4	5

**Comments:** \_\_\_\_\_

\_\_\_\_\_

Thank you for your time!!

# Psychologically deep experiences in nature

## Survey information letter



Please reading the following consent letter. At the bottom, indicate you have read the letter and click "next".

Survey on special, out-of-the-ordinary, and meaningful nature experiences

Physical Education and Recreation  
E463 Van Vliet Centre  
Edmonton, Alberta, Canada T6G 2H9

Supervisor: Dr. Gordon Walker  
gordon.walker@ualberta.ca Tel: 780.492.0581

Researcher: Lara Fenton  
lfenton@ualberta.ca Tel: 780.492.5561

Background: You are invited to participate in an online survey about a special or meaningful nature experience that you have had. These types of experiences are different from everyday nature experiences because you may have, for example, lost all sense of time or felt a connection to a higher power. This online survey will ask questions about these experiences in the moment that they happened. Please see below for more information about this project.

Title of Project: Out-of-the-ordinary experiences in nature  
Researcher: Lara Fenton, PhD Candidate  
Affiliation: Faculty of Physical Education and Recreation, University of Alberta  
Telephone: 780.886.1798  
Email: lfenton@ualberta.ca

Study Purpose: To learn more about the experiences nature goers have in nature spaces.

Procedures and consent: You will be asked to complete a 15 to 20 minute online survey. By completing the survey, you imply consent.

Study Benefits: This study will allow you to think about your nature participation. It will also help researchers better understand different kinds of nature experiences.

Study Risks: Participation in this questionnaire may involve the disclosure of sensitive information. This could make some participants uncomfortable.

Confidentiality: Your email will be collected during the online survey so that if you wish to withdraw your survey can be identified. All personal information will be downloaded from survey monkey by December 30, 2011. It will then be stored in a locked office and on a password protected computer. Only the investigator will have access to this office. You will not be identified in any future publications or presentations.

Data Storage: Information will be kept for a period of five years after publication. It will then be destroyed.

Freedom to Withdraw: You may withdraw from the study up until December 30th, 2011. To be removed please email the researcher and your information will be deleted.

Study Findings: If you would like to learn more about the study's overall findings, please contact the primary researcher, Lara Fenton or her Supervisor, Dr. Gordon Walker.

Lara Fenton 780.492.5561 lfenton@ualberta.ca  
Dr. Gordon Walker 780.492.0581 gordon.walker@ualberta.ca

# Psychologically deep experiences in nature

Additional Contacts: If you have concerns about this study, please contact Dr. Kelvin Jones. He is the chair of the Research Ethics Board that governs this project. Dr. Jones has no direct involvement with this research.  
Dr. Kelvin Jones 780.492.0302 kelvin.jones@ualberta.ca

Thank you for participating in this study!

## **1. I have read the survey information letter and consent to the online survey**

Yes

## Psychologically deep experiences in nature

**2. Please take a minute to think about the various times you have been in a natural setting during the last six months. During any of these times, did you have an experience you would describe as special, out-of-the-ordinary, or meaningful?**

- Yes
- No

# Psychologically deep experiences in nature

## Questions about the activity

**3. All of the questions in this section have to do with background information regarding the special, or out-of-the-ordinary, or meaningful experience you had during the last six months. (Note: If you had more than one such experience, please choose the ONE you feel was the MOST memorable).**

**What activities were you engaged the exact moment that you had your special, out-of-the-ordinary, or meaningful nature experience? Please check all that apply:**

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Auto/RV camping            | <input type="checkbox"/> Fishing            | <input type="checkbox"/> Running             |
| <input type="checkbox"/> Backpacking                | <input type="checkbox"/> Four-wheel driving | <input type="checkbox"/> Socializing         |
| <input type="checkbox"/> Backcountry camping        | <input type="checkbox"/> Frisbee            | <input type="checkbox"/> Spending time alone |
| <input type="checkbox"/> Bicycling                  | <input type="checkbox"/> Horseback riding   | <input type="checkbox"/> Swimming            |
| <input type="checkbox"/> Canoeing                   | <input type="checkbox"/> Hunting            | <input type="checkbox"/> Viewing scenery     |
| <input type="checkbox"/> Collecting nature products | <input type="checkbox"/> Meditation         | <input type="checkbox"/> Viewing wildlife    |
| <input type="checkbox"/> Dancing                    | <input type="checkbox"/> Photography        | <input type="checkbox"/> Walking             |
| <input type="checkbox"/> Day hiking                 | <input type="checkbox"/> Picnicking         | <input type="checkbox"/> Yoga                |
| <input type="checkbox"/> Driving for pleasure       | <input type="checkbox"/> Relaxation         |  |

Other (please specify)

**4. Would you say that this activity caused your special, out-of-the ordinary, or meaningful experience?**

- Yes
- No

**5. Why or why not?**

**6. Is there any other information about the activity (or activities) that you were doing that you would like to tell us about?**

# Psychologically deep experiences in nature

## Questions about who you were with

### 7. Who was the main person you were with when this experience happened?

- Partner
- Alone
- One friend
- Two friends or more
- Family member(s)

Other (please specify)

### 8. Is there any other information about who you were with that you would like to tell us about?

# Psychologically deep experiences in nature

## Questions about when this experience occurred

### 9. When did this experience happen?

- In the last week
- In the last month
- In the last three months
- In the last six months

Other (please specify)

# Psychologically deep experiences in nature

## Questions about where this experience occurred

**10. Is there a name for the location of this place where your experience occurred (e.g. My backyard, Banff National Park)?**

**11. Which of the following physical settings best describes where you were when this experience happened? (Please check only one).**

- An undisturbed natural area with no evidence of humans.
- A largely undisturbed natural area.
- An area that is somewhat modified but appears natural. Land use activities such as timber harvesting and livestock grazing may be evident.
- A substantially modified area with both human-made and natural features such as rural or agricultural landscapes.
- An area where roads, buildings, and powerlines clearly dominate the landscape.

Other (please specify)

**12. Is there any other information about the physical/geographical setting, time of day, Season, or weather conditions where you experienced this event you would like to share?**

# Psychologically deep experiences in nature

## Questions about your experience

The following questions all refer to your special, out-of-the-ordinary, or meaningful experience. Answer each question by circling the number that best matches what you experienced. Not all the items may necessarily apply to your experience.

Please rate on the following scale:

1 = To a small extent

2 = To some extent

3 = To a moderate extent

4 = To a great extent

5 = To a very great extent

N/A = Not applicable or Not at all

**13. I had an experience in which a new or expanded view of reality was revealed to me.**

1       2       3       4       5       N/A

**14. I experienced a perfectly peaceful state.**

1       2       3       4       5       N/A

**15. I experienced a sense of sharing with the people I was with.**

1       2       3       4       5       N/A

**16. I was worried about what others were thinking of me.**

1       2       3       4       5       N/A

**17. I performed automatically, without thinking too much.**

1       2       3       4       5       N/A

**18. I experienced a sense of harmony with other people.**

1       2       3       4       5       N/A

**19. I experienced something as being “divine”, in a spiritual sense.**

1       2       3       4       5       N/A

**20. The way time passed seemed to be different than normal.**

1       2       3       4       5       N/A

**21. The natural setting or landscape was fascinating.**

1       2       3       4       5       N/A

## Psychologically deep experiences in nature

**22. Things just seemed to happen automatically.**

- 1       2       3       4       5       N/A

**23. My abilities matched the high challenge of the situation.**

- 1       2       3       4       5       N/A

**24. I was concerned with how others were evaluating me.**

- 1       2       3       4       5       N/A

**25. I had total concentration on the activity or task that I was doing.**

- 1       2       3       4       5       N/A

**26. I had an experience in which deeper aspects of reality were made evident.**

- 1       2       3       4       5       N/A

**27. My attention was effortlessly drawn to many interesting natural things.**

- 1       2       3       4       5       N/A

**28. I had an experience that I knew to be “sacred” in a spiritual sense.**

- 1       2       3       4       5       N/A

**29. I was concerned with what others were thinking about me.**

- 1       2       3       4       5       N/A

**30. I had an experience that left me with a feeling of wonder.**

- 1       2       3       4       5       N/A

**31. I had a good idea, while I was engaged in the activity, how well I was doing in it.**

- 1       2       3       4       5       N/A

**32. I had an experience in which ultimate reality was revealed to me.**

- 1       2       3       4       5       N/A

**33. I felt I was competent enough to meet the high demands of the situation.**

- 1       2       3       4       5       N/A

**34. I was aware of how well I was doing the activity.**

- 1       2       3       4       5       N/A

## Psychologically deep experiences in nature

**35. I did things spontaneously and automatically without having to think.**

- 1       2       3       4       5       N/A

**36. I could tell by the way I was doing the activity how well I was doing.**

- 1       2       3       4       5       N/A

**37. I was completely focused on the task or situation at hand.**

- 1       2       3       4       5       N/A

**38. I had an experience that seemed “holy” in a spiritual way.**

- 1       2       3       4       5       N/A

**39. I experienced a sense of belonging with other people.**

- 1       2       3       4       5       N/A

**40. I lost my normal awareness of time.**

- 1       2       3       4       5       N/A

**41. The natural setting had fascinating qualities.**

- 1       2       3       4       5       N/A

**42. The challenge and my skills were at an equally high level.**

- 1       2       3       4       5       N/A

**43. I had an experience in which I felt that all was perfection.**

- 1       2       3       4       5       N/A

**44. Time seemed to alter (either slowed down, or sped up, or I had a sense of timelessness).**

- 1       2       3       4       5       N/A

**45. It was no effort to keep my mind on what was happening.**

- 1       2       3       4       5       N/A

**46. I had an experience that was emotionally negative.**

- 1       2       3       4       5       N/A

# Psychologically deep experiences in nature

## Other significant factors

**47. When you reflect back on this experience, were there any significant factors that you think led to its occurrence?**

**48. How many times has the experience you just described happened to you, at the same intensity, in a natural setting?**

**49. How many times has the experience you just described happened to you, at the same intensity in an urban setting?**

# Psychologically deep experiences in nature

## Evaluation of experience

Please use the following scale:

- 3 Extremely negative
- 2 Moderately Negative
- 1 Somewhat negative
- 0 Neutral
- 1 Somewhat positive
- 2 Moderately Positive
- 3 Extremely positive

**50. At the time of your experience, did you feel it was positive or negative?**

- 3       -2       -1       0       1       2       3

**51. At this moment, do you feel your experience was positive or negative?**

- 3       -2       -1       0       1       2       3

# Psychologically deep experiences in nature

## Environmental behaviors

**52. Do you think the experience you described above affected your pro-environmental behaviors (i.e. Sustainable or "Green" behaviors, like recycling, buying from local markets, or driving less)?**

Yes

No

**53. How or how not?**

**54. If yes, which environmental behaviors were influenced?**

**55. Do you think your nature experiences in general affect your pro-environmental behaviors (e.g. recycling)?**

Yes

No

**56. How or how not?**

# Psychologically deep experiences in nature

## Environmental Orientation

Listed below are statements about the relationship between humans and the environment. For each one, please indicate:

1= Strongly disagree

2= Mildly disagree

3= Unsure

4= Mildly agree

5= Strongly agree

**57. We are approaching the limit of the number of people the earth can support.**

- 1                       2                       3                       4                       5

**58. Humans have the right to modify the natural environment to suit their needs.**

- 1                       2                       3                       4                       5

**59. When humans interfere with nature it often produces disastrous consequences.**

- 1                       2                       3                       4                       5

**60. Human ingenuity will ensure that we do NOT make the earth unlivable.**

- 1                       2                       3                       4                       5

**61. Humans are severely abusing the environment.**

- 1                       2                       3                       4                       5

**62. The earth has plenty of natural resources if we just learn how to develop them.**

- 1                       2                       3                       4                       5

**63. Plants and animals have as much right as humans to exist.**

- 1                       2                       3                       4                       5

**64. The balance of nature is strong enough to cope with the impacts of modern industrial nations.**

- 1                       2                       3                       4                       5

**65. Despite our special abilities humans are still subject to the laws of nature.**

- 1                       2                       3                       4                       5

**66. The so-called ecological crisis facing humankind has been greatly exaggerated.**

- 1                       2                       3                       4                       5

## Psychologically deep experiences in nature

**67. The earth is like a spaceship with very limited room and resources.**

- 1                       2                       3                       4                       5

**68. Humans were meant to rule over the rest of nature.**

- 1                       2                       3                       4                       5

**69. The balance of nature is very delicate and easily upset.**

- 1                       2                       3                       4                       5

**70. Humans will eventually learn enough about how nature works to be able to control it.**

- 1                       2                       3                       4                       5

**71. If things continue on their present course, we will soon experience a major ecological catastrophe.**

- 1                       2                       3                       4                       5

**72. Would you like to add any comments about your environmental orientation?**

# Psychologically deep experiences in nature

## Demographic information

### 73. Gender

- Female
- Male

### 74. Can you please tell me which age group you belong to?

- 18 – 24
- 25 – 34
- 35 – 49
- 50 – 64
- 65 +

### 75. Which best describes your present situation?

- Single
- Married/Partner

Other (please specify)

### 76. What is the highest level of education you have completed?

- Elementary school graduate
- High school graduate
- University or college degree
- Graduate school degree

Other (please specify)

### 77. What was your approximate total income, before taxes, last year?

- Under \$25,000
- \$25,000 to \$49,000
- \$50,000 to \$74,999
- \$75,000 to \$100,000
- More than \$100,000

### 78. What is your ethnic or cultural background? (e.g. Aboriginal, French, British, Canadian, Vietnamese, None, etc.)?

## Psychologically deep experiences in nature

**79. What is your religious affiliation (e.g. Buddhist, Christian, Muslim, None, Etc.)?**

**80. How often do you spend time in nature?**

- Every day
- 5 to 6 days per week
- 2 to 4 days per week
- 1 day per week
- a few days per month
- a few days per year

Other (please specify)

**81. Please describe where most of these nature experiences occur.**

- An undisturbed natural area with no evidence of humans.
- A largely undisturbed natural area.
- An area that is somewhat modified but appears natural. Land use activities such as timber harvesting and livestock grazing may be evident.
- A substantially modified area with both human-made and natural features such as rural or agricultural landscapes.
- An area where roads, buildings, and powerlines clearly dominate the landscape.

## Psychologically deep experiences in nature

Thank you for participating in this study. If you would like further information about the results of this study, please contact the researcher Lara Fenton at [lfenton@ualberta.ca](mailto:lfenton@ualberta.ca)