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The Psychology of Leisure Experiences:

A closer look at liminality and a comparison of (the seemingly very different) activities of friluftsliv and video gaming

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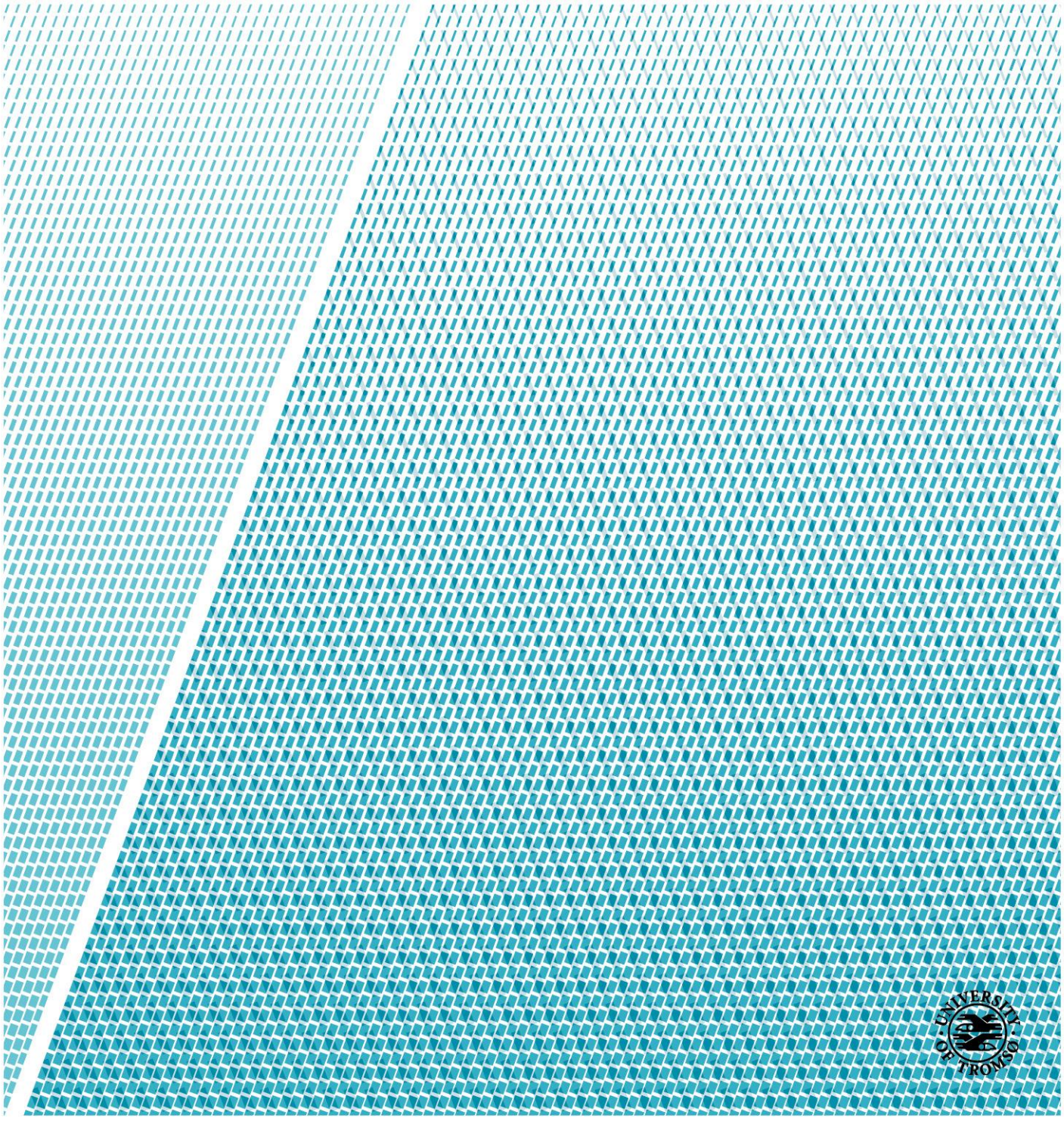

Sammendrag

Denne oppgaven utforsket naturen til liminality og opplevelse ved å analysere svar fra 155 nordmenn som deltok i fritidsaktivitetene friluftsliv eller videospill ved å svare på et spørreskjema som består av ulike skalaer som måler liminality og variabler vi trodde var mer eller mindre relatert til liminality. Variablene inkluderte, i tillegg til liminalitet, insight, Attention Restoration Theorys fire komponenter (being away, fascination, extent og compatibility), immersion, flow, positive affect, mind wandering, boredom og negative affect. Som antatt fra teorien om liminality var liminality høyt og positivt korrelert med being away, men ikke så høyt som forventet. Liminality korrelerte moderat positivt med alle varibalene antatt å være relatert til liminality, med unntak av fascination og insight som hadde lavere positivt forhold med liminality enn forventet. Av de variablene antatt å være mindre relatert til liminality, var det bare boredom som korrelerte (negtativt) som antatt med liminality, hvorav mind wandering ikke viste noe forhold av signifikans med liminality, og negative affect korrelerte (negativt) lavere enn forventa. Vi fant at er flere veier til ulike aspekter ved liminality, og indikasjon på flere veier til forskjellige aspekter av innsikt. Vi fant også at friluftsliv gruppen og videospill gruppen var mer like enn forskjellige, hvor flukt fra en kjedelig hverdag til positive opplevelser som gir en følelse av frihet og akkurat nok utfordring, virker å være sentralt hos begge fritidsaktivitetene. Forskjellen mellom de to gruppene var veien til positiv opplevelse. Hvor å føle seg borte psykologisk (being away) og følt kompatibilitet (compatibility) mellom ens mål og inklinasjoner og miljø og/eller aktivitet, virket å være det viktigste aspektet for friluftsliv aktivitet deltakerne, imens immersion var av større betydning for videospillerne.

Nøkkelord: Liminality, insight, Attention Restoration Theory, friluftsliv, video spilling.

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Ingelin Settemsdal Torjul, 30.05.2019

Preface

This thesis came into fruition by a combination of me knowing I wanted to write about friluftsliv, and my supervisor Tove Irene Dahl knowing how I could accomplish that, by giving several ideas and a more concrete direction. The final product came to be through several conversations and brainstorming sessions, where each session added something new to the thesis, until we came to a point where we had enough ideas, if not perhaps too many, where I made the final decision of what I wanted to focus on and in which direction. Though, I do not think either of us knew exactly what my thesis would be about until this last semester! The process toward a final product has been challenging, though fun, and very educational.

The survey was put together by me, with several helpful suggestions from Tove Irene Dahl. All data was analysed by me, with guidance from my supervisor.

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Abstract

This thesis explored the nature of liminality and experiences, by collecting responses from a sample of 155 Norwegians who partook in the leisure activities friluftsliv or video gaming, by responding to an online questionnaire consisting of various scales measuring liminality, and variables we believed to be more, or less, related to liminality. The variables included, in addition to liminality, were insight, Attention Restoration Theory`s four components (being away, fascination, extent and compatibility), immersion, flow, positive affect, mind wandering, boredom and negative affect. As assumed from the theory of liminality, liminality was highly positively correlated with being away, but not as high as expected. Liminality correlated moderately with all the variables believed to be related, with the exception of insight and fascination that correlated lower with liminality than expected. Of the variables believed to be less related to liminality, only boredom correlated negatively in the range predicted with that of liminality. Mind wandering showed no relationship of significance with liminality, and negative affect correlated (negative) lower than expected. We found evidence of there being multiple ways to different aspects of liminality, and indications of several paths to different aspects of insight. Also finding the friluftsliv group and video gaming group to share more similarities than differences, where escaping tedious and boring everyday life towards positive experiences providing a sense of freedom, and right amount of challenge, were characteristics shared by both groups. The difference between the two groups were the path leading to positive experience. Where feeling being away psychologically and felt compatibility between ones‘ goal and inclination and the environment/activity, seemed to be the most influential and important aspect for the friluftsliv group, whereas immersion was of more significance for video gamers.

Keywords: Liminality, insight, Attention Restoration Theory, friluftsliv, video gaming.

Like it or not, we are always experiencing something. That something is the stuff of life. Every experience has cognitive and emotional qualities that influence our feelings and thoughts, in different ways and to varying degrees. According to Csikszentmihalyi (1990, p. 6), everything we experience, whether it be joy, interest or boredom, is represented in the mind as information. Some experiences have more impact than others, and the any given situation can be experienced quite differently by the individuals involved. Accordingly, Csikszentmihalyi claims, the way we use this information can profoundly influence what our lives will be like.

We are interested in taking a closer look at what kind of experiences produce a particularly feeling - that of liminality - and determining whether liminal experiences provide a noteworthy context for the experience of insight. Thus, the first aim of this thesis is to continue the exploration of liminal experience that Bloom and Goodnow (2013) began. More specifically, how does liminality relate to arguably related concepts such as insight, attention restoration theory (ART), immersion, flow and positive affect, and to arguably unrelated concepts like mind wandering, boredom and negative affect?

We are also interested in how we experience the leisure activities of friluftsliv and video gaming. As oases from everyday life, how do these two (seemingly) diverse leisure activities compare to one another? Are they as different from each other as they might seem superficially, or are they more psychologically alike than we think?

Following is an overview of the relevant literature regarding the variables and leisure activities we have chosen to explore.

Liminality

Liminality comes from the Latin word *limen*, meaning «a threshold». (Turner, 1969), the space between one area or place and the next (Goodnow & Bordoloi, 2017).

Liminality describes one of three phases experienced in all rites of passage or

transition (Turner, 1969): (1) separation, (2) margin (limen) and (3) aggregation. The liminal phase is the most important part of transition. Turner (1969, p. 96) describes liminality as a "moment in and out of time", where we experience being psychologically away and feeling free from for instance time, norms and social ties.

The *separation phase* is when we remove ourselves from a social structure and enters a state where our existing norms cease to exist. *Russedåp* (a kind of rite of passage for Norwegian upper school pupils in their last semester of high school must complete to become a high school graduate *russ*) is an example of entering a separation state.

The margin, or liminal phase, can best be described as a state where we are fully between two stages or places, and in this way has completed the separation phase from everyday life. This second stage is like standing in a doorway; we have left the previous room, but is yet to enter the next. Providing a sense of freedom from everyday life and its norms, social bonds, rules and time. This allowing for "new ways of thinking and behaving without the usual consequences associated with breaking norms and rules in ordinary life and society" (Goodnow & Bordoloi, 2017, p. 225).

Russefeiring is a period of celebration that occurs during the last period of exams leading up to graduation where the graduates are in a liminal phase. This celebration is characterized by performing a series of challenges that involves behaviours that are normally not "acceptable" according to Norwegian norms, like walking to the nearest store in one`s underwear or spending a school day sitting under one`s desk in class. To fully experience liminality, we have still to enter the third and final stage

The last phase of transition into liminality is the *aggregation* phase, occurring after the exploration within the *limen* is complete (Goodnow & Bordoloi, 2017, p. 225). This phase is characterized by the return into our home society, with a new psychological perspective. This is the part where the russefeiring is over, one has graduated and is ready for the next step in

life into adulthood like start working or continuing to higher education. Where the passage from high school student and youth to graduation and entering adulthood is consummated (Turner, 1969). At this point the russ has crossed the threshold of adulthood and returns into their everyday life with a new phase of understanding (Goodnow & Bordoloi, 2017, p.225).

Goodnow and Bordoloi (2017) writes that this phase allows one to engage with new ways to think and behave without the usual sanctions associated with breaking norms and rules in society, like during the temporary acceptance of "unusual" behaviour from most Norwegians that high school graduates experience during their russefeiring.

Bloom and Goodnow (2013) have studied the experience of liminality in travel experiences and Goodnow and Bordoloi (2017) in adventure travel. The idea is that traveling provides a new experience that are helpful in freeing people from their daily routines, offering a freedom from everyday life which will help lead to thinking in new ways with a deeper understanding of one's life and surroundings. Bloom and Goodnow (2013) believe liminality to be one mechanism that facilitates the kind of cognitive space that promotes deep thinking and reflection.

The definition of liminality used by Bloom and Goodnow (2013) in their study, and therefor ours, is partially extracted from Kaplan and Kaplan's (1989) concept of being away in Attention Restoration Theory (ART). The basic assumption in ART is that certain environments with particular qualities are restorative for us when we experience mental fatigue following prolonged use of directed attention to inhibit certain stimulus and distraction. Being away is the first of the four restorative components in ART, consisting of three sub-components of being away (cognitively, psychologically, physically) in the experience of escape from ordinary life that, for example, allows freedom from obligations and norms.

However, Goodnow and Bordoloi (2017) regard liminality is more of a *pull* motive to

experience something positive rather than an *escape* motive, which can be regarded as a push motive from something one experience as negative at, for example, home or work. In the pursuit of liminal experiences, then, we escape *towards* a positive experience, rather than *from* a negative experience.

Insight - the «Aha!» moment

Insight is when we suddenly reach a solution to a problem that has been unsolvable for us for a long time. The answer is often, according to Bloom and Goodnow (2013), a creative idea or solution that may occur by restructuring the problem. In this context, these creative ideas or solutions concern personal understanding into one‘s authentic self, like new and novel thoughts about oneself, what is important, real and meaningful. In short, insight is the common “Aha!” moment we experience when something suddenly makes sense. This happens when we are not actively thinking or focusing on the problem (Goodnow & Bordoloi, 2017)

Liminal experience can provide an environment free from blockages to insight. Barriers to insight can be cultural, emotional and environmental. For example, one barrier might be being «stuck» in a traditional way of thinking, which may inhibit some people from thinking about life in novel ways. (Bloom & Goodnow, 2013)

An important emotional block is fear of failure. This fear can prevent us from taking a risk in searching for new solutions to problems.

Environmental blocks can be distractions like phone calls and excessive noise. Constant interruptions can impact our ability to maintain focus and attention needed to achieve solutions to problems.

Bloom and Goodnow (2013) argue that another value of liminality is its relationship to *insight*. Where freedom to think and act in non-traditional ways and/or is supported, such as in the liminal phase of liminality opens the way for development of insight. Environments vary in how much they allow that kind of freedom.

Why does it matter?

Bloom and Goodnow (2013) developed a questionnaire and found that liminality perceived as being away cognitively, physically and psychologically (Kaplan & Kaplan, 1989), seems to have a relationship with insight, at least based on their study of 335 travellers and Goodnow's later research (Goodnow & Bordoloi, 2017), where a significant association was found between liminality and insight in a content analysis of adventure travel narratives.

What other leisure activities, besides traveling, may lead to liminality, and insight? Travel is a leisure experience, but can *any* leisure activity potentially provide liminal experiences - the kinds of positive experiences and cognitive break from everyday life that travel does?

Experiencing liminality seems to be something positive and desirable; it can provide a way of being free and open to new aspect of life and self. (Bloom & Goodnow, 2013) Liminality is important not only for developing a better understanding of ourselves and contributing to our well-being, but also for creating a space to experience insight in areas beyond personal discovery. This can, for example, be helpful in problem solving in other areas of life, like work and school. Therefore, liminality may also be of value for society and not just the individual.

Since liminality seems to be something of value that people seek out by stepping out of everyday activities, we have chosen to look at the experience of liminality in two types of superficially quite different leisure activities – activities that people choose because they enjoy spending their free time on them.

More specifically, we chose to take a closer look at friluftsliv and video gaming. We chose friluftsliv partly because this is somewhat related to travel experience in that we experience a change in our surroundings, physically, cognitively and psychologically. Video gaming was chosen as a contrast activity because it is very popular and because these two

activities seem very different from each other. In video gaming, the physical aspect is removed yet it may be similar in some ways to friluftsliv, in that there are certain qualities in both that make them popular past times. This leads to another point of interest in this thesis.

Are friluftsliv and video gaming really that different from each other psychologically? How does friluftsliv compare to video gaming? In Norway, there is some positive social bias towards outdoor physical activity (Klima- og miljødepartementet, 2018) and negative social bias towards video gaming. We wonder if this bias perhaps has limited the posing of open-minded questions about how the two types of leisure activities may compare positively - perhaps even similarly on measures of positive experiences.

Other points of interest for this work involves taking a closer look at some of the possible factors of positive experiences. Is it purely based on individual preferences, or are there some common aspects to both activities and their environments that provides positive experience?

In order to get a closer look at this we have chosen to measure different psychological, cognitive and affective aspects of experiences in leisure activities that may be more or less related to liminality, and insight. Some of the instruments were chosen specifically because they might help in getting a better understanding of liminality and insight. These measures are the four components of Attention Restoration Theory (being away, fascination, extent, compatibility), immersion, flow, positive affect, mind wandering, boredom, and negative affect. The reason for choosing these measures will become clear in the next section.

We think getting a better understanding of what positive experiences consists of may be helpful in terms of improving quality of everyday life on individual basis, and maybe society as well, by providing further knowledge and understanding on what is beneficial, or not, for us. This we do by building on previous research, continuing their exploration and,

testing several instruments created. Hopefully, this may also help further developing and testing of some of the instruments used.

Overview of the Leisure Activity Groups

Leisure

According to Esteve, San Martin and Lopez (1999) leisure has many definitions. Veblen (1899) defines leisure as the time we spend outside of work. Esteve, San Martin and Lopez (1999) define leisure as activity we choose to partake in after we are free from family, professional and social duties. When they asked 335 students to express what they feel when they are involved in a leisure activity, they said that perceived freedom is a key variable in leisure.

Veal (1992, p. 2-6) listed a selection of definitions of leisure found in dictionaries and from literature; “Leisure is considered primarily as a condition, sometimes referred to as a state of being, an attitude of mind or a quality of experience..”; “Leisure is a state of mind which ordinarily is characterised by un-obligated time and willing optimism. It can involve extensive activity or no activity”; “Free time after the practical necessities of life have been attended to”; “when I use the term 'leisure', I am talking about human experience, characterised by intrinsic motivation and/or satisfaction; by a subjective sense of freedom to choose and of freedom from constraint”.

Despite different wordings and emphasis, all of these definitions have the same notion of leisure as being something we partake in willingly outside of work, school, and other obligations, with goal of relaxation and positive experiences.

Friluftsliv

The word friluftsliv consists of three Norwegian words: free (*fri*), air (*luft*) and life (*liv*). From this we draw the conclusion that this is something happening outdoors.

The Norwegian government has defined friluftsliv in the Government White Paper 39

(Stortingsmelding nr. 39, Miljøverndepartementet, 2000-2001) as physical activity and a stay in nature during free time with the aim of a change of environment and the experience of nature. Another definition by Mygind, Hartmeyer, Kjelsted, Mygind and Bentsen (2018, p. 9) is that friluftsliv is "the individuals use of nature for activity or place to stay, that gives an experience of getting closer to nature and to relate to nature physically and/or mentally" (author`s translation).

Nine out of ten Norwegians do some sort of friluftsliv activity during a year (Miljøverndepartementet, 2000-2001), such as going for a walk in nature. According to Statistics Norway (Statistisk sentralbyrå [SSB], 2017), eight out of ten Norwegians reported going on at least one shorter trip for hikes in the forest or in the mountains in 2017. Hertzberg, Aas and Vistad (2001, p. 13) mention that relaxation, calm and experiencing nature is the most prominent motivation for friluftsliv. Physical activity is also important, but it is the experience of nature and fresh air that sets it apart from using a treadmill at a gym.

The Effect of friluftsliv and Nature

Research indicates that nature is good for us. Beyer et al. (2014) looked at the relationship between green environments and mental health outcome in a study area that tested the impact of a whole spectrum environments that ranged from urban to rural. They found that the areas containing the most "green" were associated with significant lower symptoms of depression, anxiety and stress after controlling for several possible confounding factors such as education.

Pretty, Peacock, Sellens and Griffin (2005) found that even by just looking at images of green environments while running on a treadmill reduced blood pressure, elevated self-esteem and prompted better moods compared to looking at images of rural environments or no images at all.

Exposure to nature, including observing nature through a window, or being physically

active in green environments, can reduce stress (Kaplan, 2001; Pretty et al. 2007), and research has demonstrated that prolonged stress can have a negative impact on health (Ulrich, 1999). The hormones produced by the body in response to stress, like adrenaline and cortisol, will over time affect the immune system negatively. Thus, reducing stress can lead to quicker recovery from disease. For example, in one study, Moore (1981) found that prisoners who had cells facing the inner courtyard used the health care system significantly more often than the prisoners with cells facing the farmland and forests outside the prison.

From this one can conclude that both nature in itself, as well as physical activity while in it, is in general, good for mental well-being. One study (Mutz & Muller, 2016) followed 14 years old students on a class excursion of nine days in the alps, as well as 15 university students on a trip to Norway‘s Hardangervidde. They were interested in determining if friluftsliv could have a positive impact on subjective well-being and perceived stress, and if friluftsliv could foster self-efficacy and mindfulness.

Despite the small number of participants, both studies showed that the mental health benefits of friluftsliv were significant. The 14-year old students experienced an increase in life-satisfaction and mindfulness after their nine-day hike through the Alps while the university students reported higher scores in life satisfaction, happiness, mindfulness and self-efficacy as well as lower scores in perceived stress after they stay in Hardangervidda in Norway.

These kind of findings do, so far, support the notion many people have in Norway, that friluftsliv is something good. But it is also important to note that it is not the environment, or the activity part alone, that promotes these positive effects mentioned. Compatibility between the individual and the environment is just as important (Kaplan & Kaplan, 1989). For example, a person who is totally unprepared for a stay in nature will most likely not find this experience as positive, if at all.

In general, nature is good for us. But what is nature? Most people have a conception of what nature is but finding a clear definition of nature is harder, as it can be everything between looking at green images on a treadmill to camping in the wilderness. Therefore, we have chosen to base our definition of nature on Kaplan and Kaplan‘s (1989, p. 2) definition: nature can be those faraway, wild and vast places where human influence and life has been limited. It also encompasses places designated by some governmental authority as natural areas. Parks and open spaces, meadows, fields, forests, street trees and gardens in backyards is included in Kaplan and Kaplan‘s (1989) "nature". Nature can be places near and far, unusual or common, cultivated or not, from small to big. Nature are areas that can be described as green but are natural also when green is replaced by red, brown or yellow, or any other colour.

Video Gaming

Electronic equipment and a screen is used in video gaming. Everyone that owns a mobile phone or computer has a video game available. This means that video gaming is accessible for everyone who can afford these items. We are also dependent on opportunity to use electricity.

There were 2.2 billion active gamers in the world according to Newzoo‘s rapport from 2017. Age, gender and where you are from does not seem to matter (ESA, 2017), in video gaming, despite some stereotypes people (including gamers themselves!) have of who the “average” gamer is. A common stereotype is that most gamers are male (60% of American adults believe so). However, there are almost just as many female (48%) gamers as male (50%) gamers (Duggan, 2015), though men are twice as likely to call themselves “gamers”.

Unlike friluftsliv, to which people associate primarily positive stereotypes, video games are commonly associated with negative stereotypes. One such stereotype is that there is a relationship between video gaming and violent behaviour (40% of American adults have

this conception) (Duggan, 2015). However, the literature shows that it is not that simple/clear picture. For example, Ferguson (2007) did not find support for the hypothesis that playing violent video games is associated with higher levels of aggression in his meta - analytic review.

In one study with a random sample of 444 adolescents recruited from eight middle schools in Iran (Allahverdipour, Bazargan, Farhadinasab & Moeini, 2010), those who played moderately (about 10 hours a week) reported better mental health compared to those who did not play, but also compared to those who played more (excessive). Non-gamers reported worse mental health compared to excessive gamers.

Meanwhile, video gaming has been associated with many positive outcomes. For example, video gaming can be used as a platform for learning (Murphy, 2011), and there has been found correlation between better performance at school and online gaming in an Australian study (Posso, 2016) with 15 years-old students (n = 12,018). This does not mean that it is the gaming that produces this difference in achievement, it can be that those who are better and/or smarter have a disposition for playing video games. However, Jones, Jay, Mason and Jones (2016) found that using games as a platform for learning gives better learning outcomes.

Video gaming can contribute to better mental health and learning, but it is important to keep in mind the not so positive aspect associated with video gaming. In 2018 addiction to video gaming was put on the list of mental disorders (ICD-11) by the World Health Organization (WHO, 2018).

The Nature of Experience

Attention Restoration Theory

Attention Restoration Theory (ART) was introduced by Kaplan and Kaplan (1989) who claim that urban environments suffer from an excess of bottom-up stimuli that captures

attention (called hard fascination) and those exposed are forced to overcome the effect of this constant stimuli (Pearson & Craig, 2014), that will over time induce cognitive exhaustion. ART is their analysis (Kaplan, 1995) of what can lead to recovery from this fatigue directed attention can produce.

There are four restorative components in ART (Kaplan, 1995) which must be present for an environment to be restorative: Being away, fascination, extent and compatibility.

The freedom from environmental blocks mentioned earlier in insight share similarities with Kaplan and Kaplan‘s (1989) construct of «being away» in ART, which also Bloom and Goodnow (2013, p. 147) mention. The concept of «being away» in ART has three components: Cognitive, psychological and physical.

Bloom and Goodnow (2013) write that being away cognitively means that the content of our everyday life is left behind. Work and many usual obligations are put aside, and we have freedom to experience something new and different.

They also describe being away psychologically as liberating ourselves from lifegoals and priorities, feeling free from norms and values.

Being away physically is according to Bloom and Goodnow (2013) that a destination is physically and noticeable different from our home, like a different infrastructure (or lack of infrastructure). But according to Kaplan and Kaplan (1989), we do not have to go physically or that far to experience being away. It does not have to be further than your own backyard. They point out that the experience of being away involve what happens in our mind as much as what happens in the environment. The distinction and separation of experience from everyday life- like work, can be just as important as the literal distance. It can provide just as much the feeling of being remote from the world, and its pressure and obligations.

Furthermore, fascination, or soft fascination, comes in contact with environments that capture attention but at the same time give a feeling of pleasure. According to Kaplan (1995)

there can be many sources and types of fascination, and some of these derive from process. For example, being addicted to reading, you just must know what happens until the end, even though there are easier and far quicker ways of finding out. Fascination can also be evoked by content, for instance wild animals. Hard and soft fascination can also be called involuntary and voluntary attention (Kaplan, 1995).

The environment also needs extent to be considered restorative. Extent is the combination of the qualities "connectedness" and "scope" that makes us immersed in the environment and/or activity. (Hartig et al. 1997) With the experience of extent, we perceive the size and connectedness in an environment as helping to promote related experiences of being away (Pearson & Craig, 2014). It must be rich and coherent enough (Kaplan, 1995), it must provide enough to experience and think about that it takes up a considerate part of the available room in one's head. The environment does not in itself have to be physically large, but rather that we perceive it as large. In other words, the environment must be similar to environments you have been in, it is coherent - you do not feel out of place or any confusion. The elements in the environment are perceived as connected, a part of some larger whole providing a sense that there might be more to explore than is immediately evident (Kaplan & Kaplan, p. 190-1,1989)

Lastly, there must be compatibility between the environment, one's purpose and inclinations (Kaplan, 1995, p. 173). So the knowledge and skills you have to navigate your situation has to be appropriate to the setting, and this is may be the most crucial part of ART. If you are an inexperienced hiker, you will not find Mount Everest to be a particularly restorative environment or experience, perhaps rather the opposite. An environment that does not fit what you are trying to do or achieve, will induce more demand on directed attention. As Kaplan (1995) notes, an environment that is compatible will require less selectivity and therefore also less directed attention.

Several have studied ART. Hartig, Mang and Evans (1991) found evidence that spending time in natural environments improve performance on attention-demanding tasks. Also, viewing photographs of nature can promote feelings of restoration (Berto, 2005). Tennessen and Cimprich (1995) explored whether university dormitory residents with more natural views from their windows would score better than residents with less natural views on tests of directed attention. And indeed, those who did have more natural views were able to direct attention better than those with less natural views.

If viewing photographs of nature can promote restoration, maybe immersion in a virtual computer-generated nature setting could produce restorative effects as well, which Valtchanov, Barton and Ellard (2010) examined.

They tested this by taking a random sample of students that were assigned randomly to one of two conditions. The two conditions were control or nature. The control condition contained a slideshow of abstract paintings, within a dark virtual room with the lights off. The nature experimental condition contained an active exploration of a virtual forest. After controlling for gender, they found that those in the nature condition showed increased positive affect after immersion in virtual reality compared to participants in the control condition.

Other studies show support for the notion that nature is a restorative environment as Kaplan and Kaplan (1989) claim, even if one is not in nature oneself- just looking at nature through windows, at photographs or immersed in virtual reality is enough. If we can become immersed enough maybe it can be experienced as being away, psychologically and cognitively. And this is supportive of the idea that we do not actually have to physically experience a change in environment, how we perceive it (Kaplan, 1995) is enough.

Nature can provide an environment that fulfil all the criteria Kaplan and Kaplan (1989) has for what a restorative environment is, therefore friluftsliv should fulfil all four ART subscales (being away, fascination, extent, compatibility), as friluftsliv is a leisure activity

happening outside in nature.

If change of environment or scenery, to something new or different can produce the experience of being away, or it can be enough with a new perspective of known surroundings, then this is also possible for the leisure activity video gaming.

The virtual world found in video gaming can offer fascination. Many video games‘ contain outdoors settings and provide many interesting aspects to look at and discover. This support the criteria of extent as well, the virtual environment in video games are often large, coherent, rich and connected.

Immersion

Immersion is a type of engagement (Jennett, et al., 2008) and a psychological state (Witmer & Singer, 1998) where we are absorbed in what we are doing. We interact with, feel included and engulfed by an environment that supplies a constant stream of stimuli and experiences. Immersion can be understood, generally, as the feeling of being lost in an experience. (Seah & Cairns, 2007) This could happen as much in nature as in gaming.

Immersion is a known term in video gaming literature and has been widely studied. Jennett et al. (2008) writes that all successful video games have ability to draw people in. According to Jennett (2010, p. 19) and Poels, de Kort and IJsselsteijn (2007, p. 10), a reason often mentioned for why people like to play games is the opportunity to escape from the «real world». This might allow us to come back to our real-life problems afterwards with a fresh perspective (Jennett, 2010, p. 21). The difference in being immersed in a game and in a book or movie is that one can interact with the game (Jennett, 2010, p. 29).

Jennett (2010,) suggests that the immersion experienced in playing video games could be an extreme form of selective attention. She further draws a link of shared similarities between selective attention and real-world dissociation which is one of the five factors of immersion Jennett et al. (2008) identified in their study. The other four are cognitive

involvement, emotional involvement, challenge and control.

Immersion is a cognitive (Jennett, 2010) and emotional (Georgiou & Kyza, 2017) involvement (Seah & Cairns, 2007) that occurs at three identified (Brown & Cairns, 2004) levels, which reflects the types of barriers to immersion. These levels are engagement, engrossment and total immersion.

To enter the first level (in video gaming), engagement, the gamer must overcome the barrier of gamer preference. (Jennet et al., 2008) This means investing time, attention as well as effort in order to learn to play the game.

The second level, engrossment, is overcoming the barrier of game construction. Jennett et al. (2008) posit that game features need to be combined in a certain way so that the emotions of the gamer are directly affected by the game and the controls become invisible - as in that the gamer is less aware than previously of their surroundings. They further posit that engagement and engrossment are more likely to occur than the last level, total immersion. This last level requires the highest level of attention. This is probably were immersion starts being experienced as a sense of presence - where we are so absorbed that we become lost in the virtual world (Seah & Cairns, 2007).

As mentioned, immersion has an emotional aspect, usually positive (Poels, de Kort & IJsselsteijn, 2007) but it can also go the other way. For example, immersion is a factor that can contribute to excessive gaming, which may lead to addiction (Seah & Cairns, 2007). This emotional aspect is also one of the factors that separates immersion from Csikszentmihalyi‘s (1990) flow theory.

The ART components fascination and extent overlap with the definition of immersion, supporting the assumption that video gaming can offer both fascination and extent.

Flow

Flow is the condition that makes experiences genuinely satisfying, according to

Csikszentmihalyi (1990). This condition is so focused that it leads to complete absorption in the activity. Common for the activities that can promote the experience of flow are that this is activities we choose to engage in for its own sake (Csikszentmihalyi, 1990), and with little to no concern for what we will gain from it, even when it is dangerous or difficult.

There are eight necessary features of an activity needed to promote the elements of enjoyment - that are experienced as the flow state (Csikszentmihalyi, 1990, p. 49): Balance between challenge and skill, merging of action and awareness, clear goals, unambiguous feedback, concentration on task, sense of control, loss of self-consciousness and time transformation. The eight dimensions represent the optimal psychological state of flow (Jackson & Eklund, 2002), but not all have to be present for experiencing flow, rather they describe the different characteristics of optimal experience (Csikszentmihalyi, 1990).

The balance between skill and challenge, called flow channel (Csikszentmihalyi, 1990), might be the most important dimension (Jackson & Eklund, 2002) of flow, and is the dimension Csikszentmihalyi has focused on most. An activity must be challenging, but still something we can accomplish (Csikszentmihalyi, 1990). If this balance is disturbed, we can either grow bored (if not challenged enough) or anxious and frustrated (if challenged too much) where either will ultimately lead us to giving up.

If we manage to stay in the flow channel, we will find the activity enjoyable and keep at it. This will lead to practicing, and improvement of skills which will again lead to growth (Csikszentmihalyi, 1990) In this growth lies the key of flow activities. Csikszentmihalyi writes that the providing of a sense of discovery and the feeling of being in a new reality is something all flow activities have in common. It pushes us to higher levels of performance, transforming the self into something more complex. Like a chase of constant improvement.

Flow share some characteristics mentioned in liminality and insight, as well as ART. Especially the component compatibility in ART is similar to the «skill and challenge balance»

dimension in flow. This, in addition to immersion, for example, the dimension «merging of action and awareness» describes the same experience as the “engrossment” level in immersion. Our attention is wholly absorbed by the activity (Csikszentmihalyi, 1990, p. 53-4), and we are so involved that the activity becomes nearly automatic - we stop being aware of ourselves as separate from the actions we are performing. The mind has no room to wander (Howard-Jones, Jay, Mason & Jones. 2016). This is also why the optimal experience was named "flow".

Flow also overlaps with immersion (Jennett et al., 2008) in providing challenge that gets us involved in a task and loosing track of time - it becomes irrelevant. Jennett et al. (2008) propose immersion to be a forerunner of flow. In a way, it may seem like flow is an extreme version of immersion, but these are different aspects of experience. For example, immersion and flow have been widely studied in relation to the activity of playing video games. And many games are designed to keep a player in a state of flow. (Murphy, 2011; Schell, 2008) And there are games like Myst IV according to Jennett et al. (2008) that can provide immersive experiences, but that do not meet the requirements of flow, in that there are no immediate clear goals and there are many puzzles that do not provide any feedback. The immersive experience will not necessarily be disturbed by a game being too difficult or easy either, as experiencing immersion does not depend on balance between challenge and skill.

Another important distinction between flow and immersion is that immersion seems to reflect more of the emotional involvement of an experience, whereas flow represents more of the cognitive aspect of an experience. Though both seem to be driven by some inner motivation rather than external.

Physical activity can contribute to optimal experience (Csikszentmihalyi, 1990), but the body does not go into flow on its own, the mind is always involved as well. Physical

activity includes, but is not limited to, sports, dance and yoga. All of them offer a nearly unlimited amount of enjoyment, but only to those who work to develop the skills required. Csikszentmihalyi use climbing as an example of this.

Climbing is an activity requiring certain level of skill, no matter if you are attempting to scale a mountain or a rock with height of two meters. This activity is just enough mentally and physically challenging that we can become so involved that we do not see ourselves as separate from the activity of climbing.

The goal of a climber is to reach the top without falling - which are one possible feedback. To accomplish this goal, concentration on activity at hand is necessary to the degree that the climber may experience loss of self-consciousness and perception of time.

Many video games are deliberately designed to provide flow condition in players‘ (Schell, 2008). This because flow is a positive condition where we find an activity so engaging that everything around seems to cease to exist (Csikszentmihalyi, 1990). But Csikszentmihalyi also notes that enjoyable activities that produce flow can have a negative aspect. These activities can create order in the mind by their capability of improving the quality of existence, but because of this they can become addictive.

Our attitude towards an activity is important (Csikszentmihalyi, 1990, p. 98-9), engaging in an activity such as running with the attitude that we must do it because it is beneficial for our health, but not finding any enjoyment in it will not provide optimal experience at all. The key point in flow is that enjoyment does not depend on what we do, but rather why and how we do it.

The ART component compatibility share similarities with flow‘s balance between skill and challenge. Since video games are, in general, designed to give and maintain a state of flow, then, in theory, video gaming should be able to provide compatibility.

Mind wandering

The reason the optimal experience was named “flow” is because being so involved in an activity leaves no room for the mind to wander. (Howard-Jones et al., 2016) And mind wandering is quite common, studies show that we experience mind wandering nearly half the time in everyday life (Killingsworth & Gilbert. 2010; Kane, Brown, McVay, Silvia, Myin-Germeys & Kwapi. 2007). Mittner et al. (2014) asserts that mind wandering occurs when our attention changes from an external stimuli-based processing, to an internal introspective cognition. In other words, mind wandering is failure of maintaining attention on what we are doing (Smallwood, McSpadden & Schooler. 2008), i.e., losing focus on what is happening and what we are doing there and then by thinking about something unrelated. Failure of maintaining attention (mind wandering) seems to be a product of the mind attempting to escape from tedious or overwhelming everyday life experiences.

An example of this is driving. Most of us have probably experienced that our thoughts have been somewhere else than the actual task of driving. As Mason et al. (2007) writes, this is more common when tasks have been done so many times that they have become a habit, it becomes routine (and boring). This is supported by Zhang and Kumada‘s (2017) study of the relationship between workload and mind wandering in simulated driving. Reduced reaction time is another consequence associated with mind wandering. (Leszczynski et al. 2017)

Exhaustion or being tired is also a possible cause for mind wandering (Smallwood, Mrazek & Schooler, 2011); it is hard maintaining attention and focus on something if we are not well rested. This also raises the risk for errors and accidents (Gander, Purnell, Garden & Woodward, 2007).

According to Killingsworth and Gilbert (2010, p. 932), mind wandering is a «remarkable evolutionary achievement that provides us the possibility to resonate, learn and plan». In addition, Leszczynski et al. (2017) found associations between mind wandering and enhanced creative insights. The brain supports this, it seems, by disrupting some brain

networks (Mittner et al. 2014) that are involved in attention on our external environment. But as we have seen, it clearly has some downsides as well.

Killingsworth and Gilbert (2010) analysed data from 2250 adults in USA that provided real-time rapports of level of mind wandering from participants. They found people to be less happy when mind wandering compared to when not mind wandering, and this was independent of whether they were thinking about something positive or negative. Maybe this because mind wandering distracted them from the task at hand.

Smallwood, Fitzgerald, Miles and Phillips (2009) found in their study an increase of mind wandering in the participants in the negative mood induction compared to the other groups (positive and baseline). Relative to positive mood, those in a negative mood were more likely to experience attention lapses and impaired ability to recover from this lapse on the tasks given after the mood induction. This is supported by Mrazek, Phillips, Franklin, Broadway and Schooler‘s (2013) study that found mind wandering to be associated with worse mood, more stress, less satisfaction with own life, lower self-esteem and worse reading comprehension in both middle school and high school students.

Smallwood, Fitzgerald, Miles and Phillips (2009, p. 271) suggests that negative mood reduces the amount of commitment to focusing on the task at hand, and this is due to enhancing the focus on irrelevant personal concerns.

Howard-Jones, Jay, Mason and Jones (2016) investigated whether video gaming could be a tool used to prevent the occurrence of mind wandering in educational learning. Results indicate that the more game-like the conditions became, the higher the engagement participants reported. The “game-based” group had higher learning scores than the “study-only” group. An increase in engagement and recruitment of cognitive resources, a deactivation of default mode network (DMN) regions was shown on FMRI images. Increased activity in DMN regions has earlier been linked to mind wandering (Howard-Jones, Jay,

Mason & Jones, 2016; Mittner et al., 2014). According to Atchley, Strayer, and Atchley (2012) the DMN are active during restful introspection and exposure to nature may engage the DMN of the brain.

In sum, mind wandering is an ability we have that enables us to think and resonate on other things than what is happening in that moment and enables us to focus on something else than everything going on around that may not be important, but it can also be a product of a mind that is not enough engaged, for example when we feel bored. Csikszentmihalyi (1990, p. 119) has suggested that when the mind has "nothing to do, when we experience no demands on attention, it starts following random patterns" which commonly leads to negative thoughts. This can be solved by training in learning how to give order to our thoughts.

Associations between mind wandering and negative emotions seem to have a two-way relationship. The process of forcing our attention back to whatever we were or should have been focused on is also a draining experience for the mind (Csikszentmihalyi, 1990, p. 119), but maintaining attention on a task over a long period of time can also produce fatigue (Gui et al. 2015). Also, maintaining attention in unchallenging situations is harder than in cognitively demanding, but interesting ones, according to Langner and Eickhoff's (2010) meta-analytical review of the neural mechanisms of vigilant attention.

Finally, an important notice is that there has been identified two main types of mind wandering. The first are characterized by intentionally self-generated internal thoughts, while the other occur without intention, when the mind drifts of. (Florence et al. 2016) It might be comparable to the distinction mentioned by Goodnow and Bordoloi (2017) between escape *toward* something positive and conductive, and escape *from* something negative.

Boredom

Boredom is a common state most of us has experienced at one point. What separates boredom from other negative affective experiences, such as sadness and anger, is that

boredom represents a negative experience where we feel unchallenged (van Tilburg & Igou, 2011; Struk, Carriere, Cheyne & Danckert, 2017) and we perceive what we are doing or what is happening as lacking in meaning and interest. It is assumed that boredom motivates us to solve this lack by changing behaviour or situations, like seeking a challenge or stimulation. Boredom can occur in our leisure time, and this might very well be one reason for what motivates us to engage in leisure activities. However, boredom can lead to negative consequences. Iso-Ahola and Crowley (1991) for example found that adolescent substance abusers were significantly more likely to experience leisure as boredom, compared to those who were not substance users. But substance users participated more often in leisure in general and preferably in active leisure activities. However, they also became bored more easily than non-users, and especially if what they were doing did not meet their need for optimal arousal.

This tendency was also found in an Italian study - (Biolcati, Mancini & Trombini, 2017). Significant differences were found between subjects high and low in boredom. Those who reported higher levels of boredom drank more alcohol, were less involved in hobbies and activities such as sports. Instead, they used more technology (i.e., smartphone, iPhone, PC) and other forms of sedentary activities, such as movie watching. Also, they were at more risk for internet addiction than the adolescents who were not bored in their leisure time.

This is one reason why Iso-Ahola and Weissinger (1990) developed the Leisure Boredom Scale, as many studies had shown a high percentage of people of all ages who reported boredom in leisure as a significant problem. In order to deal with this problem, they felt an instrument that measured the tendency toward leisure boredom was needed.

Iso-Ahola and Weissinger (1990) asserted that we can experience boredom when deprived of opportunity for optimal activities, as claimed by Csikszentmihalyi (1990) in his theory of optimal experience - flow.

Meanwhile, boredom is not necessarily "bad". The outcome depends more on how we seek to solve the perceived negative experience that causes boredom, what activities and stimulations we choose. The match between individual preferences and chosen activity are important as well (Csikszentmihalyi, 1990; Kaplan & Kaplan, 1989). Some need, and enjoy, active leisure activities, while others prefer less physically active activities like reading or painting. For someone needing more stimulus, reading may induce boredom for that person, while someone else can read for hours and never grow tired, or bored, of it.

Also, availability of leisure activities, experiences and stimulation may be of importance. If there are no leisure activities that match current needs, avoiding boredom may become more difficult. Theoretically (Iso-Ahola & Weissinger, 1990, p. 4), "leisure boredom evolves as a product of situational factors and individual tendencies". Some people may be more resistant to boredom by finding it easier to find enjoyment in what others regard as mundane activities. This is similar to Csikszentmihalyi's (1990) writings of the traits that define an autotelic personality, a disposition among people who may enjoy experiences that other people would find unbearable.

Friluftsliv and video gaming provide immersion and a restorative environment and/or activity, and, describes mostly positive aspects of experience, also, boredom is an obstacle of optimal experience (flow), thus, neither leisure activity should provide boredom according to the literature. Though, the friluftsliv activity have more potential to induce boredom relative to video gaming, since the most common friluftsliv activities (in Norway – such as going for a walk in nature) can last longer and in addition are less likely to demand the same amount of attention and focus as video gaming. This, as literature posits, increase the likelihood of feeling unchallenged, and thus bored.

Emotions

So far, the focus has been mostly on the psychological and cognitive aspects of

experience; the affective aspect has only been mentioned in conjunction with these other aspects. Nonetheless, the emotional impact of experiences is maybe the most basic, but perhaps the most influential, as well.

Emotions are something we all experience at any moment in time, and they decide the quality (Ekman, 2003, p. xiii-xiv) of our lives. Despite this fact, a clear definition of emotion is not simple to find. There is an agreement in relevant literature that emotional systems exist to provide meaning and value to the information we process (Johnston & Olson, 2015). Emotions help by telling us what we like and what we do not like, and what is or is not good for us. They do this by making us feel good or bad and are brought forth by what we experience and how we interpret this experience. Usually we like to avoid that which evokes negative emotions, and rather seek out things that evoke positive emotions.

Furthermore, emotions help us decide what we should focus on (Vuilleumier, 2005). We have a hard time ignoring stimuli with emotional meaning (Richards & Blanchette, 2004) and we also detect stimuli with emotional meaning faster than stimuli that are in it-self neutral (Ohman, Flykt & Esteves, 2001). What is perceived as neutral and what is perceived as containing emotional meaning are to a degree dependent on the individual, but there are some stimuli that are more universally neutral (such as a spoon) and emotive (for example a snake) than others.

This helps us react faster when the unexpected happens (Oatley, 2009). Accordingly, decision making is simplified. For example, we feel fear when we perceive something as threatening (Oatley, 2009) and this will lead us to a certain set of actions (Hetland, 2016). The change of the cognitive system when this threat elicits the fear mode, emotionally provoked (Oatley, 2009) the system becomes configured to confront the danger.

Emotions are also accompanied by physiological and behavioural changes (Steimer, 2002; Hetland, 2016; Scherer, 2005). In this scenario, the physical component would be

increased heart rate and blood pressure, a fight or flight mode. The behavioural, or expressive component will provide visible changes in a person. All this help us prepare to deal with the threat, and in most extreme cases this can be what saves our life (Ekman, 2003).

All emotions have a function (Hetland, 2016), to help us make quick decisions and react accordingly when time is not on our side, as well as communicating (Scherer, 2005; Oatley, 2009) what we feel to others (and our self). This includes positive emotions, where for example, happiness is a reward (Hetland, 2016) when experiencing progress or reaching a goal (Oatley, 2009). This will make us want to continue with the activity.

Positive emotions broaden our awareness according to Fredrickson (2013), creating a space which among other things stimulates creations of new ideas (Hetland, 2016) and this will set people on positive paths of growth. Hetland (2016, p. 18-9) mentioned in his thesis that some have argued that eudaimonic emotions (for example interest, engagement, and feelings of immersion), help us focus attention on the task at hand, so narrowing instead of broadening awareness.

Emotions influence attention and especially in regulating the selectivity of attention. They also motivate action and behaviour. But although emotions exist to help us in various aspects of life, sometimes they can lead to not so great results (Ekman, 2003), leading us sometimes to act as we find appropriate and realistic, but also to act in ways we will regret deeply later.

Both friluftliv and video gaming are leisure activities, i.e. something we willingly choose to partake in, therefore, it is given that it is something we like to do because we experience positive emotions related to selected leisure activity. An underlying requirement of leisure activities is an activity one repeatedly participate in, and according to Løvoll, Røysamb and Vittersø (2017) experiences of positive emotion after an event or activity increase motivation to do it again.

Research questions

The main aim of this study is twofold. Firstly, to test the reliability and validity of the liminality scale based on its relationship to other variables either closely related; insight, attention restoration theory (ART), immersion, flow and positive affect, and relatively unrelated; mind wandering, boredom and negative affect.

Secondly, we aim to use what we learn about liminality, together with the variables of ART, immersion, flow, mind wandering, boredom, positive affect and negative affect, to test the psychological similarities and differences between the two leisure activities friluftsliv and video gaming. Based on an overall correlational analysis, we anticipate the following relationships summarized in Table 1.

Expectations of relationship among variables based on literature

Table 1

Expected correlations among experience variables

	1	2	3	4	5	6	7	8	9	10	11	12
LIMINALITY	X											
MORE RELATED VARIABLES												
Insight	2+	x										
ART variables												
Being away	3+	2+	x									
Fascination	2+	2+	2+	x								
Extent	2+	2+	2+	2+	x							
Compatibility	2+	2+	2+	2+	2+	x						
Immersion	2+	2+	2+	3+	3+	2+	x					
Flow	2+	2+	2+	2+	2+	2+	2+	x				
Positive affect	2+	2+	2+	2+	2+	2+	2+	2+	x			
LESS RELATED VARIABLES												

Mind wandering	1-	1-	1-	1-	1-	1-	1-	1-	1-	x		
Boredom	1-	1-	1-	1-	1-	1-	1-	2-	2+	x		
Negative affect	2-	2-	2-	2-	2-	2-	1-	1-	1-	2+	2+	x

No correlation: 0 (range 0 - .09); Low correlation: 1 (range .10 - .29); Moderate correlation: 2 (range .30 - .59); High correlation: 3 (range .60 - 1); Positive correlation: +; Negative correlation: -

The Nature of Liminality

We expect the liminality scale to measure the liminal experience and insight scale to measure insight and both scales to reach, at least, acceptable reliability, and to be moderately correlated with each other, where high scores of liminality will predict high scores of insight, and vice versa.

Based on regression analyses, we expect high scores of the ART component being away to predict liminality significantly, and to be highly correlated with each other.

The Nature of Friluftsliv and Video Gaming

We expect that all the other variables included (the four components of ART; being away, fascination, extent and compatibility, immersion, flow, positive affect, mind wandering, boredom, and negative affect) to measure precisely that, and reaching, at least, acceptable reliability as well, in both groups.

Hypothesis 1: Both friluftsliv and video gaming have the potential to provide the experience of liminality, and insight. As such, participants in both groups will have high scores of liminality and insight. However, the participants in the friluftsliv group will score higher than the video gaming group on both scales.

Hypothesis 2: We expect both friluftsliv and video gaming to fulfil the criteria of all the components of ART and therefore both groups will score high on all four subscales, being away, fascination, extent and compatibility.

Hypothesis 3: Both friluftsliv and video gaming will provide equally high scores of immersion, because both are leisure activities, chosen of free will, and have the possibility to provide immersive experiences.

Hypothesis 4: We expect high scores of flow in both the friluftsliv group and the video gaming group, with little to no difference between groups.

Hypothesis 5: The possibility of experiencing mind wandering exits in both friluftsliv and video gaming, and there are at least two separate types of mind wandering. As such, we expect scores of mind wandering to be higher in the friluftsliv group relative to the video gaming group, though we are unsure of how high or low the scores will be.

Hypothesis 6: The assumption is finding high scores of positive affect in both the friluftsliv group and video gaming group, and no difference of scores between the two groups

Hypothesis 7: Scores of boredom will be low in both groups, though the friluftsliv group might score higher relative to the video gaming group.

Hypothesis 8: The assumption is finding low scores of negative affect in both the friluftsliv group and video gaming group, and no difference of scores between the two groups.

Methods

To examine our research questions and hypotheses, we created a questionnaire in the net-based research software Qualtrics (Qualtrics, 2005) consisting of several different pretested scales collected (see "measures") from previous relevant studies found valid and reliable, to test the measures we were interested in taking a closer look at. Selected target groups were those who had participated in either friluftsliv activities or video gaming activities recently (with a duration of at least two hours). As such, some modifications of the original scales were performed (where necessary) to fit the target activity.

In addition, we added questions such as which friluftsliv activity they engaged in, or video game played. How long ago they participated in the chosen activity, and for how long, and whether they did the activity alone or with others. We also asked for their gender and age.

Participants

Participant were all over the age of 18, from Norway, and engaged in friluftsliv or video gaming as a leisure activity. Of 542 who viewed the questionnaire on Qualtrics, 158 completed the whole questionnaire.

Measures

Liminality. Bloom and Goodnow's (2013) liminality scale (6 items) was used to assess liminality. Participants were asked to indicate how strongly they disagreed or agreed on a scale from 1 (strongly agree) to 5 (strongly disagree) how accurately each statement described their experience of the target friluftsliv/video gaming activity. Such as "During the activity, I felt free to be myself, think what I want, and do what I want without the fear of judgements from others". All items were reverse scored before analysis such that low scores indicated low liminality and high scores indicated high liminality (see Appendix A for the full questionnaire).

Insight. Bloom and Goodnow`s (2013) insight scale (11 items) was used to assess insight. Participants rated each item on a scale from 1 (strongly agree) to 5 (strongly disagree) on statements such as "During the activity, I discovered a new perspective". All items were reverse scored before analysis so that they would be in the same order of value according to the rest of the questionnaire for easier analysis, i.e., low scores indicated low insight and high scores indicated high insight.

Attention Restoration Theory. PR(A)S (Dahl & Dalbakk, 2015), based on Hartig, Korpela, Evans and Gärling (1997) and Norling, Sibthorp and Ruddell (2008) was used to measure the four components of ART: being away (3 items), fascination (3 items), extent (3 items) and compatibility (3 items) on a scale from 1 (not at all) to 7 (very much). The statements were modified to fit the task of the friluftsliv and video gaming groups. For example, the first PR(A)S item "The drive was an escape experience for me" was modified to

«The friluftsliv activity was an escape experience for me» in the friluftsliv questionnaire, and «The gaming activity was an escape experience for me» in the gaming questionnaire.

Immersion. The immersion subscale from The Game Experience Questionnaire (GEQ) (Poels, de Kort & IJsselsteijn, 2007) was used to measure sensory and imaginative immersion (6 items) on a scale from 1 (not at all) to 5 (extremely), on statements like “I felt that I could explore things”.

Flow. The flow subscale from The Game Experience Questionnaire (GEQ) (Poels, de Kort & IJsselsteijn, 2007) was used to assess flow (5 items) on a scale from 1 (not at all) to 5 (extremely). Some statements were modified to fit the friluftsliv group, i.e. “I was deeply concentrated in the friluftsliv activity” instead of the original statement “I was deeply concentrated in the game”.

Mind wandering. The Mind Excessively Wandering Scale (MEWS) (Mowlem et al., 2016) was used to assess mind wandering (12 items) on a scale from 1 (rarely) to 4 (nearly all the time) with items like “I find it difficult to think about one thing without another thought entering my mind.” Item 6 (Because my mind is "on the go" at bedtime, I have difficulty falling off to sleep), item 10 (I try to distract myself from my thoughts by doing something else or listening to music), and item 14 (I use alcohol or other drugs to slow down my thoughts and stop constant "mental chatter") from original scale were removed as they did not fit the leisure activities friluftsliv and gaming tested in this study. Mowlem et al. (2016) also recommended these items to be excluded from the scale in future research based on the analysis they conducted.

Boredom. The Leisure Boredom Scale (Iso-Ahola & Weissinger, 1990) was used to measure boredom (15 items) on a scale from 1 (strongly agree) to 5 (strongly disagree). Participants were asked to think about their target activity and rate the degree to which they agreed or disagreed on statements such as “For me leisure time just drags on and on”. There

are 16 items in the original measure, but item 11 (I waste to much of my leisure time sleeping) was excluded as it did not fit the target groups` friluftsliv and video gaming activity. Eight items were reversed before analysis, so all items value was in the same direction as the other 7 items in the scale, as well as the rest of the questionnaire. For the final scores, then, low scores indicate low levels of boredom and high scores indicate high levels of boredom.

Positive and negative affect. Two subscales from The Game Experience Questionnaire (GEQ) (Poels, de Kort & IJsselsteijn, 2007) were used to measure positive affect (5 items) and negative affect (5 items) on a scale from 1 (not at all) to 5 (extremely), example statements included "I felt happy" (positive affect) and "I was bored by the story" or in the friluftsliv group questionnaire "I was bored by the friluftsliv experience" (negative affect).

Procedure

Participants were recruited from colleges in Norway that have friluftsliv and/or video gaming as a subject, Facebook, and four friluftsliv or video gaming forums (Kammeret.no, fjellforum.no, diskusjon.no and spillforumet.no). The friluftsliv recruits were instructed to answer in relation to a friluftsliv experience, and the video gaming group was asked to answer in relation to a video gaming activity. Both were asked to choose a recent activity that had lasted a minimum of 2 hours (see the introduction to the study in Appendix A). They were all informed at the start of the survey that their participation was voluntary. Participants did not receive a reward or any form of payment. The survey was open for approximately six weeks, afterwards the data were exported from Qualtrics to an SPSS file.

Three participants were removed from the friluftsliv group, as one was not Norwegian (lived in, and from, Switzerland), one did not answer according to a friluftsliv experience and one was excluded because they had performed said activity 30 years prior, and their chosen activity was clearly not a leisure activity for them. The total number was reduced to 155, with 77 respondents in the friluftsliv group and 78 in the video gaming group. The average time

used on completing the questionnaire was 673 seconds (11 minutes and 13 seconds), with a median of 672 seconds (min. 239 seconds and max. 243756 seconds). Participants (N = 155) ranged in age from 18-72, with average age of 32.35 (SD = 10.18) The friluftliv group ranged in age from 19-72 (M = 36.44, SD = 10.97). The gaming group was somewhat younger, ranging in age from 18-49 (M = 28.22, SD = 7.34).

In both groups combined, the majority of respondents were male (71%), with 62% male in the friluftsliv group, and 79% in the gaming group. One person in the video gaming group identified as «other». There was no difference between genders (when grouped separately, e.g., group 1 = male, group 2 = female) in scorings on any of the included variables.

Analysis

All statistical procedures were performed in IBM SPSS Statistics 25. We explored the data collected, inspecting histograms, scatterplots, and descriptive statistics for statistical bias such as outliers and violation of assumptions.

The Shapiro–Wilk and Kolmogorov–Smirnov test showed the data tested to not be from a normally distributed population. Inspection of histograms and statistics show that the distributions were skewed in all variables except for flow. Non-parametric tests were therefore utilized as the data did not meet the assumptions for parametric tests.

A Mann-Whitney test indicated that the friluftsliv group used significantly more time on their activity than the video gaming group. There was also a difference in how often participants engaged in activity between the friluftsliv group and video gaming group, whereas the video gaming group engaged in their leisure activity more often than the friluftsliv group. This had no impact on group scorings on the different variables included.

We also chose to run a Spearman‘s Rho Correlation analysis to see which of the variables were related with each other.

One aim was to further explore Bloom and Goodnow‘s (2013) travel liminality and insight scales, to test their relationship and relevance for other leisure activities and environments besides traveling. Reliability analyses were carried out on all scales used in questionnaire (see Table 2) using Cronbach‘s alpha.

We performed exploratory factor analyses for the liminality scale (see Table 4) and the insight scale (see Table 5).

Standard multiple regressions were conducted to determine which of the six liminality scale items were the best predictor of the combined scale scores of the Insight scale items, as done in original study of the scales.

Standard multiple regressions were also conducted to determine which of the seven variables being away, fascination, extent, compatibility, immersion, flow and positive affect, believed to be related to liminality, were the best predictors of liminality. In addition, the same analysis was conducted to determine which of the three variables mind wandering, boredom and negative affect, believed to be less related to liminality, were the best predictors of liminality.

The second aim was to test the psychological similarities and differences between the two leisure activities friluftsliv and video gaming.

Fulfilling the assumptions of the Independent-Samples Mann-Whitney U test, it was deemed as the best choice instead of a t-test to see if there were any differences in scores between the friluftsliv group and video gaming group. As SPSS does not calculate an effect size, we calculated the approximate effect sizes from the z-score for the test statistic with the equation Field (2018, p. 295) provided: $r = \frac{z}{\sqrt{N}}$

Results

The Nature of Liminality

Reliability analysis for all scales in questionnaire

In general, Cronbach's alpha showed all scales to reach acceptable to excellent reliability with values between 0.7 to 0.9 (Field, 2018, p. 823), except for the ART subscale being away and the GEQ subscale negative affect. Most items appeared to be worthy of retention, resulting in a decrease in the alpha if deleted. The exceptions of this are listed in Table 2.

Based on these results, we used the items for each measure that yielded higher reliability, except for the liminality scale where we kept all six items for the following analyses for theoretical reasons, as item five and six address being away physically and cognitively. We also decided to keep item three in the ART subscale being away as the difference in Cronbach`s alpha, if removed, were small, combined with the fact that this subscale already consists of few items, in addition, the liminality scale is partly based on this component, as such, all three items should be included. However, we chose to do some exploratory analyses on the liminality scale. A complete list of all scale items included in questionnaire are listed in Appendix A.

Table 2

Reliability Statistics of scales (n = 155)

Scales (items)	Cronbach's Alpha	Cronbach's Alpha if items removed
Liminality (6)	α = .710	α = .837, item 5 and 6 removed
Insight (11)	α = .938	
Being away (3)	α = .494	α = .502, item 3 removed
Fascination (3)	α = .789	
Extent (3)	α = .838	
Compatibility (3)	α = .843	
ART all items (12)	α = .876	α = .881, item 3 removed
Immersion (6)	α = .854	
Flow (5)	α = .846	
Positive affect (5)	α = .782	α = .920, item 1 and 2 removed
Mind wandering (12)	α = .918	
Boredom (15)	α = .848	α = .877, item 1 and 11 removed
Negative affect (5)	α = .566	α = .601, item 1 removed

Correlational analyses among liminality and posited more or less related variables

Eight of the eight posited positive relationships among the experience variables and liminality were supported. Most fell in the range predicted, the exceptions being insight and being away that were both lower than predicted, though being away still showed the highest correlation with liminality among the eight variables, as predicted. Two of the three posited negative relationships among the experience variables and liminality were supported. Only boredom fell in the range predicted, whereas negative affect was lower than predicted, and mind wandering and liminality were not correlated at all.

Table 3

Spearman's rank correlation coefficient among all variables friluftsliv and video gaming groups combined (n = 155).

	1	2	3	4	5	6	7	8	9	10	11	12
1. LIMINALITY	1											
MORE RELATED VARIABLES												
2. Insight	.27**	1										
ART variables												
3. Being away	.41**	**.30****	1									
4. Fascination	.23**	.22**	**.59****	1								
5. Extent	**.35****	**.33****	**.54****	**.65****	1							
6. Compatibility	**.30****	**.58****	**.40****	**.40****	**.51****	1						
7. Immersion	**.40****	.25**	**.48****	**.50****	**.61****	**.31****	1					
8. Flow	**.31****	**.36****	.29**	**.33****	**.47****	**.37****	**.45****	1				
9. Positive affect	**.33****	**.42****	**.38****	**.40****	**.45****	**.50****	**.43****	**.43****	1			
LESS RELATED VARIABLES												
10. Mind wandering	- .04	-.08	**-.19***	**-.24****	-.12	-.06	-.08	-.05	-.10	1		
11. Boredom	**-.23****	**-.33****	**-.35****	**-.31****	**-.36****	**-.35****	**-.21****	-.16*	**-.38****	**.39****	1	
12. Negative affect	-.19*	-.13	-.12	-.18*	-.09	**-.22****	-.12	-.04	-.21**	**.36****	**.36****	1

Note. Correlations matching as predicted or higher are marked in bold font.

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

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4

Each scale mean and standard deviation (n = 155)

	N	Mean	Std. Deviation
Liminality	155	3.96	.646
Insight	150	3.00	1.00
Being away	155	5.46	1.05
Fascination	155	5.20	1.20
Extent	155	5.43	1.22

Compatibility	153	5.58	1.27
Immersion	153	3.75	.792
Flow	154	3.18	.901
Positive affect	154	4.29	.725
Mind wandering	153	1.71	.611
Boredom	150	1.94	.630
Negative affect	153	1.64	.593
Valid N (listwise)	138		

EFA and internal reliability

Liminality scale. A principal axis factor analysis (EFA) was conducted on the six liminality scale items with oblique rotation (direct oblimin). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = 0.74, all KMO values were above .65 except for item five (.47) which is below the acceptable limit of 0.5 according to Field (2018, p. 808) who suggests running the analysis with and without to note the difference. An initial analysis was run to obtain eigenvalues for each factor in the data. Two factors had eigenvalues over Kaiser`s criterion of 1 and in combination explained 69.96% of the variance. The scree plot showed inflexions that justified retaining two factors. Cronbach‘s alpha for all six items was .71.

Factor one, explaining 47.5% of the variance, contained four items addressing being away psychologically and had a Cronbach‘s alpha of .83. This factor will from now on be referred to as Liminality–FREE. Factor two, explaining 22.4% of the remaining variance, consisted of two items addressing being away physically and cognitively and had a Cronbach‘s alpha of .56. This factor will from now on be referred to as Liminality–AWAY Together, Liminality–FREE and Liminality–AWAY, explained 69.9% of the variance.

The same analysis was conducted after excluding item five. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = 0.78, all KMO values were

above .70. One factor had eigenvalues over Kaiser‘s criterion of 1, which is supported by the scree plot. The factor consisted of five items, explained 56.9% of the variance and had a Cronbach‘s alpha of .79. All factor loadings were above .64, with the exception of item six with a factor loading of .32. An inspection of communalities and reliability analysis supported removal of item six.

A factor analysis with oblique rotation (direct oblimin) on items one to four was conducted. KMO = 0.77, all KMO values were above .69. One factor had eigenvalues over Kaiser‘s criterion of 1, explaining 67.7% of the variance, with a Cronbach‘s alpha of .83, and factor loadings ranging from .64 to .95. (where, item one .64, item two .69, item three .95, and item four .72). This is in line with what Bloom and Goodnow (2013) found in their analyses. All six items are included in further analyses of the liminality scale for theoretical reasons, unless otherwise noted.

Table 5

Factor loadings (both groups, n = 155) – Liminality items

	Factor	
Items	**1**	**2**
1. Felt free to act, think, and be, my authentic self without concern of judgements from others	**.663**	-.052
2. Felt like I don‘t have to worry about disappointing others	**.693**	.009
3. Felt free to be myself, think what I want, and do what I want without the fear of judgements from others	**.949**	-.051
4. Felt free from all the judgements of family, friends, society, and the culture visited	**.720**	.107
5. Entered into a new, novel, or different world that is physically or environmentally very different from home	-.122	**.628**
6. Felt free from the daily routines of my ordinary life at home and spent my time on new and novel things	.220	**.670**

Insight scale. A principal axis factor analysis (EFA) was conducted on the 11 Insight Scale items with oblique rotation (direct oblimin). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = 0.93, all KMO values were above .88. An initial analysis was run to obtain eigenvalues for each factor in the data. One factor had eigenvalues over Kaiser‘s criterion of 1, supported by the scree plot, and explained 62.9% of the variance and had a Cronbach‘s alpha of .93. This result is contrary to Bloom and Goodnow‘s (2013) results, where analyses provided two factors, named personal insight (items one to nine) and spiritual insight (item 10 and 11).

Table 6

Factor loadings (both groups, n = 150) – Insight items

	Factor
Items	**1**
1. Discovered a better way to live life	**.865**
2. Discovered that simple living is happy living	**.795**
3. Figured out how to be happy	**.858**
4. Discovered a new perspective	**.743**
5. Discovered personal strengths	**.795**
6. Discovered life‘s meaning, purpose or direction	**.860**
7. Discovered my place in the world	**.863**
8. Realized something important regarding myself	**.829**
9. Figured out how little I need to be happy	**.672**
10. Experienced connection to nature	**.648**
11. Experienced connection to a higher power	**.471**

Standard multiple regressions

Variables believed to be related, as predictors of scores of liminality. Standard multiple regression was conducted to determine which of the variables, being away,

fascination, extent, compatibility, immersion, flow and positive affect, presumed to be related to liminality, was the best predictor of scale scores on the liminality scale. Regression results indicated a model that accounted for 24.4% of the variance in the liminality scores (R^2 = .276, R^2_{adj} = .244, F (7,140) = 7.394, p = .000), being away accounted for 17.2% of the variance (R^2 = .178, R^2_{adj} = .172, F (1,146) = 31.54, p = .000). Among the seven variables, being away (β = .31, t = 3.278, p = .001) and fascination (β = -.23, t = -2.216, p = .028) were significant predictors of liminality scores.

Variables believed to be related, as predictors of scores of Liminality-FREE. Standard multiple regression was conducted to determine which of the variables, being away, fascination, extent, compatibility, immersion, flow and positive affect, presumed to be related to liminality, was the best predictor of Liminality–FREE scores. Regression results indicated a model that accounted for 11.0% of the variance in the liminality scores (R^2 = .153, R^2_{adj} = .110, F (7,141) = 3.625, p = .001), being away accounted for 9.2% of the variance (R^2 = .098, R^2_{adj} = .092, F (1,147) = 15.97, p = .000). Among the seven variables, being away (β = .32, t = 3.165, p = .002) and compatibility (β = .22, t = 2.445, p = .016) were significant predictors of Liminality-FREE scores.

Variables believed to be related, as predictors of scores of Liminality-AWAY. Standard multiple regression was conducted to determine which of the variables, being away, fascination, extent, compatibility, immersion, flow and positive affect, presumed to be related to liminality, was the best predictor of Liminality–AWAY scores. Regression results indicated a model that accounted for 31.4% of the variance in the liminality scores (R^2 = .346, R^2_{adj} = .314, F (7,141) = 10.669, p = .000), immersion accounted for 27.3% of the variance (R^2 = .278, R^2_{adj} = .273, F (1,147) = 56.45, p = .000). Among the seven variables, immersion (β = .32, t = 3.323, p = .001) and positive affect (β = .19, t = 2.142, p = .034) were significant predictors of Liminality-AWAY scores.

Variables believed to be less related, as predictors of scores of liminality. Standard multiple regression was conducted to determine which of the variables mind wandering, boredom and negative affect, presumed to be less related to liminality, was the best predictor of scale scores on the liminality scale. Regression results indicated a model that accounted for 5.0% of the variance in the liminality scores (R^2 = .070, R^2_{adj} = .050, F (3,142) = 3.556, p = .016), boredom accounted for 3.9% of the variance (R^2 = .045, R^2_{adj} = .039, F (1,144) = 6.822, p = .010). Among the three variables, only boredom (β = -.18, t = -2.116, p = .036) was a significant predictor of liminality scores.

Liminality items predictors of scores on insight scale. Standard multiple regression was conducted to determine which independent variables (liminality scale items) were the best predictors of scale scores on the insight scale. Regression results indicated a model that accounted for 12.9% of the variance in the insight scores (R^2 = .164, R^2_{adj} = .129, F (6,143) = 4.665, p = .000). Among the six predictors only item six "Felt free from the daily routines of my ordinary life at home and spent my time on new and novel things" (β = .38, t = 4.239, p = .000) were a significant predictor of insight scores. This is in line with what Bloom and Goodnow (2013) found, however, their analyses also found item three and item five, in addition to item six to be predictors of insight scores.

Liminality-FREE items predictors of scores on insight scale. Standard multiple regression was conducted to determine which of the four Liminality–FREE items were the best predictors of scale scores on the insight scale. Regression results provided no findings of interest and significance.

Liminality-AWAY items predictors of scores on insight scale. Standard multiple regression was conducted to determine which of the two Liminality–AWAY items were the best predictors of scale scores on the insight scale. Regression results indicated a model that accounted for 13.7% of the variance in the insight scores (R^2 = .148, R^2_{adj} = .137, F (2,147) =

12.78, p = .000). Among the two predictors item six “Felt free from the daily routines of my ordinary life at home and spent my time on new and novel things” (β = .39, t = 4.662, p = .000) were a significant predictor of insight scores. Removal of item five would improve the model (R^2 = .148, R^2_{adj} = .142, F (1,148) = 25.67, p = .000).

Other variables believed to be related, as predictors of scores on insight scale. Standard multiple regression was conducted to determine which of the variables, being away, fascination, extent, compatibility, immersion, flow and positive affect, presumed to be related to liminality and therefore insight, was the best predictor of insight. Regression results indicated a model that accounted for 42.6% of the variance in the insight scores (R^2 = .454, R^2_{adj} = .426, F (7,137) = 16.28, p = .000), compatibility accounted for 36.8% of the variance (R^2 = .373, R^2_{adj} = .368, F (1,143) = 84.91, p = .000). Among the seven variables, compatibility (β = .49, t = 6.452, p = .000), flow (β = .18, t = 2.382, p = .019), and being away (β = .18, t = 2.193, p = .039) were significant predictors of insight.

Variables believed to be less related, as predictors of scores of insight. Standard multiple regression was conducted to determine which of the variables mind wandering, boredom and negative affect, presumed to be less related to liminality, and therefore insight, was the best predictor of insight. Regression results indicated a model that accounted for 9.8% of the variance in the liminality scores (R^2 = .118, R^2_{adj} = .098, F (3,137) = 6.082, p = .001), boredom accounted for 10.6% of the variance (R^2 = .112, R^2_{adj} = .106, F (1,139) = 17.53, p = .000). Among the three variables, only boredom (β = -.31, t = -3.598, p = .000) was a significant predictor of insight.

The Nature of Friluftsliv and Video Gaming

Reliability analysis

We conducted reliability analyses on all scales on each group separately to see if there were any interesting differences, finding a noticeable difference between the friluftsliv group

and video gaming group in Cronbach‘s alpha on following scales listed in Table 10.

The items who‘s removal would improve Cronbach‘s alpha were, being away item three “The friluftsliv/gaming activity helped me get relief from unwanted demands on my attention”, positive affect item one “I felt content” and item two “I could laugh about it”, and negative affect item one “I thought about other things”. We decided to further keep all three items in the ART subscale being away.

Table 10

Reliability Statistics of scales separated by group

	Cronbach‘s Alpha		Cronbach‘s Alpha if (items removed)	
Scales	1	2	1	2
Being away	α = .643	α = .365		α = .404 (3)
Fascination	α = .839	α = .762		
Negative affect	α = .632	α = .511	α = .675 (1)	α = .524 (1)
Positive affect	α = .807	α = .764	α = .993 (1, 2)	α = .911 (1, 2)

Note. 1 = Friluftsliv group (n = 77), 2 = Video gaming group (n = 78). Numbers in parenthesis indicate which items were removed.

Correlational analyses among all variables

Most correlations fell in the range predicted or higher, some were lower than predicted, and some were not correlated at all. An overview is found in the following tables (Table 7 and Table 8), where correlations matching the predictions posited, or higher, are marked in bold font.

Table 7

Spearman‘s rank correlation coefficient among all variables in friluftsliv group (n = 77)

	1	2	3	4	5	6	7	8	9	10	11	12
1. Liminality	1											
2. Insight	**.33****	1										
3. Being away	.44**	**.32****	1									
4. Fascination	.19	**.36****	**.61****	1								
5. Extent	**.36****	**.50****	**.54****	**.66****	1							
6. Compatibility	.25**	**.39****	**.52****	**.52****	**.60****	1						
7. Immersion	**.39****	**.57****	**.59****	**.59****	**.69****	**.49****	1					
8. Flow	**.37****	**.47****	**.31****	**.38****	**.54****	**.36****	**.67****	1				
9. Positive affect	**.36****	**.53****	**49****	**.49****	**.53****	**.49****	**.69****	**.50****	1			
10. Mind wandering	-.07	-.19	**-.25***	**-.44****	-.18	-.21	-.07	-.08	-.16	1		
11. Boredom	-.20	**-.22***	**-.42****	**-.34****	**-.38****	**-.40****	**-.27***	-.13	**-.26***	**.50****	1	
12. Negative affect	-.13	-.02	-.11	-.16	-.03	**-.27****	-.02	-.00	-.08	**.44****	**.32****	1

Note. Correlations matching as predicted or higher are marked in bold font.

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

*. Correlation is significant at the 0.05 level (2-tailed).

Table 8

Spearman's rank correlation coefficient among all variables in video gaming group (n = 78)

	1	2	3	4	5	6	7	8	9	10	11	12
1. Liminality	1											
2. Insight	.27**	1										
3. Being away	.41**	**.30****	1									
4. Fascination	.23**	.22**	**.59****	1								
5. Extent	**.35****	**.33****	**.54****	**.65****	1							
6. Compatibility	**.30****	**.58****	**.40****	**.40****	**.51****	1						
7. Immersion	**.40****	.25**	**.48****	**.50****	**.61****	.31**	1					
8. Flow	**.31****	**.36****	.29**	**.33****	**.47****	**.37****	**.45****	1				
9. Positive affect	**.31****	**.37****	.27*	**.34****	**.39****	**.53****	.25*	**.36****	1			
10. Mind wandering	-.04	-.08	**-.19***	**-.24****	-.12	-.06	-.08	-.05	-.04	1		
11. Boredom	**-.25****	**-.41****	**-.25****	**-.30****	**-.34****	**-.24****	-.19	-.18	**-.25****	**.50****	1	
12. Negative affect	-.24*	-.22	-.13	-.23*	-.24*	-.17	**-.26***	-.07	**-.35****	.27*	**.42****	1

Note. Correlations matching as predicted or higher are marked in bold font.

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

*. Correlation is significant at the 0.05 level (2-tailed).

EFA and internal reliability

Bloom and Goodnow (2013) found two factors in their study, representing personal insight (item one to nine) and spiritual insight (item 10 and 11). The same analysis was run again on each group separately to see if there were any differences. Noteworthy were the extraction of two factors for the insight items in the video gaming group (see Table 9), instead of one factor as in the friluftsliv group and in both groups combined. Factor one, explaining 54.6% of the variance, contained nine items addressing personal insight and had a Cronbach‘s alpha of .92. Factor two, explaining 10.9% of the remaining variance, consisted of two items addressing spiritual insight and had a Cronbach`s alpha for all 11 items was .91, explaining 65.5% of variance.

Table 9

Factor loadings video gaming group (n = 74) – Insight items

	Factor	
Items	**1**	**2**
1. Discovered a better way to live life	**.742**	.085
2. Discovered that simple living is happy living	**.531**	.208
3. Figured out how to be happy	**.826**	.006
4. Discovered a new perspective	**.811**	-.059
5. Discovered personal strengths	**.796**	-.089
6. Discovered life‘s meaning, purpose or direction	**.790**	.118
7. Discovered my place in the world	**.728**	.178
8. Realized something important regarding myself	**.893**	-.073
9. Figured out how little I need to be happy	**.586**	-.093
10. Experienced connection to nature	.278	**.410**

11. Experienced connection to a higher power	-.062	**.922**

Standard multiple regressions

Other variables believed to be related, as predictors of scores of liminality. Standard multiple regression was conducted, on each group separately, to determine which of the variables, being away, fascination, extent, compatibility, immersion, flow and positive affect, presumed to be related to liminality, was the best predictor of scale scores on the liminality scale.

Friluftsliv group. Regression results indicated a model that accounted for 23.9% of the variance in the liminality scores (R^2 = .313, R^2_{adj} = .239, F (7,65) = 4.238, p = .001), being away accounted for 21.0% of the variance (R^2 = .221, R^2_{adj} = .210, F (1,71) = 20.14, p = .000). Among the seven variables, only being away (β = .50, t = 3.666, p = .000) were a significant predictor of liminality scores.

Video gaming group. Regression results indicated a model that accounted for 24.6% of the variance in the liminality scores (R^2 = .317, R^2_{adj} = .246, F (7,67) = 4.452, p = .000), immersion accounted for 22.2% of the variance (R^2 = .232, R^2_{adj} = .222, F (1,73) = 22.09, p = .000). Among the seven variables, only immersion (β = .33, t = 2.505, p = .015) were a significant predictor of liminality scores.

Variables believed to be less related, as predictors of scores of liminality. Standard multiple regression conducted, on each group separately, to determine which of the variables mind wandering, boredom and negative affect, presumed to be less related to liminality, was the best predictor of scale scores on the liminality scale, revealed no significant findings in either group.

Liminality scale items as predictors of scores of insight. Standard multiple regression was conducted, on each group separately, to determine which independent variables (liminality scale items) were the best predictors of scale scores on the insight scale.

Regression results indicated a model that accounted for 37.7% of the variance in the insight scores (R^2 = .427, R^2adj = .377, F (6,69) = 8.560, p = .000) in the friluftsliv group. Among the six predictors only item five "Entered into a new, novel, or different world that is physically or environmentally very different from home" (β = .57. t = 5.611, p = .000) were a significant predictor of insight scores. The video gaming group regression results indicated a model that accounted for 19.6% of the variance in the insight scores (R^2 = .262, R^2adj = .196, F (6,69) = 3.960, p = .002). Among the six predictors item six "Felt free from the daily routines of my ordinary life at home and spent my time on new and novel things" (β = .45, t = 3.114, p = .003) and item three "Felt free to be myself, think what I want, and do what I want without the fear of judgements from others" (β = .39, t = 2.020, p = .047) were a significant predictor of insight scores. These items are the same Bloom and Goodnow (2013) found in their study.

Comparison of scores between groups

A series of Mann-Whitney tests were conducted, where the experience variables were compared between groups, instead of *t*-tests as the data did not meet the assumptions for parametric tests.

Liminality and insight. There was no difference in liminality scores between the friluftsliv group (*Mdn* = 4.16) and the video gaming group (*Mdn* = 3.83), U = 2.77, z = -.835, p = .404, r = -.067. However, the friluftsliv group scored significantly higher on insight (*Mdn* = 3.54) than the video gaming group (*Mdn* = 2.54), U = 934, z = -7.065, p = .000, r = -.576.

Liminality-FREE. The friluftsliv group scored significantly higher on Liminality-FREE (items one, two, three and four) (*Mdn* = 4.50) than the video gaming group (*Mdn* = 4.00), U = 2.293, z = -2.567, p = .010, r = -.206.

Liminality-AWAY. The friluftsliv group scored significantly lower on Liminality–AWAY (items five and six) (*Mdn* = 3.50) than the video gaming group (*Mdn* = 4.00), U = 3.598, z = 2.165, p = .030, r = .173.

Attention Restoration Theory. The friluftsliv group scored significantly higher on compatibility (*Mdn* = 6.33) than the video gaming group (*Mdn* = 5.00), *U* = 1.396, *z* = -5.632, *p* = .000, *r* = -.455. No significant differences were found between groups in terms of being away (Friluftsliv *Mdn* = 5.66, Video gaming *Mdn* = 5.16, *U* = 2.53, *z* = -1.684, *p* = .092, *r* = -.135), fascination (friluftsliv *Mdn* = 5.33, Video gaming *Mdn* = 5.33, *U* = 3.22, *z* = .799, *p* = .424, *r* = .064) and extent (Friluftsliv *Mdn* = 5.66, Video gaming *Mdn* = 5.50, *U* = 2.98, *z* = -.081, *p* = .935, *r* = -.006).

Immersion. There was no significant difference in scores of immersion between the friluftsliv group (*Mdn* = 3.66) and the video gaming group (*Mdn* = 3.83), *U* = 3.34, *z* = 1.544, *p* = .123, *r* = .125.

Flow. There was no significant difference in scores of flow between the friluftsliv group (*Mdn* = 3.20) and the video gaming group (*Mdn* = 3.00), *U* = 2.606, *z* = -1.295, *p* = .195, *r* = .104.

Mind wandering. There was no significant difference in scores of mind wandering between the friluftsliv group (*Mdn* = 1.50) and the video gaming group (*Mdn* = 1.66), *U* = 3.229, *z* = 1.110, *p* = .267, *r* = .089.

Boredom. There was no significant difference in scores of boredom between the friluftsliv group (*Mdn* = 1.83) and the video gaming group (*Mdn* = 2.06), *U* = 3.228, *z* = 1.565, *p* = .118, *r* = .127.

Emotions. There was no significant difference in scores of positive affect between the friluftsliv group (*Mdn* = 4.00) and the video gaming group (*Mdn* = 4.00), *U* = 2.778, *z* = -.538, *p* = .591, *r* = -.043, and no significant difference in scores of negative affect between the friluftsliv group (*Mdn* = 1.80) and video gaming group (*Mdn* = 1.80), *U* = 2.758, *z* = -.616, *p* = .538, *r* = -.049.

Table 10

Descriptive Statistics Friluftsliv group

	n	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Kurtosis
Liminality	77	3.17	1.83	5.00	4.00	.610	.372	-.907	1.11
Liminality-FREE	77	4.00	1.00	5.00	4.25	.803	.646	-1.49	3.14
Liminality-AWAY	77	3.50	1.50	5.00	3.50	.867	.753	-.392	-.379
Insight	76	3.73	1.27	5.00	3.55	.795	.632	-.577	.420
Being away	77	5.00	2.00	7.00	5.60	1.08	1.17	-.564	.283
Fascination	77	5.00	2.00	7.00	5.12	1.23	1.51	-.494	-.012
Extent	77	5.00	2.00	7.00	5.43	1.24	1.53	-.428	-.493
Compatibility	76	3.33	3.67	7.00	6.17	.859	.739	-.997	.392
Immersion	77	3.83	1.17	5.00	3.67	.732	.537	-.551	.946
Flow	76	3.80	1.20	5.00	3.27	.931	.867	-.165	-.658
Positive affect	76	4.00	1.00	5.00	4.36	.718	.516	-1.64	5.07
Mind wandering	76	2.92	1.00	3.92	1.66	.588	.346	1.29	1.90
Boredom	76	2.54	1.00	3.54	1.85	.590	.349	1.00	.843
Negative affect	77	3.25	1.00	4.25	1.62	.642	.412	1.32	2.44
Valid N (listwise)	71								

Table 11

Descriptive Statistics Video Gaming group

	n	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Kurtosis
Liminality	78	2.67	2.33	5.00	3.92	.681	.465	-.255	-.532
Liminality-FREE	78	3.25	1.75	5.00	4.00	.744	.554	-.461	-.181
Liminality-AWAY	78	4.00	1.00	5.00	3.77	.979	.959	-.920	.641
Insight	74	3.55	1.00	4.55	2.43	.878	.772	-.083	-.824
Being away	78	4.00	3.00	7.00	5.32	1.02	1.04	-.128	-.578
Fascination	78	4.67	2.33	7.00	5.27	1.18	1.40	-.621	.113
Extent	78	5.00	2.00	7.00	5.44	1.21	1.48	-.612	-.084
Compatibility	77	5.67	1.33	7.00	5.00	1.36	1.85	-.449	-.514
Immersion	76	3.67	1.33	5.00	3.82	.846	.717	-.834	.703
Flow	78	4.00	1.00	5.00	3.10	.868	.755	.161	-.327
Positive affect	78	3.00	2.00	5.00	4.22	.729	.532	-.958	.965
Mind wandering	77	2.67	1.00	3.67	1.77	.632	.400	.887	.141
Boredom	74	2.77	1.00	3.77	2.03	.660	.436	.730	.076
Negative affect	76	2.00	1.00	3.00	1.65	.542	.295	.627	-.374
Valid N (listwise)	67								

Discussion

The first aim was to further explore Bloom and Goodnow‘s (2013) travel liminality and insight scales, to test their relationship and relevance for other leisure activities and environments besides traveling. The second aim was to test the psychological similarities and differences between the two leisure activities friluftsliv and video gaming.

As predicted, being away correlated the highest with liminality, though not as highly as expected. The remaining seven experience variables we assumed to be positively correlated with liminality, did indeed correlate positively with liminality. Two of the three posited negative relationships among the experience variables and liminality were also supported, though only boredom fell in the range predicted, whereas negative affect was lower than predicted, mind wandering and liminality were not correlated at all.

Our results are, for the most part, in line with Bloom and Goodnow‘s (2013) findings, Cronbach`s alpha showed the liminality scale to reach acceptable reliability, however, removal of item five and item six would lead to improved reliability for the liminality scale. We decided to keep all six items, for theoretical reasons, in further analyses unless otherwise stated.

The liminality scale consisted of two factors, supportive of Bloom and Goodnow‘s findings, which we named Liminality–FREE and Liminality–AWAY. Though, our analysis revealed the insight scale to consist of only one factor, compared to Bloom and Goodnow who found two, which they named personal insight and spiritual insight. Our analyses also revealed only liminality item six to be a significant predictor of insight scores whereas in Bloom and Goodnow‘s sample of travellers, liminality item three and five were found as significant predictors of insight scores as well, in addition to item six. Not surprisingly, being away was a significant predictor of liminality scores, more surprisingly however were the negative relationship among liminality and fascination. In addition, our study found being

away and compatibility to be significant predictors of Liminality–FREE scores, and immersion and positive affect to be significant predictors of Liminality–AWAY scores. For the variables believed to be less related to liminality, only boredom proved to be a significant predictor of liminality, where an increase in liminality scores would lead to a decrease of boredom scores, and vice versa.

The friluftsliv and video gaming groups shared more similarities than differences. We can experience a certain degree of liminality in both activities, however it seems the way there is different. In friluftsliv it is linked more to the feeling of being away, while in video gaming it is linked more to the feeling of immersion, this implies that there may be multiple paths to liminality, or perhaps more likely, different paths to different liminality aspects.

The nature of liminality

Cronbach‘s alpha showed the liminality scale to reach acceptable reliability, however, removal of item five and six would cause a noticeable increase of reliability for the liminality scale, indicating consideration of removal of these items form the scale, supported by the exploratory analyses conducted, after inspection of KMO and communalities. We decided to keep all six items, for theoretical reasons, also, liminality item six “Felt free from the daily routines of my ordinary life at home and spent my time on new and novel things” were found to be the only predictor of insight scores. Though, we did perform a multiple regression analysis to see which of the four liminality items the reliability and factor analyses recommended, which we named Liminality–FREE. Regression results provided no findings of significance.

We predicted being away would correlate highly with liminality, Spearman‘s rank correlation test showed liminality and being away to only correlate moderately, though it was also the highest correlation coefficient, which was expected, closely followed by immersion. Perhaps being away and immersion describes some of the same motives for experiences,

being escape and being lost in an activity or experience. Though, according to Jennett (2010) and Poels, de Kort and IJsselsteijn (2007), a reason often mentioned for why people like to play games is the opportunity to escape from the «real world», on the other hand, Goodnow and Bordoloi (2017) believe liminality is more of a pull motive to experience something positive rather than an escape motive. Which seem contradictive, but maybe it is not "either or", perchance both can contain motive of escape from something negative as well as towards something positive at the same time.

The remaining six experience variables we assumed to be positively correlated with liminality, did indeed correlate positively with liminality. We did expect a stronger positive correlation between liminality and insight than we found. However, after conducting analyses and interpreting the results and its' implications, it is not surprising. We think this prove a connection between the two variables, but it is also evidence of them being independent variables measuring separate aspects of experience. Two of the three posited negative relationships among the experience variables and liminality were also supported, though only boredom fell in the range predicted, whereas negative affect was lower than predicted, liminality and mind wandering were not correlated at all.

Bloom and Goodnow's (2013) liminality are partly based on Kaplan and Kaplan's (1989) component being away in Attention Restoration Theory (ART) scale, consisting of three dimensions, being away physically, cognitively, and psychologically. The scale items in their study were based on these three dimensions, however, in their study, liminality loaded on two factors, not three (Bloom & Goodnow 2013). In our analyses, Liminality-FREE, consisted of item one to four, addressing being away psychologically, explained most of the variance. Liminality-AWAY, consisted of the two remaining items, addressing being away physically and cognitively, explained the remaining variance.

Our results support to the notion of being away psychologically as the most important

dimension of liminality, as previously noted by Bloom and Goodnow (2013). They suggested the intriguing idea that this might be because being away physically and "free from daily routines are inherent parts of travel, freeing the mind from cultural and cognitive blocks" (Bloom & Goodnow, 2013, p. 153), thus, creating the cognitive space to think in novel ways. This is not true for half of our study sample (video gaming group), however, friluftsliv activities happen outdoors in a physically different environment, and the friluftsliv group scored significantly higher on Liminality–FREE than the video gaming group, whereas the video gaming group scored significantly higher on Liminality–AWAY, providing support to Bloom and Goodnow's theory of being away physically and cognitively will create the possibility of experiencing Liminality–FREE (psychologically away).

We also found evidence of the existence of multiple paths to different liminality aspects. We found that there seem to be at least two aspects of liminality. Bloom and Goodnow (2013) described these aspects as being away psychologically, and being away physically and cognitively, which we decided to name Liminality–FREE and Liminality–AWAY, respectively. Attention Restoration Theory's two components, and subscales, being away and compatibility predicted Liminality-FREE scores. Immersion and positive affect predicted Liminality–AWAY.

Surprisingly, multiple regression analyses showed negative relationship among liminality and fascination. Maybe fascination is a hindrance to the experience of feeling free, in that it captures attention, preventing, through distraction, cognitive space that promotes deep thinking and reflection. Interestingly, of all experience variables, the variable mind wandering shared highest negative correlation coefficient with, was fascination. The mind wandering scale used in this study only measured involuntary mind wandering, e.g. the type of mind wandering producing negative affect, supporting the notion of fascination describing voluntary attention. Even more interesting, mind wandering did not share a significant

negative relationship with either liminality or insight, which support the theory of soft fascination, e.g. voluntary attention, possibly preventing liminality, or it could also be that liminality prevents fascination. Of the four ART subscales, fascination was the subscale with the lowest correlation coefficients with liminality, and insight, as well as the only ART subscale that had a lower correlation coefficient than predicted.

In line with correlational analyses, boredom proved to be the only of the three posited less related experience variables. However, both the correlation coefficient among liminality and boredom, and the negative relationship found between the two in regression analyses, were considerably low, even if significant, making drawing any conclusions difficult. Though, it is not surprising that following an increase in liminality, boredom decrease. It is hard to combine the experience of freedom found in liminality, with feelings of boredom, it seems rather unlikely to feel bored when we experience freedom from everyday life and its` commitments and judgements, and possibly experiencing cognitive space allowing for reflection about life. Especially if liminality provide insight, and the correlation coefficient among insight and boredom were moderate and significant,

Insight

Bloom and Goodnow (2013) found two factors in their study, representing personal insight (item one to nine) and spiritual insight (item 10 and 11). In contrast, our study contained only one factor loading. This might be due to the difference in scoring of insight between the two groups, and especially a noticeable difference of means on item 10 "experienced connection to nature". That the friluftsliv group scored higher (M = 4.58) on this item than the video gaming group (M = 2.17) is not surprising, it is also the item of the insight scale with highest mean in the friluftsliv group. Both groups scored low on item 11 "experienced connection to a higher power", but the difference in means between item 10 and 11 are larger in the friluftsliv group (M = 2.26) than in the video gaming group (M = 1.48).

Indicating that factor two loading would mainly consist of item 10 in the friluftsliv group, compared to the video gaming group where both item 10 and 11 loaded on factor two.

Interesting is finding no difference between the two leisure activity groups in liminality scores, but finding a difference in Liminality–FREE and Liminality–AWAY, and difference in scoring of insight, especially considering what the multiple regression analyses indicated. Item five addressing being away physically were a predictor of insight in the friluftsliv group, but not in the video gaming group. While item six addressing being away cognitively and item three addressing being away psychologically were predictors of insight in the video gaming group. Again, not surprising as one cannot experience being away physically in video gaming. This, in addition to lower scores on the insight scale might indicate that experiencing being away physically is necessary for insight to occur, maybe being away psychologically and cognitively is not enough. Though, it seems we can experience liminality regardless of being away physically. Our analyses found evidence of there being several paths to liminality, and to different types of liminality, this seems to be the case for insight as well, that certain liminality aspects lead to different types of insight.

A possible contributor to difference in scorings between the friluftsliv group and video gaming group could have been length of activity, and a Mann-Whitney test did show that the friluftsliv group used significantly more time on their activity than the video gaming group. However, regression analyses found duration to not impact liminality scores or insight scores, and the difference in scores of insight between the two groups were not due to length of activity either.

So, in line with the findings of Bloom and Goodnow (2013, p. 153-4), some types of insight can occur through the experience of sub-components of liminality. But it seems, as they also noted, that all three components of being away (psychologically, cognitively, physically) is required for the “complete experience of insight”. But this is contradictory to

the results from the factor analyses. Thus, it might be wise to keep all items in the liminality scale and insight scale for future research and continue further exploration before any decision of elimination. Or maybe even better, to further test and develop Liminality–FREE and Liminality–AWAY, and their relationship with insight, or rather, the different aspects of insight.

Alas, experiencing liminality is not dependent on all three components of being away, but liminality does not necessarily guarantee experiencing insight, though it increases the possibility. Liminality–FREE, e.g., being away psychologically, a sense of freedom to be one self, and cognitively, freedom from routine, is "enough" to experience insight it appears. It also seems that feeling of escape, immersion in and felt match between oneself and the environment/activity are important aspects of experiencing liminality providing positive affect. Felt match between oneself and the environment/activity showed to be an especially important predictor of insight, and more so than the experience of escape. The friluftsliv group scored higher (*Mdn* = 6.33) on compatibility than the video gaming group (*Mdn* = 5.00) and a Mann-Whitney test showed that this difference was of significance. Investigation of correlation tables show insight to correlate highest with compatibility, and compatibility were the variable sharing the highest negative correlation coefficient with negative affect as well, even higher than among positive affect and negative affect, in addition of a moderate negative relationship with boredom. We are not surprised of finding compatibility being especially important in predicting insight, nor in being a predictor of Liminality–FREE. As stated in the literature review, we believe compatibility to be the most important component of ART, and perhaps even the most important aspect of all experiences. Compatibility, and the flow channel balance aspect of the "optimal experience", describe not only possession of the right knowledge and skill appropriate to the setting, but more importantly, that we *feel* this match between level of skill and challenge provided by the environment and/or activity.

The nature of friluftsliv and video gaming

H1: "Both groups will have high scores of liminality and insight, but the friluftsliv group will score higher on both, compared to the video gaming group." As predicted both groups had high scores of liminality, where the friluftsliv group scored higher on Liminality–FREE and lower on Liminality-AWAY compared to the video gaming group. The psychological and cognitive aspect of being away was "enough" to enter a liminal state, though as discussed above, it seems there are multiple ways to different aspects of liminality. There was a difference in scores of insight, where the video gaming group scored significantly lower. This could be due to video gaming lacking the physical aspect of being away. We hypothesised that video gaming could be more cognitively demanding than friluftsliv activity, based on the literature, and therefore would possibly not provide the same cognitive space needed for insight to occur. However, it is more likely that there are different types of insight, and several paths to them, as well. Maybe the insight scale used in this study simply did not capture the type of insight video gaming could potentially provide.

H2: "Both friluftsliv and video gaming can provide attention restoration, finding high scores of all four ART components in both leisure activities." Both groups had high scores on all components ART consists of. Both leisure activities can provide a restorative environment, as expected. An important aspect of leisure activities is precisely restoration, the motive for partaking in leisure activities being recreation, taking a break from everyday life and refill of energy drained, and positive experiences, which seems to be the case in our sample of friluftsliv and video gaming activity partakers.

Interesting are the difference in scores of the subscale compatibility, where the friluftliv group found their leisure activities to be more compatible compared to the video gaming group. Perhaps the amount of demand of cognitive resources are the reason behind the difference between the two groups. Video gaming does provide, in general, an environment

and activity that are more cognitively challenging than the most common friluftsliv activities. Video games are designed to provide new goals to overcome to proceed, where some can be harder to accomplish than others, perhaps leading to perception of less compatibility- even when part of the motive behind playing are to overcome challenges. The friluftsliv activity, usually, do not demand the same turbulent or amount of challenge as in video gaming, making them perceive it as more compatible.

H3: "Both groups will have high scores of immersion, with no difference between groups in scoring". Both friluftsliv and video gaming groups had high scores on the subscale immersion, where there was no difference between the two leisure activities, as expected. Immersion is a type of engagement in an environment and/or activity, immersion describes the feeling of being lost in an experience. Immersion share many descriptions and qualities found in liminality and ART, where escape from "the real world", and towards something one finds enjoyable are key aspects. There are several prerequisites for immersion, one vital aspect is *wanting* for positive experience and choice of activity are motivated by just that - enjoyment. As such, it is no revelation finding high scores of immersion in either leisure activity group, as a motive for choosing a particular leisure activity is because it is something one like doing, to the level were one are not focused on anything else than what one is doing right there and then.

H4: "Both groups will have high scores of flow, with no difference between groups in scoring". No difference between scores of flow was found between groups, though neither group had as high flow scores as expected.

There are only five items in the GEQ flow sub-scale, it is reasonable to presume that they do not capture all aspects that the optimal experience consists of. Not all eight dimensions of flow need be present for experiencing flow, but to capture a potential flow experience we need to use a scale where all eight dimensions of flow are represented. In that

way we can be sure that flow is being measured and that the scores represents all the different aspects flow consists of.

The scale used in this study does capture aspects of flow, but it is almost certain that several aspects of flow are not represented in the GEQ scale. Flow contains eight dimensions, the GEQ subscale contain only five items, that seemingly captures the immersive part of flow, describing complete absorption in the activity performed- which is also what the definition of the last level in immersion is. In the introduction we wrote that flow might seem like an extreme version of immersion, but according to the literature it is not. Though it seems like this is the definition and aspect the GEQ flow subscale items captures. Not only does it mainly capture the immersive aspect of flow, but also the higher levels of immersion.

As such, we cannot draw the conclusion of flow not being a common aspect of positive experience found in the two leisure activities friluftsliv and video gaming. Another flow scale that contain items representing all dimensions of flow should be used to determine the presence of flow in friluftsliv activities and video gaming. It could be that the scores of flow in reality were higher than we found in this study, as it is possible aspects of flow that was actually present in the groups, was simply not measured and therefore would not have any influence on scores of flow. In hindsight, we believe that the Activity Flow State Scale (Payne, Jackson, Noh, & Stine-Morrow, 2011) could be a better alternative to measure flow in our chosen leisure activities, as it measures all dimensions of flow.

H5: "Scores of positive affect will be high in both groups, with no difference between the two groups". Both groups scored equally high on positive affect, with no difference between the two groups. Supporting the assumption of the leisure activities, friluftsliv and video gaming, being chosen of own volition, and chosen to be continued because they found them enjoyable, with mostly positive associations which increases the motivation to continue partaking in chosen activity.

H6: "Mind wandering will be present in both groups, however, scores of mind wandering might be higher in the friluftsliv group compared to the video gaming group". Both groups had low scores of mind wandering, and there was no difference between groups. The mind wandering scale used may not have been optimal in measuring mind wandering in our sample, as it was created to measure excessive mind wandering in ADHD. It clearly measures the type of mind wandering that is involuntary and non-productive, and the type that is likely most associated with negative affect and boredom - where the mind attempts to escape from an experience, environment and/or activity that are perceived as tedious and boring.

The type of mind wandering mentioned in the introduction that are voluntary and for the most part purposeful to a degree, could potentially be more prevalent in our sample of leisure activity doers, as it does seem to share somewhat similarities with escape, in that one is motivated to escape towards something positive. This could also show whether there are differences between the two groups in mind wandering, and further explore the idea that there is more cognitive room for the mind to wander in the more common friluftsliv activities, such as going for a walk, than in most video gaming activities, that are often created with the intention of inducing a state of flow.

H7: "Scores of boredom will be low in both groups, though scores of boredom might be higher in the friluftsliv group". Scores of boredom lay in the lower mid-range of the scale (1-4) in both groups, with no difference between friluftsliv activity and video gaming. It appears that boredom was not especially prevalent in either leisure activity group, indicating that overall, they are seemingly satisfied with the amount of challenge provided by the activity.

H8: "Scores of negative affect will be low in both groups, with no difference between the two groups". Both groups scored equally low on negative affect, with no difference between the two groups. Further supporting the assumption of the leisure activities being

chosen of own volition, and because of finding them enjoyable.

In consideration of relationships among variables. Interpretations of relationships found among variables, based on literature, point towards this sample of leisure activity partakers not feeling themselves to experience the possible downside of immersion and flow, such as negative feelings and addiction. And feelings of being away and immersed in an environment and/or activity that is coherent, interesting and compatible, are likely important for positive experiences. As expected, and supportive of the literature review, the variables immersion, extent and fascination showed more positive associations with each other than nearly any other variables did, indicating measuring related and/or overlapping aspects of experience. The relationship between flow and extent were moderate, and higher than between flow and compatibility which we expected would have higher association with one another. Perhaps extent simply capture the factor of perceived compatibility between the qualities and elements in the environment in our sample. But being more similar to the flow dimension "balance between challenge and skill", like a sort of environmental flow-channel.

Not surprisingly, the ART components were positively associated with each other, appearing to follow a pattern, where the highest correlation coefficients were among fascination and extent, and among being away and fascination, whereas being away and compatibility has the lowest correlation coefficient. Meaning the components to correlate higher with their neighbour component, where skipping one component decrease the coefficient, skipping two components lead to further decrease. This makes sense, the four components of ART can be considered as steps toward restoration, where all contributes different necessary attributes in an environment and/or activity for it to be perceived as fully restorative, but they are still at the same time related and following a chronological order. Where each new step (component) fulfil the previous step, at the same time adding something new and leading to the next requirement and step.

The correlation analysis supported our theory that the three variables mind wandering, boredom and negative affect would have positive correlation coefficients with each other.

In consideration of reliability statistics. Reliability analysis of scales found nearly all scales to reach acceptable to excellent reliability, except for the ART subscale being away consisting of three items and the GEQ subscale negative affect consisting of five items.

There were differences between the friluftsliv group and video gaming group in reliability of some scales, Cronbach‘s alpha in the ART subscale being away were of particular notice, it seems that this subscale were a poor fit for the video gaming group in measuring being away, and therefore should be taken into consideration in interpretation of the standard multiple regression results, where we found only immersion to be a significant predictor of liminality in the video gaming group. The poor fit of the scale items in the subscale being away could very well be the reason why being away was not a predictor of liminality in the video gaming group, but in the friluftsliv group.

However, as the subscale consisted of few items, we should be careful in interpretation, few items can deflate the alpha value, so we cannot claim the subscale to be poor measures for our sample though we cannot claim it to be adequate either.

In conclusion, the two leisure activities friluftsliv and video gaming share more similarities than differences, and overall, supported the notion of leisure activities as something positive and enjoyable, providing break and escape from everyday life, and providing restoration. The two group activities provide different types of liminality, whereas Liminality–FREE is more likely to lead to insight, which the friluftsliv group scored high on, and significantly higher than the video gaming group. Though it is also likely that there exist different paths to different aspects of insight, which mean we cannot claim that video gaming activities does not provide insight, maybe we simply did not measure the type of insight that can possibly be found in video gaming. We also found that both friluftsliv and video gaming

to be restorative, in accordance to the four components of ART, here the perception of being away, as experienced in video gaming, is just as important as actually being away physically, such as in friluftsliv activities. Nature seem to provide a restorative environment since half our sample partook in activities in nature, and, compatibility is crucial in experiencing an environment and/or activity as restorative. So, yes, friluftsliv and as such, nature is good for us, in the right circumstances, however, other leisure activities such as video gaming can be just as good and beneficial for us psychologically as well.

Limitations

The study samples. We have no way of being completely sure that participants fulfilled the requirement we set of what defined as a leisure activity, or that they provided true and/or honest answers. The study sample represented a limited part of the general population, as both groups had an overrepresentation of male respondents. This is peculiar, as we know that, at least in video gaming, there is little to no difference in participation between genders. Though, in the video gaming group, this might be due to the fact that men are more likely than women to identify themselves as gamers. We did check whether there was any difference in scorings between genders, however finding none. This do not mean we can discard the possibility of there being differences between genders, as there were too few women in our sample, therefore not representing the equal gender distribution as the general population consists of. As such, there could potentially be a difference between genders, but not something our study can confirm, or deny, as our sample was not normally distributed. A larger sample size for future studies is advisable.

Language barriers. We received feedback from some participants that they felt some of the questions were strange, and/or that they did not completely understand what the questions asked. For example, several had trouble understanding item one in the leisure boredom scale “for me leisure time just drags on and on”. One asked if this meant if whether

he thought himself to have too much leisure time. It could be that we lost many potential respondents because the questionnaire was in English, and not Norwegian.

Implications

We are always experiencing something, and every experience has cognitive and emotional qualities that influence our feelings and thoughts, in different ways and to varying degrees. Some experiences have more impact than others, and the chosen leisure activities friluftsliv and video gaming seems to belong to the positive impactful experiences. Experiencing liminality was an important aspect found in both leisure activities, however the types of liminality achieved in the two leisure activities, and the way there, seems to be different. The path leading to positive experience in the friluftsliv group were feelings of being away psychologically, and compatibility between ones‘ goal, and inclination, and the environment/activity. Whereas the way to positive experience for the video gaming group were more characterised by feelings of immersion. The two types of liminality we identified, and named, in our study was Liminality-FREE and Liminality-AWAY. Our analyses found only Liminality-FREE, which the friluftsliv group experienced most, and more so than the video gaming group, to be the only of the two to predict the insight measured in this study. The friluftsliv also scored significantly higher on insight compared to the video gaming group. However, this does not necessarily mean that video gaming does not lead to insight, it might be that the scale we used to measure insight simply did not include the other possible existing types of insight. It could also be that the liminality scale did not capture all aspects of liminality that could possibly lead to the insight we measured. As such, further exploring and testing of liminality are advisable, before drawing any conclusions.

The same applies to the other variables tested, especially those scales that proved to be poor fit of measuring what they were supposed to, or what we wanted to measure, in this sample. This particularly applies to the flow scale and mind wandering scale used. We think

that flow might be of more importance than what the scale we used could measure, and that mind wandering might be more prominent in leisure experience, at least in the friluftsliv group, than we found. The mind wandering scale we used only measure the involuntary type of mind wandering, that can be compared to ART`s hard fascination, whereas voluntary mind wandering e.g., soft fascination could potentially, based on the literature, be prominent in leisure activities.

Initially we were surprised that liminality and insight did not positively correlate higher than they did, but further analysation of the results led to less surprise. Liminality and insight are indeed related, but this relation is more complex than we presumed. We believe that this implicate the two to be related, but also evidence of them being independent variables measuring separate aspects of experience. In addition to liminality, attention restoration and positive affect characterised both leisure activities experience most, and equally, with the exception of compatibility, where the friluftsliv group scored significantly higher relative to the video gaming group.

Conclusion

These findings are important not only in new findings regarding liminality, but also because it points to the potential significance liminality has for positive experiences. Our study is also supportive of certain environments and activities being restorative for us, indicating that it is an important aspect of partaking in leisure activities, to feel free and away from the aspects of everyday life we find tedious and tiresome. It also suggests that how we feel about an activity and what it provides us with, according to our goals, is more important than what type of activity it is – at least when it comes to friluftsliv and video gaming. Neither of these two leisure activities are “better” or “worse” than the other, psychologically and cognitively, what matters most in the end, are what *we* want to do, and being able to choose accordingly.

References

Allahverdipour, H., Bazargan, M., Farhadinasab, A., & Moeini, B. (2010). Correlates of video games playing among adolescents in an Islamic country. *BMC Public Health, 10*(286), 286. doi:10.1186/1471-2458-10-286

Atchley, R. A., Strayer, D. L., & Atchley, P. (2012). Creativity in the wild: improving creative reasoning through immersion in natural settings. *PloS One, 7*(12), e51474. doi:10.1371/journal.pone.0051474

Berto, R. (2005). Exposure to restorative environments helps restore attentional capacity. *Journal of Environmental Psychology, 25*(3), 249-259. doi:10.1016/j.jenvp.2005.07.001

Beyer, K. M., Kaltenbach, A., Szabo, A., Bogar, S., Nieto, F. J., & Malecki, K. M. (2014). Exposure to neighborhood green space and mental health: evidence from the survey of the health of Wisconsin. *International Journal of Environmental Research and Public Health, 11*(3), 3453-3472. doi:10.3390/ijerph110303453

Biolcati, R., Mancini, G., & Trombini, E. (2018). Proneness to Boredom and Risk Behaviors During Adolescents' Free Time. *Psychological Reports, 121*(2), 303-323. doi:10.1177/0033294117724447

Bloom, K. S., & Goodnow, J. (2013). Insight and the Travel Experience: An Exploration into the Contributions of Liminality. *Journal of Travel and Tourism Research, 13*(1/2), 143-157.

Brown, E., & Cairns, P. (2004). *A grounded investigation of game immersion*. Paper presented at the Extended abstracts of the 2004 conference on Human factors and computing systems - CHI '04.

Csikszentmihalyi, M. (1990). *Flow.*: HarperCollins Publishers.

Dahl, T. I., & Dalbakk, J. A. (2015). Whizzing through the High North: Motorists' Psychological Experience of the Countryside. *Scandinavian Journal of Hospitality*

and Tourism, 15(1-2), 8-28. doi:10.1080/15022250.2015.1015766

Duggan, M. (2015) "Gaming and Gamers." Pew Research Center. Available at: http://www.pewinternet.org/2015/12/15/gaming-and-gamers/

Ekman, P. (2004). *Emotions Revealed: Understanding Faces and Feelings*. London: Phoenix

Esteve, R., Martin, J. S., & Lopez, A. E. (1999). Grasping the meaning of leisure: developing a self-report measurement tool. *Leisure Studies, 18*(2), 79-91. doi:10.1080/026143699374961

Ferguson, C. J. (2007). Evidence for publication bias in video game violence effects literature: A meta-analytic review. *Aggression and Violent Behavior, 12*(4), 470-482. doi:10.1016/j.avb.2007.01.001

Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics* (J. Seaman Ed. Fifth ed.). University of Sussex, UK: SAGE Publications Ltd

Fredrickson, B. L. (2013). Positive Emotions Broaden and Build. In P. Devine & A. Plant (Eds.), *Advances in Experimental Social Psychology* (Vol. 47, pp. 1-53): Academic Press.

Gander, P., Purnell, H., Garden, A., & Woodward, A. (2007). Work patterns and fatigue-related risk among junior doctors. *Occupational and Environmental Medicine, 64*(11), 733-738. doi:10.1136/oem.2006.030916

Georgiou, Y., & Kyza, E. A. (2017). The development and validation of the ARI questionnaire: An instrument for measuring immersion in location-based augmented reality settings. *International Journal of Human-Computer Studies, 98*, 24-37. doi:10.1016/j.ijhcs.2016.09.014

Goodnow, J. M., & Bordoloi, S. (2017). Travel and Insight on the Limen: A Content Analysis of Adventure Travel Narratives. *Tourism Review International, 21*(3), 223-239. doi:10.3727/154427217x15022104437701

Gui, D., Xu, S., Zhu, S., Fang, Z., Spaeth, A. M., Xin, Y., . . . Rao, H. (2015). Resting spontaneous activity in the default mode network predicts performance decline during prolonged attention workload. *Neuroimage, 120*, 323-330. doi:10.1016/j.neuroimage.2015.07.030

Hartig, T., Korpela, K., Evans, G. W., & Garling, T. (1997). A measure of restorative quality in environments. *Scandinavian Housing & Planning Research, 14*(4), 175-194. doi:10.1080/02815739708730435

Hartig, T., Mang, M., & Evans, G. W. (1991). Restorative Effects of Natural-Environment Experiences. *Environment and Behavior, 23*(1), 3-26. doi:10.1177/0013916591231001

Hertzberg, K. A., Ø. & Vistad, O.I. (2001). *Evaluation of the consequences of the "White paper" 40 About Outdoor Recreation (1986/87).* NINA.

Hetland, A. (2016). *Why risk your life for fun? Capturing Emotions in Extreme Sport.* (PhD), UiT The Arctic University of Norway, Tromsø.

Howard-Jones, P. A., Jay, T., Mason, A., & Jones, H. (2015). Gamification of Learning Deactivates the Default Mode Network. *Frontiers in Psychology, 6*(1891), 1891. doi:10.3389/fpsyg.2015.01891

Iso-Ahola, S., & Crowley, E. D. (1991). Adolescent Substance Abuse and Leisure Boredom. *Journal of Leisure Research, 23*(3), 260-271.

Iso-Ahola, S. E., & Weissinger, E. (2018). Perceptions of Boredom in Leisure: Conceptualization, Reliability and Validity of the Leisure Boredom Scale. *Journal of Leisure Research, 22*(1), 1-17. doi:10.1080/00222216.1990.11969811

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. doi:10.1123/jsep.24.2.133

Jennett, C., Cox, A. L., Cairns, P., Dhoparee, S., Epps, A., Tijs, T., & Walton, A. (2008).

Measuring and defining the experience of immersion in games. *International Journal of Human-Computer Studies, 66*(9), 641-661. doi:10.1016/j.ijhcs.2008.04.004

Jennett, C. I. (2010). *Is Game Immersion Just Another Form of Selective Attention? An Empirical Investigation of Real World Dissociation in Computer Game Immersion.* (Doctor), UCL Retrieved from http://discovery.ucl.ac.uk/20225/1/20225.pdf

Johnston, E., & Olson, L. (2015). *The Feeling Brain: The Biology and Psychology of Emotions* New York: W.W. Norton & Company, Inc.

Kane, M. J., Brown, L. H., McVay, J. C., Silvia, P. J., Myin-Germeys, I., & Kwapil, T. R. (2007). For whom the mind wanders, and when: an experience-sampling study of working memory and executive control in daily life. *Psychological Science, 18*(7), 614-621. doi:10.1111/j.1467-9280.2007.01948.x

Kaplan, R. (2001). The nature of the view from home - Psychological benefits. *Environment and Behavior, 33*(4), 507-542. doi:10.1177/00139160121973115

Kaplan, R., & Kaplan, S. (1989). *The experience of nature: A psychological perspective.* New York: Cambridge University Press.

Kaplan, S. (1995). The Restorative Benefits of Nature - toward an Integrative Framework. *Journal of Environmental Psychology, 15*(3), 169-182. doi:10.1016/0272-4944(95)90001-2

Killingsworth, M. A., & Gilbert, D. T. (2010). A wandering mind is an unhappy mind. *Science, 330*(6006), 932. doi:10.1126/science.1192439

Klima- og miljødepartementet. (2018). *Handlingsplan for friluftsliv: Natur som kilde til helse og livskvalitet*. Retrieved from https://fido.nrk.no/d1bc5cd305029703d21fc37c04772ee106e18255469ea0664181fdb21356e564/Handlingsplan%20for%20friluftsliv%202018.pdf.

Langner, R., & Eickhoff, S. B. (2013). Sustaining attention to simple tasks: a meta-analytic

review of the neural mechanisms of vigilant attention. *Psychological Bulletin, 139*(4), 870-900. doi:10.1037/a0030694

Leszczynski, M., Chaieb, L., Reber, T. P., Derner, M., Axmacher, N., & Fell, J. (2017). Mind wandering simultaneously prolongs reactions and promotes creative incubation. *Scientific Reports, 7*(1), 10197. doi:10.1038/s41598-017-10616-3

Løvoll, H. S., Røysamb, E., Vittersø, J., & Zourbanos, N. (2017). Experiences matter: Positive emotions facilitate intrinsic motivation. *Cogent Psychology, 4*(1). doi:10.1080/23311908.2017.1340083

Mason, M. F., Norton, M. I., Van Horn, J. D., Wegner, D. M., Grafton, S. T., & Macrae, C. N. (2007). Wandering minds: the default network and stimulus-independent thought. *Science, 315*(5810), 393-395. doi:10.1126/science.1131295

Miljødepartementet, K.-o. (2018). *Handlingsplan for friluftsliv: Natur som kilde til helse og livskvalitet*. Retrieved from https://fido.nrk.no/d1bc5cd305029703d21fc37c04772ee106e18255469ea0664181fdb21356e564/Handlingsplan%20for%20friluftsliv%202018.pdf.

Miljøverndepartementet. (2000-2001). *Friluftsliv- Ein veg til høgare livskvalitet*. (39). Retrieved from https://www.regjeringen.no/no/dokumenter/stmeld-nr-39-2000-2001-/id194963/sec1.

Mittner, M., Boekel, W., Tucker, A. M., Turner, B. M., Heathcote, A., & Forstmann, B. U. (2014). When the brain takes a break: a model-based analysis of mind wandering. *Journal of Neuroscience, 34*(49), 16286-16295. doi:10.1523/JNEUROSCI.2062-14.2014

Moore, E. O. (1981). A Prison Environment's Effect on Health Care Service Demands. *Journal of Environmental Systems, 11*(1), 17-34. doi:10.2190/km50-wh2k-k2d1-dm69

Mowlem, F. D., Skirrow, C., Reid, P., Maltezos, S., Nijjar, S. K., Merwood, A., . . . Asherson,

P. (2019). Validation of the Mind Excessively Wandering Scale and the Relationship of Mind Wandering to Impairment in Adult ADHD. *J Atten Disord, 23*(6), 624-634. doi:10.1177/1087054716651927

Mrazek, M. D., Phillips, D. T., Franklin, M. S., Broadway, J. M., & Schooler, J. W. (2013). Young and restless: validation of the Mind-Wandering Questionnaire (MWQ) reveals disruptive impact of mind-wandering for youth. *Frontiers in Psychology, 4*, 560. doi:10.3389/fpsyg.2013.00560

Murphy, C. (2011). Why Games Work and the Science of Learning *Alion Science and Technology.*

Mutz, M., & Muller, J. (2016). Mental health benefits of outdoor adventures: Results from two pilot studies. *Journal of Adolescence, 49*, 105-114. doi:10.1016/j.adolescence.2016.03.009

Mygind, L., Hartmeyer, R., Kjeldsted, E., Mygind, E. & Bentsen, P. (2018). Viden om friluftslivs effekter på sundhed – resultater fra en systematisk forskningsoversigt. Retrieved from Friluftsrådets hjemmeside: Friluftsraadet.dk/publikationer

Norling, J. C., Sibthorp, J., & Ruddell, E. (2008). *Perceived Restorativeness for Activities Scale (PRAS): Development and Validation* (Vol. 5).

Oatley, K. (2009). Communications to Self and Others: Emotional Experience and its Skills. *Emotion Review, 1*(3), 206-213. doi:10.1177/1754073909103588

Ohman, A., Flykt, A., & Esteves, F. (2001). Emotion drives attention: Detecting the snake in the grass. *Journal of Experimental Psychology-General, 130*(3), 466-478. doi:10.1037/0096-3445.130.3.466

Payne, B. R., Jackson, J. J., Noh, S. R., & Stine-Morrow, E. A. (2011). In the zone: flow state and cognition in older adults. *Psychology and Aging, 26*(3), 738-743. doi:10.1037/a0022359

Pearson, D. G., & Craig, T. (2014). The great outdoors? Exploring the mental health benefits of natural environments. *Frontiers in Psychology, 5*(1178), 1178. doi:10.3389/fpsyg.2014.01178

Poels, K., de Kort, Y. A. W., & IJsselsteijn, W. A. (2007). D3.3 : Game Experience Questionnaire: development of a self-report measure to assess the psychological impact of digital games.

Posso, A. (2016). Internet Usage and Educational Outcomes Among 15-Year-Old Australian Students. *International Journal of Communication, 10*, 3851-3876.

Pretty, J., Peacock, J., Hine, R., Sellens, M., South, N., & Griffin, M. (2007). Green exercise in the UK countryside: Effects on health and psychological well-being, and implications for policy and planning. *Journal of Environmental Planning and Management, 50*(2), 211-231. doi:10.1080/09640560601156466

Pretty, J., Peacock, J., Sellens, M., & Griffin, M. (2005). The mental and physical health outcomes of green exercise. *International Journal of Environmental Health Research, 15*(5), 319-337. doi:10.1080/09603120500155963

Richards, A., & Blanchette, I. (2004). Independent manipulation of emotion in an emotional stroop task using classical conditioning. *Emotion, 4*(3), 275-281. doi:10.1037/1528-3542.4.3.275

Qualtrics. (2005). Utah, USA: Qualtrics. Retrieved from http://www.qualtrics.com

Schell, J. (2008). *The Art of Game Design: A Book of Lenses*: Elsevier Inc.

Scherer, K. R. (2016). What are emotions? And how can they be measured? *Social Science Information, 44*(4), 695-729. doi:10.1177/0539018405058216

Seah, M.-l., & Cairns, P. (2007). From immersion to addiction in videogames.

Smallwood, J., Fitzgerald, A., Miles, L. K., & Phillips, L. H. (2009). Shifting moods, wandering minds: negative moods lead the mind to wander. *Emotion, 9*(2), 271-276.

doi:10.1037/a0014855

Smallwood, J., McSpadden, M., & Schooler, J. W. (2008). When attention matters: the curious incident of the wandering mind. *Memory and Cognition, 36*(6), 1144-1150. doi:10.3758/MC.36.6.1144

Smallwood, J., Mrazek, M. D., & Schooler, J. W. (2011). Medicine for the wandering mind: mind wandering in medical practice. *Medical Education, 45*(11), 1072-1080. doi:10.1111/j.1365-2923.2011.04074.x

Statistisk sentralbyrå. (2017, 27. oktober). Idrett og friluftsliv, levekårsundersøkelsen. Available at: https://www.ssb.no/kultur-og-fritid/statistikker/fritid

Steimer, T. (2002). The biology of fear- and anxiety-related behaviors. *Dialogues in Clinical Neuroscience, 4*(3), 231-249.

Tennessen, C. M., & Cimprich, B. (1995). Views to Nature - Effects on Attention. *Journal of Environmental Psychology, 15*(1), 77-85. doi:10.1016/0272-4944(95)90016-0

Turner, V. (1969). *The Ritual Process. Structure and Anti-Structure*. New York: Cornell University Press.

Tyng, C. M., Amin, H. U., Saad, M. N. M., & Malik, A. S. (2017). The Influences of Emotion on Learning and Memory. *Frontiers in Psychology, 8*, 1454. doi:10.3389/fpsyg.2017.01454

Ulrich, R. S. (1999). Effects of gardens in health outcomes: theory and research. *Healing Gardens*, 27-86.

Valtchanov, D., Barton, K. R., & Ellard, C. (2010). Restorative effects of virtual nature settings. *Cyberpsychol Behav Soc Netw, 13*(5), 503-512. doi:10.1089/cyber.2009.0308

van Tilburg, W. A. P., & Igou, E. R. (2011). On boredom: Lack of challenge and meaning as distinct boredom experiences. *Motivation and Emotion, 36*(2), 181-194. doi:10.1007/s11031-011-9234-9

Veblen, T. (1899). *The Theory of Leisure Class*. New York: Macmillan.

Vodanovich, S. J., & Watt, J. D. (2016). Self-Report Measures of Boredom: An Updated Review of the Literature. *Journal of Psychology, 150*(2), 196-228. doi:10.1080/00223980.2015.1074531

Vuilleumier, P. (2005). How brains beware: neural mechanisms of emotional attention. *Trends in Cognitive Sciences, 9*(12), 585-594. doi:10.1016/j.tics.2005.10.011

Witmer, B. G., & Singer, M. J. (1998). Measuring presence in virtual environments: A presence questionnaire. *Presence-Teleoperators and Virtual Environments, 7*(3), 225-240. doi:10.1162/105474698565686

World Health Organization. (2018, September). Gaming disorder. Retrieved from https://www.who.int/features/qa/gaming-disorder/en/

Zhang, Y., & Kumada, T. (2017). Relationship between workload and mind-wandering in simulated driving. *PloS One, 12*(5), e0176962. doi:10.1371/journal.pone.0176962

Appendix A

Friluftsliv Questionnaire

Consent Form

Your experience of a recent friluftsliv activity

Introduction

Friluftliv is the Norwegian word for time spent outdoors in nature doing leisure activities such as walking, hiking, climbing and paddling. If you have engaged in a friluftsliv activity that lasted at least 2 hours, relatively recently, we invite you to tell us about that experience. People engage in friluftsliv for different reasons, most people probably do it because they find it enjoyable or as a means of exercise. We are interested in finding out exactly why people find it enjoyable and to see if there might be other reasons people choose to participate in this activity. You can help us do this by telling us how you experience friluftsliv based on an activity you have recently participated in.

Purposes of the Study

The purpose of this study is to learn more about friluftsliv as a leisure activity, where your answers will be compared to other leisure activities.

Description of Procedures

This study involves answering this questionnaire on your experiences regarding your leisure activity, and will take approximately 12 minutes for you to complete.

Risks and Discomforts

There are no known or expected risks for participating in this study, and you may decide at any time to quit the study.

Benefits

By answering these questions you may gain new insights in how one experience friluftsliv.

What we learn will be useful in the development of a deeper understanding about what motivates us to participate in different activities.

Confidentiality

Any information about you that is obtained as a result of your participating in this research will be kept as confidential as legally possible. In any publications that result from this research, neither your name nor any information from which you might be identified will be published without your consent.

Voluntary Participation

Participating in this study is voluntary. You are free to withdraw your consent to participate in this study at any time. Completing the questionnaire constitutes your consent to participate.

You have been invited to be in this research study, conducted by Ingelin Settemsdal Torjul in the Department of psychology at UiT, The Arctic University of Norway. This research is being conducted to fulfil the degree requirements for completing a master`s degree of psychology at UiT, The Arctic University of Norway, under the supervision of Dr. Tove Irene Dahl.

Gender:

- Male.
- Female.
- Other.

Age:

_____

Think back to the last time you engaged in a friluftsliv activity that lasted at least 2 hours or more and answer the following questions in relation to that particular activity.

Approximately how many days ago did you do this activity?

_____

What was the duration of this activity?

- 2-3 hours.
- 4-5 hours.
- 6-7 hours.
- 8-9 hours.
- 10 hours or longer.

What activity did you engage in?

_____

Did you do the activity with others?

- Yes.
- No.

If so, how many?

_____

If so, who were they?

- Friend.
- Stranger.
- Did the activity alone.

During these last months, how often have you on average engaged in a friluftliv activity?

- Once a month or less.
- Couple times a month.
- At least once a week.
- 2-3 times a week.
- 4-5 times a week.
- 6-7 times a week or more.

From now on, we will refer to this activity as the "target activity" and ask you to always refer back to this particular activity when answering the questions.

For the next questions, think about the target activity that you just described. How well do the statements below fit you or the experience of that activity?

PR(A)S	Not at all (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Very much (7)
1.The friluftsliv activity was an experience for me.	○	‹	‹	‹	‹	‹	○
2. The friluftsliv activity gave me a good break from my day-to-day routine.	○	‹	‹	‹	‹	‹	○
3. The friluftsliv activity helped me get relief from unwanted demands on my attention.	○	‹	‹	‹	‹	‹	○
4.The friluftsliv activity had many fascinating qualities.	○	‹	‹	‹	‹	‹	○
5. My attention was drawn to many interesting things during the friluftsliv activity.	○	‹	‹	‹	‹	‹	○
6. For me the friluftsliv activity was a captivating experience.	○	‹	‹	‹	‹	‹	○
7. For me the friluftsliv activity had qualities that drew me further in.	○	‹	‹	‹	‹	‹	○
8. The more I walked (hiked, paddled, biked, skied etc.) the more I wanted to explore it.	○	‹	‹	‹	‹	‹	○
9. The friluftsliv activity sustained my interest.	○	‹	‹	‹	‹	‹	○
10. I have a sense that I belong here.	○	‹	‹	‹	‹	‹	○
11. I could do things I like to do during the friluftsliv activity.	○	‹	‹	‹	‹	‹	○
12. The friluftsliv activity suited my personality.	○	‹	‹	‹	‹	‹	○

Think about your target activity and rate the degree to which you agree or disagree with each of the following statements:

Boredom scale	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
1. For me leisure time just drags on and on.	○	○	○	○	○
2. During my leisure time, I become highly	○	○	○	○	○

involved in what I do.					
3. Leisure time is boring.	○	○	○	○	○
4. If I could retire now with a comfortable income, I would have plenty of exciting things to do for the rest of my life.	○	○	○	○	○
5. During my leisure time, I feel like I`m just biding my time.	○	○	○	○	○
6. In my leisure time, I usually don`t like what I`m doing, but I don`t know what else to do.	○	○	○	○	○
7. Leisure time gets me aroused and going.	○	○	○	○	○
8. Leisure experiences are an important part of my quality of life.	○	○	○	○	○
9. I am excited about leisure time.	○	○	○	○	○
10. In my leisure time, I want to do something, but I don`t know what I want to do.	○	○	○	○	○
11. I would like to try new leisure activities that I have never tried before instead of the friluftsliv activity.	○	○	○	○	○
12. I am very active during my leisure activity.	○	○	○	○	○

13. The leisure time activity do not excite me.	○	○	○	○	○
14. I do not have many leisure skills.	○	○	○	○	○
15. During my leisure time, I almost always have something to do.	○	○	○	○	○

Think about the last time you engaged in a friluftsliv activity and rate the degree to which you agree or disagree with each of the following statements:

GEQ	Not at all (1)	Slightly (2)	Moderately (3)	Fairly (4)	Extremely (5)
1. I felt completely absorbed.	○	○	○	○	○
2. I forgot everything around me.	○	○	○	○	○
3. I lost track of time.	○	○	○	○	○
4.I was deeply concentrated in the friluftsliv activity.	○	○	○	○	○
5. I lost connection with the outside world.	○	○	○	○	○
6. I was interested in everything between the beginning and the end of the friluftsliv activity.	○	○	○	○	○
7. It was aesthetically pleasing.	○	○	○	○	○
8. I felt imaginative.	○	○	○	○	○
9. I felt that I could explore things.	○	○	○	○	○
10. I found it impressive.	○	○	○	○	○

11. It felt like a rich experience.	○	○	○	○	○
12. I thought about other things.	○	○	○	○	○
13. I found it tiresome.	○	○	○	○	○
14. I felt bored.	○	○	○	○	○
15. I was distracted.	○	○	○	○	○
16. I was bored by the friluftliv experience.	○	○	○	○	○
17. I felt content.	○	○	○	○	○
18. I could laugh about it.	○	○	○	○	○
19. I felt happy.	○	○	○	○	○
20. I felt good.	○	○	○	○	○
21. I enjoyed it.	○	○	○	○	○

For the following questions, indicate how strongly you disagree or agree that each statement accurately describes your experience of the target activity. When engaged in friluftsliv activities, how often do you experience the following?

MEWS	Rarely (1)	Some of the time (2)	Most of the time (3)	Nearly all the time (4)
1. I have difficulty controlling my thoughts.	○	○	○	○
2. I find it hard to switch my thoughts off.	○	○	○	○
3. I have two or more different thoughts going on at the same time.	○	○	○	○
4. My thoughts are disorganised and "all over the place".	○	○	○	○
5. My thoughts are "on the go" all the time.	○	○	○	○
6. I experience ceaseless mental activity.	○	○	○	○

7. I find it difficult to think about one thing without another thought entering my mind.	○	○	○	○
8. I find my thoughts are distracting and prevent me from focusing on what I am doing.	○	○	○	○
9. I have difficulty slowing my thoughts down and focusing on one thing at a time.	○	○	○	○
10. I find it difficult to think clearly, as if my mind is in a fog.	○	○	○	○
11. I find myself flitting back and forth between different thoughts.	○	○	○	○
12. I can only focus my thoughts on one thing at a time with considerable effort.	○	○	○	○

For the following questions, indicate how strongly you disagree or agree that each statement accurately describes your experience of the target friluftsliv activity. During the activity, I…

Liminality (items 1-6) and insight (items 7-17)	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
1. Felt free to act, think, and be, my authentic self without concern of judgement from others.	○	○	○	○	○
2. Felt like I don`t have to worry about disappointing others.	○	○	○	○	○
3. Felt free to be myself, think what I want, and do what I want without the fear	○	○	○	○	○

of judgements from others.					
4. Felt free from all the judgements of family, friends, society, and the culture visited.	○	○	○	○	○
5. Entered into a new, novel, or different world that is physically or environmentally very different from home.	○	○	○	○	○
6. Felt free from the daily routines of my ordinary life at home and spent my time on new and novel things.	○	○	○	○	○
7. Discovered a better way to live life.	○	○	○	○	○
8. Discovered that simple living is happy living.	○	○	○	○	○
9. Figured out how to be happy.	○	○	○	○	○
10. Discovered a new perspective.	○	○	○	○	○
11. Discovered personal strengths.	○	○	○	○	○
12. Discovered life`s meaning, purpose or direction.	○	○	○	○	○
13. Discovered my place in the world.	○	○	○	○	○
14. Realized something important regarding myself.	○	○	○	○	○

15. Figured out how little I need to be happy.	○	○	○	○	○
16. Experienced a connection to nature.	○	○	○	○	○
17. Experienced a connection to a higher power.	○	○	○	○	○

Thank you for your time / Takk for deltakelsen.
Comments or other feedback regarding this questionnaire can be written below, or you can send mail to ito015@uit.no / Kommentar eller ellers tilbakemelding angående dette spørreskjemaet kan skrives under, eller ta kontakt direkte ved mail, ito015@uit.no

_____

Gaming Questionnaire

Your experience of a recent gaming activity

Introduction

Gaming is the action or practice of playing video games, and a very common leisure activity. People game for different reasons, most people probably do it because they find it enjoyable. We are interested in finding out exactly how people find it enjoyable and to see if there might be other reasons people choose to game. You can help us do this by telling us how YOU experience gaming based on an activity you have recently participated in.

Purposes of the Study

The purpose of this study is to learn more about gaming as a leisure activity, where your answers will be compared to other leisure activities.

Description of Procedures

This study involves answering this questionnaire on your experiences regarding your leisure activity, and will take approximately 13 minutes for you to complete.

Risks and Discomforts

There are no known or expected risks for participating in this study, and you may decide at any time to quit the study.

Benefits

By answering these questions you may gain new insights in how one experience gaming. What we learn will be useful in the development of a deeper understanding about what motivates us to participate in different activities.

Confidentiality

Any information about you that is obtained as a result of your participating in this research will be kept as confidential as legally possible. In any publications that result from this research, neither your name nor any information from which you might be identified will be published without your consent.

Voluntary Participation

Participating in this study is voluntary. You are free to withdraw your consent to participate in this study at any time. Completing the questionnaire constitutes your consent to participate.

This research study is being conducted by Ingelin Settemsdal Torjul from the Department of psychology at UiT The Arctic University of Norway. It is a part of her work necessary to fulfil the degree requirements of a Master`s Degree of Psychology. Her supervisor is Dr. Tove

Irene Dahl. If you have any questions or comments about the study, you may send an email to either of them at ito015@post.uit.no or tove.dahl@uit.no.

Gender:

- Male.
- Female.
- Other.

Age:

_____

Think back to the last time you gamed for at least 2 hours or longer, and answer the following questions in relation to that session.

How long did the gaming session last?

- 2-3 hours
- 4-5 hours
- 6-7 hours
- 8-9 hours.
- 10 hour or longer.

Approximately how many days ago did you do this activity?

_____

What game did you play?

_____

Were you interacting with others during the game?

- Yes.
- No.

If so, how were you interacting with others?

- Chat (text).
- Voice chat.
- Physically in the same room.
- Didn`t interact with others.

If so, how many?

_____

If so, who were they?

- Friend.
- Stranger.
- Gamed alone.

During these last months, how often have you played on average?

- Once a month or less.
- Couple times a month.
- At least once a week.
- 2-3 times a week.
- 4-5 times a week.
- 6-7 times a week or more.

From now on, we will refer to this activity as the "target activity" and ask you to always refer back to this particular activity when answering the questions.

For the next questions, think about the target activity that you just described. How well do the statements below fit you or the experience of that activity?

PR(A)S	Not at all	2	3	4	5	6	Very much
1. The gaming activity was an experience for me.	○	○	○	○	○	○	○
2. The gaming activity gave me a good break from my day-to-day routine.	○	○	○	○	○	○	○

3. The gaming activity helped me get relief from unwanted demands on my attention.	○	○	○	○	○	○	○
4. The gaming activity had many fascinating qualities.	○	○	○	○	○	○	○
5. My attention was drawn to many interesting things while gaming.	○	○	○	○	○	○	○
6. For me the gaming activity was a captivating experience.	○	○	○	○	○	○	○
7. For me the gaming activity had qualities that drew me further in.	○	○	○	○	○	○	○
8. The more I played the more I wanted to explore it.	○	○	○	○	○	○	○
9. The gaming activity sustained my interest.	○	○	○	○	○	○	○
10. I have a sense that I belong here.	○	○	○	○	○	○	○
11. I could do things I	○	○	○	○	○	○	○

like to do during the gaming activity.							
12.The gaming activity suited my personality.	○	○	○	○	○	○	○

Think about your target activity and rate the degree to which you agree or disagree with each of the following statements:

Boredom	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
1. For me leisure time just drags on and on.	○	○	○	○	○
2. During my leisure time, I become highly involved in what I do.	○	○	○	○	○
3. Leisure time is boring.	○	○	○	○	○
4. If I could retire now with a comfortable income, I would have plenty of exciting things to do for the rest of my life.	○	○	○	○	○
5. During my leisure time, I feel like I`m just biding my time.	○	○	○	○	○
6. In my leisure time, I usually don`t like what I`m doing, but I don`t know what else to do.	○	○	○	○	○
7. Leisure time gets me aroused and going.	○	○	○	○	○

8. Leisure experiences are an important part of my quality of life.	○	○	○	○	○
9. I am excited about leisure time.	○	○	○	○	○
10. In my leisure time, I want to do something, but I don`t know what I want to do.	○	○	○	○	○
11. I would like to try new leisure activities that I have never tried before instead of gaming.	○	○	○	○	○
12. I am very active during my leisure activity.	○	○	○	○	○
13. The leisure time activity do not excite me.	○	○	○	○	○
14. I do not have many leisure skills.	○	○	○	○	○
15. During my leisure time, I almost always have something to do.	○	○	○	○	○

Think about the last time you gamed and rate the degree to which you agree or disagree with each of the following statements:

GEQ	Not at all	Slightly	Moderately	Fairly	Extremely
1. I felt completely absorbed.	○	○	○	○	○
2. I forgot everything around me.	○	○	○	○	○

3. I lost track of time.	○	○	○	○	○
4. I was deeply concentrated in the game.	○	○	○	○	○
5. I lost connection with the outside world.	○	○	○	○	○
6. I was interested in the game`s story.	○	○	○	○	○
7. It was aesthetically pleasing.	○	○	○	○	○
8. I felt imaginative.	○	○	○	○	○
9. I felt that I could explore things.	○	○	○	○	○
10. I found it impressive.	○	○	○	○	○
11. It felt like a rich experience.	○	○	○	○	○
12. I thought about other things.	○	○	○	○	○
13. I found it tiresome.	○	○	○	○	○
14. I felt bored.	○	○	○	○	○
15. I was distracted.	○	○	○	○	○
16. I was bored by the story.	○	○	○	○	○
17. I felt content.	○	○	○	○	○
18. I could laugh about it.	○	○	○	○	○
19. I felt happy.	○	○	○	○	○
20. I felt good.	○	○	○	○	○
21. I enjoyed it.	○	○	○	○	○

When engaged in gaming activities, how often do you experience the following?

MEWS	Rarely	Some of the time	Most of the time	Nearly all the time
1. I have difficulty controlling my thoughts.	○	○	○	○
2. I find it hard to switch my thoughts off.	○	○	○	○
3. I have two or more different thoughts going on at the same time.	○	○	○	○
4. My thoughts are disorganised and "all over the place".	○	○	○	○
5. My thoughts are "on the go" all the time.	○	○	○	○
6. I experience ceaseless mental activity.	○	○	○	○
7. I find it difficult to think about one thing without another thought entering my mind.	○	○	○	○
8. I find my thoughts are distracting and prevent me from focusing on what I am doing.	○	○	○	○
9. I have difficulty slowing my thoughts down and focusing on one thing at a time.	○	○	○	○
10. I find it difficult to think clearly, as if my mind is in a fog.	○	○	○	○
11. I find myself flitting back and forth between different thoughts	○	○	○	○
12. I can only focus my thoughts on one thing at a time with considerable effort.	○	○	○	○

For the following questions, indicate how strongly you disagree or agree that each statement accurately describes your experience of the target activity. During the activity, I…

Liminality and insight	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
1. Felt free to act, think, and be, my authentic self without concern of judgement from others.	○	○	○	○	○
2. Felt like I don`t have to worry about disappointing others.	○	○	○	○	○
3. Felt free to be myself, think what I want, and do what I want without the fear of judgements from others.	○	○	○	○	○
4. Felt free from all the judgements of family, friends, society, and the culture visited.	○	○	○	○	○
5. Entered into a new, novel, or different world that is physically or environmentally very different from home.	○	○	○	○	○
6. Felt free from the daily routines of my ordinary life at home and spent my time on new and novel things.	○	○	○	○	○

7. Discovered a better way to live life.	○	○	○	○	○
8. Discovered that simple living is happy living.	○	○	○	○	○
9. Figured out how to be happy.	○	○	○	○	○
10. Discovered a new perspective.	○	○	○	○	○
11. Discovered personal strengths.	○	○	○	○	○
12. Discovered life`s meaning, purpose or direction.	○	○	○	○	○
13. Discovered my place in the world.	○	○	○	○	○
14. Realized something important regarding myself.	○	○	○	○	○
15. Figured out how little I need to be happy.	○	○	○	○	○
16. Experienced a connection to nature.	○	○	○	○	○
17. Experienced connection to a higher power.	○	○	○	○	○

Thank you for your time / Takk for deltakelsen.

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