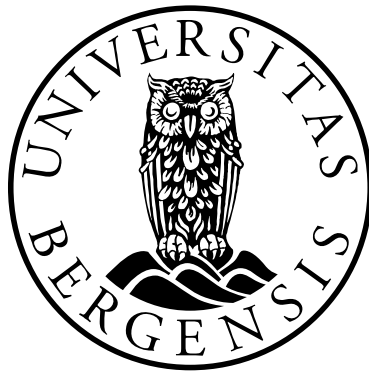


Inside the Outdoor Experience

On the distinction between pleasant and interesting feelings and
their implication in the motivational process

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Volda, February, 2016

Helga Synnevåg Løvoll

Abstract

Inspired by the functional well-being approach (Vittersø, 2013a, 2013b), this study set out to explore the distinction between hedonic and eudaimonic dimensions of feeling states to understand more about the variety and richness of experiences in the outdoors. Sixty-four first-year students of a combined sports- and outdoor bachelor education were followed over three semesters to identify the qualities of hiking experiences and the influence of these experiences on intrinsic motivation and choice between future sport education or outdoor education. Two hiking experiences were a compulsory part of the program: A three-day coastal hike, including camping and practical seamanship, and a three-day skiing hike in the mountains in the wintertime, including training on safety in potential snow avalanche areas.

The event reconstruction method, as a version of the day reconstruction method, was applied to measure peak episodes, whole-day experiences, and remembered experiences. A replication of experience measurements was conducted in a second sample following a group of 26 outdoor students on a five-day introduction course to glacier hiking. In the identification of experiences that are empowering, important, or positive, Paper I set out to investigate the role of challenges and skills. The challenge–skill ratio (CSR) was tested on series of positive feeling states. The analysis results revealed that against mainstream theory, the CSR was a poor predictor model for subjective experiences in general. With regard to the relationship between challenges and skills, support for an imbalance theory was found: An imbalance toward higher skills produces more feelings of pleasure, while an imbalance toward higher challenges partly shows correlation with interest. The balance condition between high challenges and high skills did not appear to predict the best positive experiences in any of the 24 tests. The results indicate that research needs to be nuanced to different concepts of positive functioning.

In an exploration of different valences of experiences, exemplified by pleasure and interest, and different time perspectives of the experiences, Paper II set out to investigate the relation between peak episodes, whole-day experiences, and remembered experiences. Peak episodes were coded into seven different groups of

experiences. Sixty percent of the reported peak episodes related to “exercising basic outdoor skills” typically reported as more interesting than pleasant. The remaining 40% of the episodes all had in common that they were typically more pleasant than interesting. In the memorial process, factor analysis revealed that interest and pleasure had different dynamics over time and that interest approached the factor of pleasure but not vice versa. A path model explained that interest had a predictor role on pleasure over time, and this effect was stronger as time went by. Thus, interesting experiences feel more pleasant as time goes by. Furthermore, the findings replicate earlier studies on the importance of remembered experiences as the best predictor of prospective motivation.

Paper III had an overall aim of analyzing the influence of emotion in the motivational process of choosing a major. The importance of positive emotions in motivation regulation is well known, but the knowledge of new experiences in the causal chain of self-determination is limited. Analysis revealed that positive emotions had a direct effect on intrinsic outdoor motivation. Analyzed in two separate regression models, the isolated effect from new positive emotions on intrinsic motivation could account for a 12% increase in intrinsic motivation when controlling for the effect from previous intrinsic motivation. Furthermore, while positive emotions from the second event correlated with outdoor choice, a logistic regression analysis revealed that only intrinsic outdoor motivation predicted outdoor choice. The indirect influence of situational emotion seemed to influence this process.

The findings underscore the importance of new positive experiences in the motivational process and, moreover, how these emotions internalize into patterns of intrinsic motivation. The PhD thesis contributes to empiric knowledge and theory improvement in several areas of understanding “the good hiking experience” but also understanding and measuring positive emotion within the concept of well-being. The findings of how positive emotions induce, change over time, and build intrinsic motivation have practical implications for outdoor leaders or guides in making informed choices and paying attention to emotions during and after events. The findings are also important for public health in understanding the motivational dynamics of outdoor engagement.

List of publications

- Løvoll, H. S., & Vittersø, J. (2014). Can balance be boring? A critique of the “challenges should match skills” hypotheses in flow theory. *Social Indicators Research*. *115*, 117-136. doi: 10.1007/s11205-012-0211-9
- Løvoll, H. S., Vittersø, J., & Wold, B. (2016). Experiencing the outdoors: peak episodes are interesting but the memories are pleasant. *Journal of Adventure Education and Outdoor Learning*. *16*, 269-284. doi: 10.1080/14729679.2015.1122541
- Løvoll, H. S., Røysamb, E., & Vittersø, J. (submitted). Experience matters: Emotions facilitate intrinsic motivation.

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1. Introduction

Right now the arctic mood belongs solely to me. I own the mountains; the sky begins expanding an inch above my shoulders. The solitude creates a rapture inside me.

Creak, creak, my boots advance. Until, for the last time, I halt, turning a circle, gazing all around. I don't want to lose it, I suppress feelings of loss. Perhaps I can't ever reproduce the satisfaction of this moment; maybe I'll never again have such reverence for life. It doesn't matter. The most precious gifts often dissolve off my fingertips within a moment of their triumphs....
(Nichole, 1989, p. 75)

1.1 The significance of emotion in Friluftsliv

In this thesis, I will explore how experiences in the outdoors influence our memories, motivations, and choices. According to humanistic psychology, there are moments in human consciousness that are particularly important in the existential perspective of self-actualization, meaning, identity, and spirituality (Maslow, 1961, 1968, 1976). Nature experiences potentially cover an existential dimension of human beings, as expressed in the quote above. Hence, in the approach to understanding good or important experiences, a complex theoretical understanding of positive experiences is needed. There is more to human flourishing than "happy feelings." Picking out only the hedonic dimension might mean a reduction of other important dimensions, such as meaning, identity, and growth.

The growing literature on refined approaches to positive experiences in psychology argue for the need to distinguish between hedonia and eudaimonia, inspired by the Aristotelian critique of hedonia as philosophy of the good life (Deci & Ryan, 2008b; Huta & Ryan, 2010; Kashdan, Biswas-Diener, & King, 2008; Ryff & Singer, 2008; Waterman, 1993, 2013; Wolsko & Lindberg, 2013). Positive experiences are positive evaluations but are not necessarily related to the affective

dimension, at least not in the moment. Hence, hedonia and eudaimonia refer to different dimensions of a good life, where hedonia typically is about situational happiness with pleasant feelings, while eudaimonia typically is about personal growth and the philosophical meaning of a good life.

When studying outdoor experiences, there is always the danger of reducing a complex experience, a gestalt experience, into parts. Philosophers, like Arne Næss, warn us about reductionism, claiming that the human *self* cannot be reduced to the dynamics inside the body; it necessarily involves a wider perspective of how humans connect with the world (Næss, 1976, 1986). However, to understand how we connect with nature, the role of attention seems to be central. This insight is known from early writings of William James: “*My experience is what I agree to attend to. Only those items that I notice shape my mind—without selective interest, my experience is an utter chaos*” (James, 1890, p. 402, italics in original). Hence, our attention includes both the effect of the environment and culture but also subtle mental processes, as our attention is like a “stream of thoughts,” using the vocabulary of James. This stream of thoughts might connect us to nature if we attend to nature by selective interest.

While human separation from nature is one kind of reductionism, other dangers of reductionism are present in the conceptualization of human consciousness. Looking at human connection to nature by studying the relationship between human beings and nature in terms of *construction of meaning* can lead to metaphysical antirealism (Ziman, 2002). While the study of the relationship between nature and human beings can have an ambition of seeing the relation as a gestalt, this is a position in which the basis function of emotion in consciousness might be overlooked. Consciousness cannot only relate to the contexts of meaning because the role of emotion is *more* than a response to meaning (Lazarus, 1991b). For example, positive emotions, as opposed to negative emotions, have the function of broadening our attention and building resources, which is an argument for the existence of an emotion-driven component to well-being (Fredrickson, 2004; Fredrickson & Branigan, 2005). There are mental processes that influence our perception and well-being that do not relate to our intentional thinking. In understanding the dynamics of human consciousness, we need to understand both how feelings emerge as a result of

intentional meaning and how feelings are related to our perception of well-being, memory, and motivations. These dynamics in human consciousness do not necessarily need an explanation of the causation of cultural meanings. Thus, the normativity of meanings have other explanations than the fact that positive emotions might occur in the body with its own communication system, which influences general human functioning.

Accordingly, we need to have two parallel approaches to human consciousness that are inseparable but at the same time possible to study separately: the role of intended attention and the role of affect (Searle, 1999). These systems are influenced by human will as well as biological systems that coexist. While the relation between these systems is a dependent one, the systems tend to have different explanations. However, the communication goes both ways: from intended will to emotion and from emotion to intend will. Thus, a non-reductionist approach to human consciousness includes the interplay between emotion and cognition. In this view, the cognitive approach has been the underlying paradigm, while the emotional approach has been somewhat less developed (Hidi, Renninger, & Krapp, 2004).

1.1.1 Experiences, temporality, and research angle

The term “experience” is in lay language often related to a gestalt approach (“this hike was a good experience”), but when trying to operationalize experiences in order to investigate how feelings follow patterns of stability and change, there are many challenges related to the way we perceive information. For example, there are differences between how we perceive the moment as compared to how we remember the experience. This is identified as the “experience-memory gap” (Miron-Shatz, Stone, & Kahneman, 2009). There are also differences in how we think of an event from close and distant perspectives: we seem to think in a more value-oriented and global way about events in the distant future, while we think more affectively about events in the near future (Trope & Liberman, 2003). Hence, there is confusion in understanding the central components of a good outdoor experience. For example, the idea of what an “experience” is increases in complexity when pinpointing “optimal experiences” (flow experiences) as a distinct kind of gestalt experience different from

the everyday life experience (Csikszentmihalyi, 1975; Csikszentmihalyi & Csikszentmihalyi, 1990).

This thesis is a contribution to the knowledge on the outdoor experience, which is sensitive to the distinction between hedonia and eudaimonia, but also explores different aspects of temporality and evaluation in the perception of a good experience. Furthermore, this thesis will explore how positive emotions influence the motivational process leading to educational choice. To understand the complexity of outdoor experiences, the term “Friluftsliv” appears to be important in understanding the difference between eudaimonic and hedonic components, as this word from lay language includes implicit understandings of emotional nature experiences. Moreover, Friluftsliv as presented in educational programs includes different ideas regarding the basis of a good experience, both philosophically and psychologically. This thesis aims to bring knowledge to educators about making informed didactical choices when communicating “experiences” within groups.

1.1.2 On the concept of Friluftsliv

In the Nordic outdoor education discourse, Friluftsliv is a description of a phenomenon that goes beyond simply being outdoors (Henderson & Vikander, 2007). There is normativity in the interpretation of this phenomenon. In addition to being away from modern civilization and being in the presence of natural environments, Friluftsliv might include a particular state of being mindful about the presence of nature, but this association is not systematically investigated, as the interpretation of the word most often relates to *values* and *discourses* (see, for example, Backman, 2010). The word first appeared in the poem “On the Heights” (Ibsen, 1871). In the perspective of the whole poem (70 verses), the concept Friluftsliv appears to be a *state of mind*, including distance from everyday life, sense experiences, freedom, reflections on death, transcendence, and future visualization (my interpretation). The more recent distinction between *slow experiences* and *fast (or post-modern) adventure* further illustrates qualitative differences among outdoor experiences (Gelter, 2010, Varley & Semple, 2015). Hence, the term Friluftsliv relates to different intentionality, typically associated with *philosophical meaning*.

1.1.3 Experience as emotion

When approaching the word “experience,” there are at least two main interpretations. One interpretation involves the activity (by the Latin word *experientia* – to try), and the other interpretation involves *awareness*, which implies the observation of the event (Gilbert, 2006). Doing an activity and reflecting on this activity often go nicely together: e.g., “Yesterday, I went hiking on a nearby mountain. There was a beautiful view from there.” However, there are important differences in understanding these different phenomena. In this thesis, the chosen perspective is to understand more of our awareness in relation to Friluftsliv. How we think of an event, as conscious emotions, is valuable to understanding motivational dynamics as well as perceptions of well-being. As our awareness is trapped by systems of neglect, false memories, and illusions, the evaluation of event needs to include both the short- and the long-term perspective of the experience.

Stern (2004) discusses the “present moment” as a holistic story of phenomenological and objective qualities that makes an emotion rise and fall. This normally has a duration of three to five seconds. The sensation of, for example, happiness is then thus just a glimpse of a feeling. However, complex experiential states refer to terms of *awareness* more than affective states. In this interpretation, the “moment of meeting” is another more long-lasting approach (Stern, 2004). Emotion covers these short moments as well as awareness of situations. Moreover, while we are not able to choose them, we are able to modify, interpret, and vary their implications. For example, we can choose activities that maximize some kinds of emotions and minimize others (Oatley, 1992). Furthermore, one can argue that there are some core descriptions of the typicality of emotion; for example, that “an emotion is a state of readiness that has a phenomenological tone” (Oatley, 1992, p. 77). Inspired by Oatley, emotions here are viewed as functional, leading to readiness for certain behavior.

For the thesis, I chose a definition of emotion that includes the *emotion process*, which differs from emotion theories, including evolutionary theories or social and culture theories of emotion. However, regarding emotions as a *process*, there is a difference between cognitive theories and non-cognitive theories. Cognitive

theories concern individual and temporal variability in the perception of stimuli. For example, beliefs, goals, and desires influence the way we feel (Roseman, 1984). Roseman suggests a model of cognitive appraisal, where five appraisal components can produce 14 discrete emotions. These appraisals are motivational state, situational state, probability, power, and agency. This model has inspired several appraisal theorists, such as Lazarus (1991a) and Sherer (2009). On the other hand, non-cognitive theories suggest that bodily changes are a part of the emotional process. According to Damasio, feelings as bodily responses are helpful in making decisions and choosing our actions (Damasio, 1999). The feedback from the body is then essential in producing an emotion. However, while there are overlaps between the cognitive and non-cognitive approach to emotions, theories can be criticized as being inconsistent (Johnson, 2015).

In the general picture of understanding emotion processes, Oatley (1992) suggests a communication theory of emotions that includes several aspects of appraisal as well as bodily responses. Inspired by this thinking, emotions communicate on different levels. First, they communicate with us and tend to constrain our actions. For example, when sub-goals are being achieved, this is associated with the emotion of happiness. When a major plan fails, this goes with sadness. Second, they communicate to others through facial and bodily signals, which prompts their continuation or transition. Third, by talking about emotion, we semantically communicate within ourselves and to others. Moreover, Oatley argues that emotions have a consciousness-raising function in helping us to find our goals and build models of goal structures (Oatley, 1992, p. 89). This goes along with the view that the body and mind are closely related and that through the study of emotion, we can understand more about being human (Nussbaum, 2003).

Second, when we experience an emotion, we make a unified mental conclusion, which includes a semantic content with a distinctively emotional tone and readiness (Oatley, 1992, p. 77). While Oatley is clear on this point, others are more unclear in understanding the role of emotion and attention. For example, Bruya (2010) suggests a two-dimensional model of attention including diffuse and selective attention (p. 225). By diffuse attention he refers to the relevance of context and

expectations. This leads to a two-way process of top-down and bottom-up responses. However, while the role of attention is central in understanding emotion, there are alternative models explaining one emotion at the time; in selective attention, interest is typical (Tomkins, 1970), and in broadened attention, pleasure is typical (Carver, 2003), which prompts us to take up a new set of goals and actions.

Third, emotions form around a biological basis. The *occasions* for these states depend strongly on culture (Oatley, 1992, p. 119). For example, feeling states during Friluftsliv are biologically determined, but why some people feel “happy” and others feel “frightened” in exactly the same situational frames of experience is culturally and socially dependent. This goes along with the philosophical understanding of consciousness in which emotion can be studied both as intention and also as affect (Searle, 1999). There is a typical connection between events and emotions: “...61% of emotions were elicited by events involving action or lack of action by the subjects or by other people. Moreover, 77% of the emotion episodes were classifiable as occurring in relation to achievement, losses, frustrations, and threats” (Oatley, 1992, p. 102). Taking an emotion approach to outdoor experiences translates well to psychology.

Making a working definition of emotion includes self-reports of subjective experiences, measured as expressions of intensity on a cluster of feelings. Hence, “emotion” refers to a heterogeneous cluster of diverse theories, taking an “everyday” perspective of emotional dynamics. Moreover, the emotional perspective includes feeling states as moments of affect and dispositional states (traits) as a more stable emotional structure. This working definition of emotion is perhaps less sensitive to the phenomenological “being in the world” approach, represented by Husserl (1964/1990). There is, for example, a difference between transcendental and empirical approaches to phenomena like outdoor experiences. To understand how positive emotions emerge, the existential approach to feel *embodied* (Allen-Collinson & Leledaki, 2014; Bischoff, 2012) or to have *spiritual experiences* (Jirásek, Jirásková, Majewská, & Bolcková, 2014) supplement the understanding of how emotional experiences can be caused. Hence, the conceptualization of *feelings* can be criticized as a subjectivist approach to a phenomenon that needs to be studied in a

more complex manner (Halak, Jirasek, & Nesti, 2014). The danger, however, lies in whether feelings are considered as epistemologically and ontologically “true” or not when explaining this phenomenon. Taking the perspective of Searle (1999), feelings can be caused by many different reasons, but we need to be clear that the dynamics of feelings and the causes of feelings are two distinct approaches that can be studied simultaneously. The strength of the working definition is having a precise conceptual understanding to study dynamics like stability and change in temporal phases of the experience. To summarize, “emotions are a part of the solution to problems of organizing knowledge and action helpful in living in a world that are imperfectly known and in which we have limited resources” (Oatley, 1992, p. 3). Hence, emotion is not meaningless or in the periphery to human functioning; it is the core center of human cognition in understanding how we strive to reach our goals and our general functioning.

1.1.4 The complexity of positive emotion

In general, positive emotion is an important component of human well-being. For example, positive emotion triggers an upward spiral of well-being (Fredrickson & Joiner, 2002). Positive emotion builds our thought-action repertoire (Fredrickson, 2004) and positive emotion has a repairing function in the face of threats (Fredrickson, Mancuso, Branigan, & Tugade, 2000). Furthermore, the content of positive emotion in daily life can be trained, leading to increased well-being (Fredrickson, 2000a; Otake, Shimai, Tanaka-Matsumi, Otsui, & Fredrickson, 2006). In a recent study of distinct positive emotions (i.e., discrete positive emotions), *awe* was the strongest predictor of lower levels of proinflammatory cytokines (Stellar et al., 2015). The dispositional positive feeling of awe thus relates to physical health.

However, empirical investigations of positive emotion in the field of positive psychology are criticized as “so riddled with concept confusion and naïveté, that we had better pause and sort things out before going any further” (Nussbaum, 2008, p. 108). For example, one recommendation on how to get a better life include five dimensions: Positive emotions, Engagement, positive Relationships, Meaning and Achievement (PERMA), (Seligman, 2011). However, this advice is different from,

for example, advice about engaging in global politics, which might include a risk of reversal and misery, i.e., arguments that place helping other people, working for peace, or helping fix global environmental crises as *primary motivational goals*. According to Aristotle, negative emotion also has a function, for example, it is linked to empathy: “People who have never faced their own weakness, and who think, optimistically, that they are not very likely to suffer, tend to have little compassion for the suffering of others” (Nussbaum, 2008, p. 97). Hence, understanding the depth of a good experience in the perspective of normative good involves psychological as well as philosophical considerations.

Which inclusion criterion a researcher uses as the component of feeling states is a choice between several possibilities. This normativity might be implicit (“taken for granted”) or explicit (articulated assumptions) (Henriksen, 2011). While early approaches to well-being had a hedonic approach with a focus on how it feels from moment to moment (for example, Kahneman, Diener, & Schwarz, 1999), this implicit approach to happiness has been criticized for being too narrow (Alexandrova, 2005; Kahneman & Riis, 2007; R. M. Ryan, Curren, & Deci, 2013; Ryff, 1989, 2013). It does not necessarily feel good to strive for happiness. High levels of performance often have costs, such as hard practice, discipline, renunciation, and pain, but these experiences can still be very meaningful and can lead to deep levels of happiness.

One of the hallmarks of a positive experience is the theory of flow experience (Csikszentmihalyi, 1975, 1990). In understanding what constitutes a good life, the ability to be *completely absorbed* seem to be a characteristic factor, later described as “effortless attention” (Csikszentmihalyi & Nakamura, 2010). The term “flow” was originally used as a metaphor by respondents describing their feelings while involved in their favorite activity (Csikszentmihalyi, 1988, p. 8). Many characteristics are associated with this “optimal experience.” Originally, these characteristics include merging of action and awareness, centering of attention, loss of self-consciousness, the feeling of control, coherent noncontradictory demands and autotelic nature (Engeser, 2012, p. 3). Other versions of the theory include clear goals, concentration, balance between challenges and skills, immediate feedback, sense of control, merging of action and awareness, loss of self-consciousness, sense of time becomes distorted,

and the experience becomes autotelic (Csikszentmihalyi, 1996, 2002; Jackson & Csikszentmihalyi, 1999). However, while these are characteristics of flow, the question of what induces flow concerns validity issues in translating the subjective phenomenology of flow into a scientific standardization. Flow experiences typically concern positive emotions and ideas of happiness (Csikszentmihalyi, 2002).

However, the role of attention seems to be an important factor in understanding these dynamics. Based on neuropsychology, the core of flow is characterized by arousal, which connects to motivational seeking and dopamine release in the midbrain, which can be present until half an hour after a trigger experience (Ashby, Isen, & Turken, 1999). However, understanding the *emotional process of flow* challenges the idea of positive emotion as being a unified concept. Different phases of the experience require different action readiness. The dopamine release and feeling of happiness typically occur *after* being absorbed in a situation, indicating an emotional process of different phases.

Emotional experiences in the *outdoors* are described in the international experience literature by several theories. The original theory of flow experiences is a common basis for understanding emotional “highs” in outdoor adventures (Boniface, 2000; Csikszentmihalyi & Csikszentmihalyi, 1990; Delle Fave, Bassi, & Massimini, 1999; Hall, Smith, & Nelson, 2007; Magnussen, 2011; Priest, 1990; Wurdinger & Priest, 1999). Other theories that seek to explain positive emotions during outdoor experiences include *peak* experiences. Maslow describes peak experiences as “moments of highest happiness and fulfilment” (1968, p. 73). These experiences are rare and typically associated with existential meanings. Typically, these experiences occur during outdoor experiences (Maslow, 1974; McDonald, Wearing, & Ponting, 2009; Ravizza, 1977; C. Ryan, Trauer, Kave, Sharma, & Sharma, 2003). Other notations of peaks represent the idea that “extraordinary experiences” are what tourists seek. *Nature qualities* and *nature aesthetics* are identified as inducers of extraordinary experiences, in comparison to socializing or the activity itself (Farber & Hall, 2007).

The theory of peak *performance* includes mastering high level skills (Jackson & Roberts, 1992). However, the similarities and differences between different kinds

of emotional highs within these different concepts is complex (Privette, 1983, 2001). By including the distinction between micro flow as *high levels of arousal and affect*, as well as a *general sense of positive experience* (O. C. Davis, 2010) and the fact that deep flow and long-term engagement in tasks requires high skills, typically by controlling a situation in a highly absorbed manner (Csikszentmihalyi, 1975, 1990), the question of the typologies of positive experiences becomes even more complex.

The inherent contrasts in the concept of positive emotion require sharper attention in order to understand the core qualities of awareness. Although there is an expectation that happiness goes with flow experience (Csikszentmihalyi, 1975, 2002), peak experience (Maslow, 1968), and peak performance (Privette, 1983, 2001), the observation of happiness seems to be unclear due to time perspective but also due to affective feelings. The term happiness seems to be very wide. For example, the three concepts of positive experiences are similar in covering a scope of qualities such as absorption, involvement, joy, valuing, self-identity, responsibility, spontaneity, freedom, awareness of power, and loss of time and space temporality (Privette, 1983, p. 1366). To understand more about the functions of positive emotions in Friluftsliv, a more refined empirical approach to emotional fluctuation can contribute to this picture. This includes the distinction between hedonic and eudaimonic components as well as more refined approaches to temporal variability and their implication in the motivational process.

Hence, an in-depth approach to positive emotion is necessary. This includes philosophical arguments as well as implications for interpreting outdoor experiences and well-being. For example, is there a difference in how distinct positive emotion is processed in consciousness over time? In the further work, I will explore the predictors, valences, and general influence of positive emotion in relation to motivations and choices. In the investigation of the role of *experiences* in the outdoors, I will refer to the *emotional* experience. Further, the terms feeling, emotion, and affect will appear interchangeably.

1.2 Theory

1.2.1 On the distinction between hedonia and eudaimonia

In general, positive emotions are likely to be associated with several different activities and situations in the natural setting. Looking for contrasts, there seems to be a difference between those who relate to learning and using skills and those who relate to relaxing activities. A major question in the concept of positive experiences is whether the feeling of happiness is an *end in itself* (pleasant feelings, hedonia), or if happiness is a *side effect* of good actions (philosophical meaning, eudaimonia). This is a philosophical question.

In ancient Greek philosophy, the study of happiness or a good life has its own word, *eudaimonia*. Etymologically, it consists of the words *eu* (good) and *daimōn* (spirit) and can be translated as blessedness, happiness, and prosperity (MacIntyre, 1984, p. 148). For Aristotle, the good man is the man who strives toward excellence based on human capabilities. Opposed to Plato, for whom excellence was related to the ideas, Aristotle argued that every organism had the possibility of reaching its fully potential: “the virtue of a human being will (likewise) be the state that makes human being good and makes him perform or function well” (Aristotle, trans. 1992, p. 255). Furthermore, the *activities* make the virtues alive. In doing good actions, the state of happiness is achieved. Aristotle argued that there are three conditions in the soul: feelings, capacities, and states. Virtue is neither feelings nor capacities, but states. By states, he means being well or badly off in relation to feelings (Aristotle, trans. 1992, p. 254).

The decision of what is good in every situation relates to some extent to general rules, but Aristotle argued that we need deliberative practice and emotional and social skills that fit into the interpretation of a new situation that is not within the general rules. *Virtues* are fundamental in Aristotle’s eudaimonia. However, virtues are not necessarily in contradiction to pleasure. He refuted that pleasure is not present in a virtuous life but argued that there are other pleasures than those of the senses (book VII). Those who have the capacity for excellent activity experience the best pleasures. The highest good for Aristotle meant practicing virtue, defined within the

particular situation, as a necessary and sufficient condition of eudaimonia: “It is the state of being well and doing well in being well, of a man’s being well-favored himself and in relation to the divine” (MacIntyre, 1984, p. 148).

Typically, eudaimonia is about striving for excellence, but standards of excellences are different from one situation to another. Taking the activity of skiing, this could relate to striving for excellence related to *skill development*, but there is also an ethical perspective on the *goodness of this activity*. Aristotle made the distinction between these approaches. While skill development can be related to *poiesis* (rule-based knowledge), with *techne* as the activity of moving from a beginner to an expert, this knowledge does not, for example, include good judgements within this skill (Carr, 1987). Including personal experience and intellectual knowledge into the situation, this is not only about skills but also a deeper contextual understanding. For example, a skier might have good skills in skiing, but this does not lead to good judgments in behavior in alpine areas, including danger of snow avalanches. This judgment includes a deep contextual understanding, in addition to personal reflection and technical skills, called *phronesis* (wisdom). Typically, when identifying *praxis*, the activity relating to phronesis, there are certain standards of excellence that exist. For example, there is a difference between throwing a football with skill (*poiesis*) and the game of football (*praxis*), where standards of excellence exist (Macintyre & Dunne, 2002). In the outdoor context, *praxis* can be related to the *phenomenon of Friluftsliv* where standards of excellence exist (Løvoll, 2009). The counter-movement of environmentalism that is typical for some outdoor education programs (Devall, 1991; Taylor, 2001) is moreover a eudaimonic approach in making the experience a moral journey by ethical standards of behavior. The relevance of outdoor education within educational institutions is furthermore legitimated as *striving* for eudaimonia:

What outdoor experiential learning *can* do well is to provide a new way of seeing, by creating space for participants to better know themselves and others, and become more aware their moral journey. In Aristotelian terms, experiential

learning can create opportunities for students and educators to develop their own *phronesis*. (Stonehouse, Allison, & Carr, 2009, p. 36)

Hence, the outdoor context has a huge potential for eudaimonia in seeking activities for the soul and striving for *phronesis* as the practical and moral knowledge.

There was no consensus regarding the content of eudaimonia in Aristotele's time. For example, Aristippus was probably the most scandalous of Socrates' followers, arguing that the good life was the pleasant life, including sense pleasures like those of old wine, fine food, and sleeping with courtesans (O'Keefe, 2005). A good life included maximum pleasure and not being involved in trouble. With his founding of the Cyrenaic school, the philosophy of *hedonism* was further articulated. Jeremy Bentham later represents the hedonic view with *utilitarianism*: the greatest happiness principle is the predominance of pleasure over pain both on the individual level and for the largest number of people. The best outcome for most people in a specific situation is thus the better choice. As a social reformer, his project was to produce happiness for all people, including women, slaves, and so on (Bentham, 1789). This idea contradicted the ideas of deontological ethics, for example, represented by Immanuel Kant (1724-1804), which argued for the value of exchanging individual happiness for the idea of being a dutiful person (Morgan, 1992).

Later, John Stuart Mill widened the utilitarian approach and criticized Bentham, arguing that creative self-development is central to personal character. He claimed that the question of happiness cannot be reduced to pleasure alone, that happiness has an intrinsic value identified by introspection, and that our understanding of happiness must rely on a careful and honest examination of our feelings and motives (Heydth, 2006). Mill further makes a distinction between "high" and "low" pleasure. Still, the question of happiness from the utilitarian approach is directed toward the pleasantness of a *particular experience*, not setting the experience in a wider ethical contextual frame (Tiberius, 2013). Taking the hedonic perspective on outdoor experiences, they typically contain many elements of coziness or having fun in the moment: being in good company, having a nice view, the nice smell of

flowers, generally feeling good, enjoying a nice meal, or making a cup of coffee over the campfire.

While the contrasts between eudaimonia and hedonia refer to different perspectives of a good experience, there are also strong arguments for the coexistence of both hedonic and eudaimonic dimensions. The question of a good life and life experiences has many layers of complexity, including thinking and feeling, taking short- and long-term perspectives, psychological needs, and ethical considerations. Taking a non-reductionist perspective on consciousness, Nussbaum (2003) argues how emotions influence the way we think and that understanding these dynamics makes us human. Eudaimonic and hedonic concepts of feeling states appear in different contexts, leading to emotional conflicts as well as feelings of harmony. Both concepts of feeling states are important in our interactions with our environment. Life experiences are like a stream of always shifting feelings, and they all carry different information.

The “good hiking experience” might have elements of both hedonia and eudaimonia, and the optimally good hiking experience might include the right combination of these in relation to the individual’s self-development and preferences. In the mapping of positive emotions in the outdoor field, the confusion between hedonic and eudaimonic elements make this a complex task. However, while “theory as a map” is the position of Nussbaum, an alternative way is to make “map as a theory” through empirical investigations (Ziman, 2002). As this is a goal of psychological science, empirical differences between hedonic and eudaimonic components can shed light over the theory of positive emotions.

1.2.2 Operationalizing hedonic and eudaimonic components

Inspired by the discourse on eudaimonic and hedonic elements, there are reasons to study the distinction between feeling states closer. Theoretically, it is argued that hedonia and eudaimonia overlap conceptually, and in the lack of good definitions, the distinction do not translate well to science (Kashdan et al., 2008). Empirically, some researchers point out that the correlation between hedonic and eudaimonic feelings is high. An example is $r = .79$ when measured as self-reports of a

post measure after an intervention of loving-kindness meditation (Fredrickson et al., 2013). However, there are philosophical reasons to treat the two concepts differently, and there are also empirical challenges in operationalizing this. When approaching outdoor experiences, the separation between hedonic and eudaimonic elements seems to be an important factor as there are huge differences between feelings concerning different intentionality, like “canoe rescuing in cold water” versus “enjoying the sunshine.” Hence, a bottom-up investigation of the differences in hedonic and eudaimonic feeling states would contribute to the discussion on how the state feeling of eudaimonia can be meaningfully conceptualized.

In early well-being research, the term “subjective well-being” (SWB) appears as a term on how people evaluate their lives (Diener, 1984). The definition of SWB involved cognition (evaluation of how life is considered as a whole) and affect (positive and negative). Later, the measure of “life satisfaction” was established as a cognitive approach to happiness, measured by the Satisfaction With Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985). Utilized on the outdoor experience, this measure relates to *how satisfied we are with life in general and how we feel about life in the outdoor moment*. Life satisfaction as an outcome measure of happiness has been criticized as being biased by a hedonistic evaluation of life, measuring the long-term balance between positive and negative affect and the immediate balance (Keyes, Shmotkin, & Ryff, 2002). Later, Diener developed the concept of subjective well-being to a hierarchical model, including an evaluation of pleasant emotions, unpleasant emotions, global life judgements, and domain satisfaction (Diener, Scollon, & Lucas, 2009, p. 71). However, the measure of life satisfaction, by the original SWLS, is an important factor for a good life. Although life satisfaction might not be sensitive to the whole picture of happiness, life satisfaction is central to *hedonic well-being*, and there are certain components in the experience that are important for this dispositional measure. For example, the feeling state of *pleasure* was typically related to life satisfaction (Vittersø & Søholt, 2011). Thus, the SWLS is an important measure of dispositional hedonic feelings and goes along with state measures of pleasure.

With regard to the eudaimonic contributions to well-being theory, this typically relates to attitudes toward domains in life. For example, the idea of intrinsic motivation from the self-determination theory (SDT) links to eudaimonia, labeled as “eudaimonic well-being” (R. M. Ryan & Deci, 2001; R. M. Ryan, Huta, & Deci, 2008). Eudaimonia is connected to four different concepts of motivation: 1) pursuing intrinsic goals for their own sake, 2) behaving autonomously, 3) being mindful, and 4) behaving for satisfaction of basic needs (autonomy, relatedness, and competence) (R. M. Ryan et al., 2008). Thus, the SDT draws on ideas of eudaimonia, and among the consequences of this orientation is pro-social behavior. Furthermore, need satisfaction relates to a flourishing life, including daily and situational conditions. Leisure time generates well-being, which is explained by detachment-recovery, autonomy, mastery, meaning, and affiliation as mediators of increase in subjective well-being (Newman, Tay, & Diener, 2014). Typically, this description would apply to outdoor experiences as a kind of leisure experience.

However, the empirical distinction between hedonia and eudaimonia for a good life is not straightforward. In eudaimonic well-being theory, hedonia is about positive affect, which plays an important role within a thriving life (Huta & Ryan, 2010; R. M. Ryan et al., 2013). Moreover, eudaimonia and hedonia can be considered as better when combined rather than cultivating only one of them (Huta, 2013). Regarded as a *personal motive*, eudaimonia is more related to the longer-term perspective and feeling more engaged with concerns, while hedonia refers to immediate outcomes and seems to be most important in the moment (Huta & Ryan, 2010). In this theory, the evaluation of eudaimonia is cognitive in the perspective of long-term goals, compared to hedonia, which is affective.

Flow experiences can be considered as state experiences of eudaimonic well-being while striving toward meaningful goals (Waterman, Schwartz, & Conti, 2008). Moreover, flow experiences based on harmonious passion relate to positive emotions (Philippe, Vallerand, Andrianarisoa, & Brunel, 2009). In refined approaches to psychometric reliability on the predictors of flow experiences, researchers have more recently questioned the general role of *challenges and skills*. For example, in a systematic review of 17 flow publications, focus, thoughts, and/or emotions were the

most-reported factors that generally influence flow occurrence, and these were not necessarily related to challenges and skills (Swann, Keegan, Piggott, & Crust, 2012). Another study, inspired by reversal theory, suggests that motivation is a bistable meta-motivational state and that challenges and skills seem to be more relevant during *telic* motivation, *when goals are clearly articulated*, in contrast to *paratelic* motivation, which is a *more spontaneous and emotional state* where challenges and skills were less important (Houge Mackenzie, Hodge, & Boyes, 2011). The overall concept of flow carries great potential for well-being, yet the scientific concept suffers from being unclear in several ways. A clarification of the core elements of flow is necessary before general predictors of flow experience can be translated into the outdoor field.

1.2.3 Challenges, skills, and prediction of positive emotions

Although there are scholars who argue for the existence of moderators and preconditions of challenges and skills (Engeser & Rheinberg, 2008; Moneta, 2004) or other functional dynamics, such as in chaos theory and nonlinear dynamics (Ceja & Navarro, 2009), there are strong reasons for testing the main idea in flow theory: the idea that challenges and skills are important predictors of the positive (outdoor) experience. Challenges and skills are one of the core presentations of flow experience in the current literature. Hence, the application of a challenge–skill balance model to the outdoor field might be a false approach to the prediction of positive experiences.

When deciding the influence of challenges and skills for positive experiences, a clear understanding of the dependent variables is necessary. This question relates to the temporal understanding of the “experience” as well as the ontological understanding of what a good experience is. Is the good experience all about positive feelings, or is the good experience also about good actions? Moreover, is distinct emotion constant during different phases of the experience? These questions need more attention. However, emotions are central in the study of consciousness as these carry information about what our attention is directed to. A “bottom-up” approach to understanding the complex dynamics in our thinking and behavior through the study of *emotional fluctuation* can contribute to understanding our intentional mind. The

intention with Paper I was to empirically test challenge–skill balance as a predictor of positive experiences.

With regard to experiences as fluctuating from one moment to another, the idea of challenges and skills as a kind of navigation compass between different experiential states has been presented in the original theory of flow (Csikszentmihalyi, 1975, 1990). A prediction model of flow was originally explained in a three-channel diagram, with the tipping zones of *boredom* having higher skills and *anxiety* having higher challenges (see, for example, Csikszentmihalyi, 1975; Csikszentmihalyi, 2002, p. 74). Furthermore, the relation between challenges and skills is argued to be the primary condition of flow (Jackson & Csikszentmihalyi, 1999; J. A. Schmidt, Shernoff, & Csikszentmihalyi, 2007). The challenge–skill interpretation of modelling flow is widespread when presenting the idea of flow experience. For example, a Google search of “flow challenge–skill balance” November 19, 2015 led to 85,100,000 hits, indicating that this model is very popular.

The Adventure Experience Paradigm

The idea that flow experiences are a goal in outdoor programs has resulted in a prediction model where the adventure experience (flow experience) translates into a model with two dimensions. More specifically, as an interpretation of flow theory and the application to the outdoor field, challenges have been translated to risk and skills have been translated to competence in the “Adventure Experience Paradigm” (Csikszentmihalyi & Csikszentmihalyi, 1990; Priest, 1990). The interpretation from “challenges and skills” to “risk and competence” is empirically found to be a reliable construct in the outdoor context (Jones, Hollenhorst, & Perna, 2003). However, the perception of challenges and skills as the *primary predictors of flow* is a theoretical approach to flow experience that suffers from a lack of empirical evidence (Ellis, Voelkl, & Morris, 1994). Because challenges and skills are interpreted as the core dimension in the flow experience in the Adventure Experience Paradigm, there is a danger that the critical approach to these dimensions replenishes in thinking “flow = balance of challenges and skills.” Through this conceptualization, there might be a process of “reification” of risk–competence balance as identical with the concept of flow, which may be false.

The implications of using the Adventure Experience Paradigm might be that the outdoor leader or guide focuses on facilitating the participant to strive for new situations, including the assumed subjective risk that relates to the assumed competence level of the participant. Although the idea that flow experiences influence personal development is grounded in humanistic psychology, the consequences for the individual might be negative due to a lack of individual sensitivity (Berman & Davis-Berman, 2005; Leberman & Martin, 2003), a lack of safety equipment and instructions (Houge Mackenzie & Kerr, 2012), or a lack of questioning the value of the task in a wider ethical context. According to this model, there are many questions related to the prediction of positive emotions: 1) What kind of emotions does this paradigm produce? 2) Are the two dimensions, challenges and skills, producing the same kinds of positive emotions? (i.e., is this model actually predicting flow?)

The Experience Fluctuation Model

The idea that a regulation between challenges and skills can explain a variety of experiences has been further widened and refined into an eight-channel model, including the explanation of eight different experiences (EFM: the experience fluctuation model): arousal, flow, control, boredom, relaxation, apathy, worry, and anxiety (Massimini & Carli, 1988, p. 270). All these experiences translate as expressions of challenges and skills with eight different combinations:

Channel 1 (arousal) = challenges that are higher than high skills

Channel 2 (flow) = high challenges and high skills

Channel 3 (control) = high skills and medium challenges

Channel 4 (boredom) = high skills and few challenges

Channel 5 (relaxation) = lack of challenges and lack of skills

Channel 6 (apathy) = low challenges and low skills

Channel 7 (worry) = medium challenges and low skills

Channel 8 (anxiety) = challenges that are higher than medium skills

The model was later revised by the shift between channels 4 and 5, boredom and relaxation (Delle Fave, Massimini, & Bassi, 2011). The EFM thus aims to explain a broad scope of emotional experiences. Potentially, this model provides access to

emotional experience by the two single questions of challenges and skills, expressed within an interval of intensity, for example, in a Likert scale. However, few have questioned the general validity of the EFM.

Moreover, the relevance of challenges in a positive experience might not only be a question of subjective perception in the moment. For example, the willingness to seek challenges depends on personal dispositions identified with a growth-oriented mindset (Dweck, 2006). People with a fixed mindset, in contrast, seem to avoid challenges, as these are more threatening than wanted. Similarly, there are motivational differences in whether individuals have a motivational promotion focus or motivational prevention focus, where promoted-focused individuals are more likely to use opportunities for advancement (Lieberman, Molden, Idson, & Higgins, 2001), which is typically approached by seeking challenges. Consequently, the EFM-model seems to be insensitive to these factors.

1.2.4 Functional well-being: state feelings in the outdoors relate to general functioning

A media presentation of a young man coping with his mental suffering by kayaking the whole coast of Norway together with a friend for four months reported his experience as being 30% related to the performance of coming from A to B and 70% related to the pleasantness of being along the way (Høihjelle & Husebø, 2013). Although this is only one single person's experience, it is a rough illustration of how different positive feeling states interplay in overall functioning. Hence, a precise approach to distinct positive experiences is needed.

The Functional Well-Being Approach (FWBA) is not a new theory on well-being but a supplement in the discussion of the functions of feelings (Vittersø, 2013a, 2013b). Taking a functional perspective on feelings, there are systems of regulation that empower the strive for meaningful behavior, including the role of satisfaction (Vittersø, 2013a). In addition, both positive and negative feelings can be important and functional in a good life. Personal growth and development of skills are not necessarily pleasant or fun. However, on the other side, personal growth is not in

contradiction to feelings. Rather, feelings are helpful in striving for functional plans and goals.

Typically, both hedonia and eudaimonia are present in a good life, and this yields both dispositional states and feeling states. At the dispositional level, life satisfaction typically relates to hedonia, while state feelings typically relate to *pleasure* and *enjoyment* (Vittersø, 2013a, 2013b). The dispositional approach to eudaimonia would typically be personal growth, while typical state feelings would be *interest* and *engagement* (Vittersø, 2013a, 2013b). *Inspiration* is also identified as a eudaimonic state component, which is associated with personal growth at work (Straume & Vittersø, 2012). Applied to the outdoor context, the state feeling of pleasure typically goes with life satisfaction, while state feeling of interest goes with personal growth (Vittersø & Søholt, 2011). Nature experiences might have a more complex role in well-being than seeking peak and flow experiences because both hedonic and eudaimonic elements are present in a good life. Thus, how we engage with our environments is an important factor of well-being in capturing both hedonic and eudaimonic experiences. In this perspective, the role of challenges and skills in the prediction of positive experience needs to relate to general functioning.

Some of the differences between hedonic and eudaimonic feelings can be explained by scheme theory: higher degrees of complexity or conflict are, until a certain point, more attractive for the organism than lower degrees (Eckblad, 1981). However, rather than expressing a linear relationship between stimuli and arousal, Eckblad argues that there is a curvilinear relation between stimulus complexity and hedonic tone (p. 8). Thus, different kinds of feelings have different functions in relation to how we meet the complexity of a new situation based on our previous schemes (called assimilation resistance). For interest, it is typically about the existence of high stimulus complexity, until a certain tipping point, while for pleasure, attention is directed toward elements of uncertainty, typically by low stimulus complexity (p. 78). However, in the adaption of a new complex scheme, the experience can also be pleasurable. Distinct feelings appear in a curve model where the level of stimuli complexity, presented as sectors, shows different peaks for different sectors, depending on the assimilation resistance (Eckblad, 1981; Vittersø,

2004). Consequently, distinct feelings have different phenomenology and distinct functions in our adaption and accommodation process.

Based on scheme theory, the dichotomy between positive and negative emotions does not appeal because every feeling state starts at a certain point of complexity and reaches a certain tipping point in relation to the environment. The structure of change is more informative to capture than the relative difference between positive and negative emotions. The distinction between hedonic and eudaimonic feelings is thus more informative in the momentary capture of experiences, as they are related to different attentional functions, which sometimes feel good and sometimes not but are still functional in leading to a goal or purpose.

Whether leading a life with many flow experiences appears to be a better goal than leading a life with few or no flow experiences is a huge question. People can have high life satisfaction without necessarily cultivating personal growth (Vittersø, 1998). Life satisfaction and personal growth are different constructs that must be understood separately. Furthermore, too much focus on highly skilled performances, for example, getting hooked by perfect off-piste skiing, potentially filled with flow experiences, might lead to less functional choices in the perspective of a good life. For example, there is a danger of developing an obsessive passion for an activity (Vallerand et al., 2006), which can lead to lower life satisfaction and risk for developing depression. Satisfaction has the function of stabilizing a person and allowing him/her to be ready to get involved in new tasks. Thus, satisfaction is also a functional element in well-being. The fine relation between the approach to outdoor experiences as a source of personal growth, being creative and active, and the approach to outdoor experiences as a source of recovery, satisfaction, and gaining harmony in life is discussed by Vittersø (2011). Too much of either the eudaimonic or the hedonic element seems to be less functional than an optimal exchange between these elements.

Pleasure and interest in the temporal gap

The function of positive emotion might be different in the momentary experience than in the remembered experience. This is, for example, studied by the difference between the experiencing self and the remembering self, where the

remembering self seems to be more judging about the whole experience, while the experiencing self is about affective feelings in the here and now (Kahneman & Riis, 2007). Following this line of research, a remembered experience is possibly different from the experiencing self. For example, remembered experiences are more important in prospective motivation than momentary experiences (Wirtz, Kruger, Scollon, & Diener, 2003). However, some experiences seem to be more important than others when evaluating events. For example, peaks, endings, and specific emotions seem to be more important in the memory of an event than the duration of it (Fredrickson, 2000b). Including these elements, we do not know much about the differences between the hedonic and eudaimonic dimensions of temporal experiences. For example, is the high correlation between hedonic and eudaimonic feelings identified earlier (Fredrickson et al., 2013) a result of capturing *remembered experiences*? Furthermore, the relevance of challenges and skills in the description of a positive experience could be influenced by the different evaluations in the temporal gap.

If there is a difference in how positive emotion is perceived in the momentary experience as compared to the remembered experience, a refined approach to the function of positive emotion would contribute to the scientific understanding of the concept of positive emotion. This knowledge has implications for practical outdoor programs in understanding the underlying dynamics of a positive memory. The understanding of how our memory builds the emotional experience is clear when we ask participants to recall their experiences. For example, would a recall of an interesting but unpleasant experience, like canoe rescuing in cold water, be harmful or beneficial for prospective motivation? In addition, what is the role of pleasant experiences? The intention with Paper II was to examine the emotional dynamics between pleasure and interest in a temporal perspective, including peak episodes, whole-day experiences, and remembered experiences.

1.2.5 Emotions and motivation

Outdoor experiences are complex, covering a broad range of motives, needs, and feelings in seeking natural sites and particular activities. There are many benefits to engaging in Friluftsliv. Most obviously, physical exercise has a general positive

effect on well-being (see for example: Fox, 1999; Netz, Wu, Becker, & Tenenbaum, 2005). In addition, there is growing evidence of the additional benefits of *natural environments*, which can be explained in various ways: our attention gets a break from every day-intentional thinking and recovers by the unintended attention powered from the natural environments (S. Kaplan, 1995); people become more vitalized (R. M. Ryan, Weinstein, et al., 2010), less stressed (Laumann, Gärling, & Stormark, 2003), more creative (Atchley, Strayer, & Atchley, 2012), and more caring (Weinstein, Przybylski, & Ryan, 2009); and people express more environmental concern the longer they stay in the outdoors (McKay, Brownlee, & Hallo, 2012). Potentially, many of these additional benefits relate to emotions and well-being, but the pattern to understanding motivation for outdoor activity seems to be rather complex: despite the many benefits of being outdoors, the motivation for moving outdoors is not straightforward.

In Norway, where access to natural sites is very easy, only 20% of the population follows the recommendation from the Norwegian Public Health Institute of 30 minutes of physical activity every day (Anderssen et al., 2009). This low participation in physical activity is parallel to the conditions in other western countries. Nature could play an important role in this picture through the attraction of hiking as a gentle form of physical activity. Nevertheless, moving outdoors has some costs in everyday life. Having access to hiking trails, due to the geography of Norway, seems not to be a sufficient explanation for understanding the pattern of a physically active lifestyle. In comparison to other countries, Norwegians spend an average of 13 minutes hiking every day, while Italians spend 20 minutes and Slovenes 18 minutes (Vaage, 2008).

In general, one approach to understanding why some people overcome the obstacles and become engaged in outdoor activities is to look at how positive emotion is perceived in the consciousness before, during, and after hikes. To understand why some people seem to enjoy activities that includes physical effort, the concept of intrinsic motivation, as opposed to extrinsic motivation, is central (R. M. Ryan, 2007). Intrinsic motivation is when people do an activity because it is interesting and enjoyable (R. M. Ryan & Deci, 2012). Furthermore, when intrinsically motivated, an

activity has its own reward, in contrast to external motivation, where the value of an activity is extrinsic.

Intrinsic motivation can relate to state experiences as well as dispositions. The state of being intrinsically motivated is, for example, often associated with flow experience, as this state is very motivating itself (Csikszentmihalyi & Csikszentmihalyi, 1988). Typically, there is a connection between flow experiences, intrinsic motivation, and actual behavior (Csikszentmihalyi, 1975; Csikszentmihalyi & Csikszentmihalyi, 1988; Fortier & Kowal, 2007; Stavrou, 2008; Waterman et al., 2003). The identification of flow experiences as positive experiences could then be a marker of prospective motivation and actual behavior. However, the problems of flow measurement at this stage of research make this a difficult project. Taking an inductive approach, the role of general positive evaluation is important to explore, putting aside the ontological problems of flow measurements. Understanding the dynamics of emotions in relation to intrinsic motivation might shed light on some patterns in our decision to move outdoors.

Intrinsic motivation in self determination theory

One explanation for why participation in outdoor activities is relatively low is that there are psychological needs that come before the desire to go outdoors. In their self-determination theory (SDT), Deci and Ryan argue that this macro theory covers a system of self-determination in which satisfaction of the three basic needs—autonomy, relatedness, and competence—is necessary to feel motivated and happy (Deci & Ryan, 1985, 2008c; R. M. Ryan & Deci, 2012). While motivation is categorized in a continuum from controlled (extrinsic) to autonomous (intrinsic), the different satisfaction of basic needs generally corresponds to internalization toward different motivation regulating states. Furthermore, people can satisfy their basic needs within some life domains, but may still be less satisfied in others. Motivation differs across life domains. How activity internalizes in memory is thus a central point in the self-regulation process. There are, for example, differences between full internalization, indicating autonomy, and introjection, which is the least autonomous form of internal regulation (R. M. Ryan & Deci, 2012). Full internalization means self-regulation toward an activity for autonomous reasons, while introjection means

self-regulation toward an activity only if there are benefits, like rewards, or to avoid punishment or for other extrinsic reasons.

Taking an everyday perspective, there are many life domains that need to be satisfied for a person to be generally satisfied, such as work, family, housekeeping, and social networking. The need for physical activity might be associated with “should” more than “desire” for persons who are not physically active. Hence, the ability to move physically depends on mental imagination or the self-talk of semantic meaning with physical activity. Understanding the factors that improve intrinsic motivation is thus key in public health, as is understanding why some people choose activities that include suffering.

In the development of self-determined intrinsic motivation, different phases of dispositional and situational satisfaction of basic psychological needs are explained as a chain process leading to behavior toward a specific motivational domain (Deci & Ryan, 2008a; Teixeira, Carraça, Markland, Silva, & Ryan, 2012). Satisfaction of psychological needs leads to intrinsic motivation, which is associated with pleasant feelings during and after activities, and again supports approach behaviors. Being intrinsically motivated is associated with positive emotion. Emotion might be a very important ingredient in the self-determination process of motivation. However, intrinsic motivation is a state that motivates one to do an activity even if the activity is not a flow experience nor particularly fun (R. M. Ryan, 2007). Hence, how experiences internalize in our memory is thus a key question. It is likely that emotions from events play a role in this process.

While the theoretical construct of self-determined intrinsic motivation has been studied along with flow experiences measured as challenge–skill balance (Eunju, 2005; Keller & Bless, 2008; Stavrou, 2008; Waterman et al., 2003), few have isolated the role of emotion from new experiences in relation to the level of intrinsic motivation before and after events. Emotional and motivational states have much in common as they both are associated with pleasant feelings and influence behavior. The conceptual understanding of these two phenomena seem to be hard to distinguish. Although the concepts can overlap, there are also some core differences: “Hunger, thirst, greed, maternal caregiving, ambition and the like are motivations, not

emotions. Emotions can accomplish transitions among motivational states, and they can select a repertoire of plans and goals” (Oatley, 1992, p. 61). This view is a supplement to appraisal theory, which holds that emotion and motivation are inseparable: “Events are appraised as emotionally relevant when they appear to favor or harm the individual’s concerns: his or her major goals, motives, or sensitivities (the appraisal process is thought to be non-conscious)” (Frijda, Kuipers, & ter Schure, 1989, p. 213).

Appraisal theory was initially proposed to explain how a variety of emotions could emerge from the same events in different individuals and on different occasions (Moors, Ellsworth, Scherer, & Frijda, 2013). In this theory, the appraisal criterion involves an interaction between the event and the appraiser. The relation between emotion and cognition is thus reliant of how the individual interprets the event in the light of various cognitive, motivational, and somatic components, which according to the theory does not appear to be clear but rather is chaotic. Supplementary, basic emotions can influence cognition as an independent factor, as expressed in the communication theory of emotion (Oatley, 1992). The broaden-and-build theory of positive emotion (Fredrickson, 2001, 2004) explains that there are inherent dynamics within positive emotions to our general perception: hence, the study of emotion in the motivational process can inform us of how we build intrinsic motivation.

When including educational choices, the study of emotion in the motivational process is more directly approached in this study. While the students in Sample 1 choose between 1) sport major, 2) outdoor major, and 3) other options, it was possible to study the effect of positive emotion from experiences in relation to these choices. Emotions are functionally important in study-related and social behavior, adaption to college, and academic success (Pekrun, 2007, p. 554). Positive emotions plays an important role in both outcome-related and activity-related motivation. Hence, understanding more about how a positive evaluation of outdoor experiences contributes to this picture provides important knowledge about prospective outdoor motivation as well as understanding study choices. The intention with Paper III was to investigate intrinsic motivation and positive emotions after new events as distinct concepts in the process of choosing a major.

1.3 Earlier research on Friluftsliv and emotions

From a Nordic Friluftsliv research perspective, research on emotions is mostly oriented toward social constructions, questioning values, discourses, meanings, and explanations of successful or unsuccessful participation in Friluftsliv (Andkær, 2008; Backman, 2010; Bischoff, 2012; Skår, 2010; Tordsson, 2003). From the social constructive perspective, there are different explanations for why positive emotions emerge. For example, the ability to feel positive emotions seems to be a result of place and time (Tordsson, 2003), dependent on the interaction between environments and people (Bischoff, 2012; Vold, 2015), dependent on differences between groups (Humberstone & Pedersen, 2001; Pedersen, 2000), and dependent on social barriers in using natural nearby areas (Skår, 2010).

Few Nordic Friluftsliv studies have approached emotions using psychological emotion theory, though there are exceptions. For example, the reason why some people seek strong emotional experiences more often than others is due to their personality traits, identified as “high sensation seekers” (Breivik, 1995, 2001; J.-H. Johnsen & Breivik, 1995). When including the distinction between hedonia and eudaimonia, there are differences between different aspects of well-being during Friluftsliv (Vittersø, 1998, 2011). There is, for example, a difference between recovery and seeking a change (Vittersø, 2011). Different experiences feed different aspects of well-being. More specifically, pleasure feeds life satisfaction and interest feeds personal growth (Vittersø & Søholt, 2011). Both dimensions of well-being typically occur during Friluftsliv. However, while emotions change in a temporal perspective, thinking more specifically about events in the near future and more generally on events in distant future (Trope & Liberman, 2003), few studies have investigated the dynamics of pleasure and interest over time. Some results from studying sky-diving indicate an emotional change during different phases of the experience, where the positive emotion typically occurs *after* the unfolding of the parachute, when the situation is under control (Hetland & Vittersø, 2012).

Research on the nature of leisure experiences flourished in the 1990s. For example, there is an agreement that leisure experiences are dynamic and multi-phased

experiences (Borrie & Roggenbuch, 2001; Hull, Stewart, & Yi, 1992; Lee, Dattilo, & Howard, 1994). In an exploration of feelings during self-selected leisure activities, the most frequently reported feelings included positive emotions and benefits but also negative emotions, like exhaustion, nervousness, disappointment, frustration, and guilt (Lee et al., 1994). Research on outdoor programs like Outward Bound identified strong emotional feelings in the wilderness experience, particularly in the identification of tranquility, peace, silence, a sense of oneness, and a coherent sense of oneself (R. Kaplan & Kaplan, 1995). While these are early approaches to the mapping of subjective experiences during outdoor experiences, a particular focus was to identify variability as well as understanding the context of how positive emotions emerge. Furthermore, the literature on preference studies identified the natural landscape or old agricultural landscapes as being favorable to urban landscapes (Strumse 1994, 1996). Experience preference domains in the outdoors are also related to “physical activity” and “escape from civilization” (Stewart, 1992).

One explanation of why we feel better in natural environments when compared to urban environments is explained by the *biophilia hypotheses*: humans are necessarily connected to nature (Wilson, 1984). Support for this hypothesis has been empirically found. For example, a view of nature through windows has a healing effect after surgery (Ulrich, 1984), natural environments improve recovery after stress (Laumann, 2004), and the presence of natural or old farm landscapes are general sources of recreation (Strumse, 1996). A large experience sampling study (N = 21 947) using the app “Mappiness” in the UK demonstrated that happiness is reported to be greater in natural environments when compared to urban environments, as measured within individuals and controlling for a wide scope of potential confounders (MacKerron & Mourato, 2013). Nature is an important source of emotion regulation, which may increase the possibility of actually solving emotional problems, as opposed to traditional regulation through suppression or reappraisal (S. Å. K. Johnsen, 2011; S. Å. K. Johnsen & Rydstedt, 2013). Hence, engaging in the outdoors has a great potential for health. Moreover, the dispositional construct “connectedness to nature” is associated with both hedonic well-being as well as eudaimonic well-being (Wolsko & Lindberg, 2013). The trait “connectedness to

nature” is additionally a predictor of strong, awe-inspiring experiences, particularly in wild nature (N. Davis & Gatersleben, 2013).

How emotions from Friluftsliv relates to motivation is a huge research question. For 54% of the American population, *physical exercise* poses a threat to one’s freedom and choice (Iso-Ahola, 2013). How we *think* about physical activity thus is a key to understanding motivation. However, emotions are supportive in this process. Emotion helps sustain intrinsic motivation toward a specific domain of activity (R. M. Ryan, 2007). Moreover, positive emotions are an important factor for sustaining long-lasting academic motivation in a learning context (Pekrun, 2007).

In an investigation of temporal phases of experiences, remembered experiences were more predictive of prospective motivation than peak episodes and daily reports from experiences (Wirtz et al., 2003). Hence, the memory of an experience is important in the development of motivation. Recently, the distinction between harmonious and obsessive passion in the prediction of positive emotions was tested on sport recreation participants (Stenseng, Forest, & Curran, 2015). In this study, the variable “belongingness” was a mediator of positive emotions, which followed from harmonious passion. For people with an obsessive passion, this passion was not related to “belongingness” and was similarly not a predictor of positive emotions. Thus, how positive emotions are induced is a complex process in which our reasons for liking the activity matter. It is possible that “belongingness” relates to a memory characterized by positive emotions. Nevertheless, knowledge of remembered positive emotions from situations will add new knowledge about the importance of particular experiences and how they are processed in the memory over time.

1.4 Present study: Friluftsliv during two different three-day hikes

During an outdoor stay with a duration of three days, it is likely that different activities produce different feeling states, possibly in some intersubjective patterns. In the present main study, experiences relate to two different three-day hikes: one in a

coastal area using traditional wooden boats and living at a campsite, and the other situated in the mountains in the wintertime with a focus on skiing and safety in a potential snow avalanche area. The activities varied between topics requiring some basic outdoor skills, such as canoeing or skiing, and more relaxing kinds of experiences, such as sitting around a bonfire enjoying a conversation. The hiking trips had components of learning as they were a part of a curriculum at a university college, but they also had components of leisure time as the students lived together, ate together, and had some time for socializing or doing freely chosen activities. During these courses, there was a focus on the intrinsic value of outdoor activities, combined with technical skills and a focus on safety. The course had one teacher per 16 students, and situation-based leadership characterized the teacher's role—sometimes giving instructions and sometimes letting the students figure out the task themselves with the principle of “learning by doing.” These three-day courses are very similar to courses offered by outdoor organizations and other kinds of outdoor education in Norway.

1.5 General research aim

The overall aim of this thesis is to determine patterns of emotional change and stability in our perception of outdoor experiences. Emotions appear with different functions in well-being as well as motivational processes. Three different approaches shed light over the complexity of positive emotions, which have implications for how we understand positive experiences, how we produce a positive memory, and how important situational experiences are in relation to intrinsic motivation and choice.

First, exploring limitations with the challenge–skill ratio, a continuous measurement of *flow experiences* includes concentration, interest, enjoyment, involvement and control (Schmidt, Sherhoff, & Csikszentmihalyi, 2007). Thus, an emotional approach to flow experience differs from measurement of flow based on flow conditions. Challenges and skills could have different roles for different action readiness. For example, enjoyment (hedonic feeling) and interest (eudaimonic feeling) could have different predictors in terms of challenges and skills. Few have empirically tested the challenge–skill ratio on a diversity of positive emotions. Hence, the validity of the balance model needs to be tested.

Second, capturing feelings at different time perspectives, these feelings possibly carry different information, which affects by memorial processes. The relative importance of *hedonic* (pleasure) and *eudaimonic* feelings (interest) in the peak, whole, and remembered conditions will be questioned. In the study of experiences, it is likely that the given perspective influences our feelings. Moreover, knowledge of how important *pleasant* peak episodes are in prospective motivation, opposed to *interesting* peak episodes, may add new knowledge to the existing research. The implication of pleasant or interesting remembered experiences on prospective outdoor motivation will be questioned.

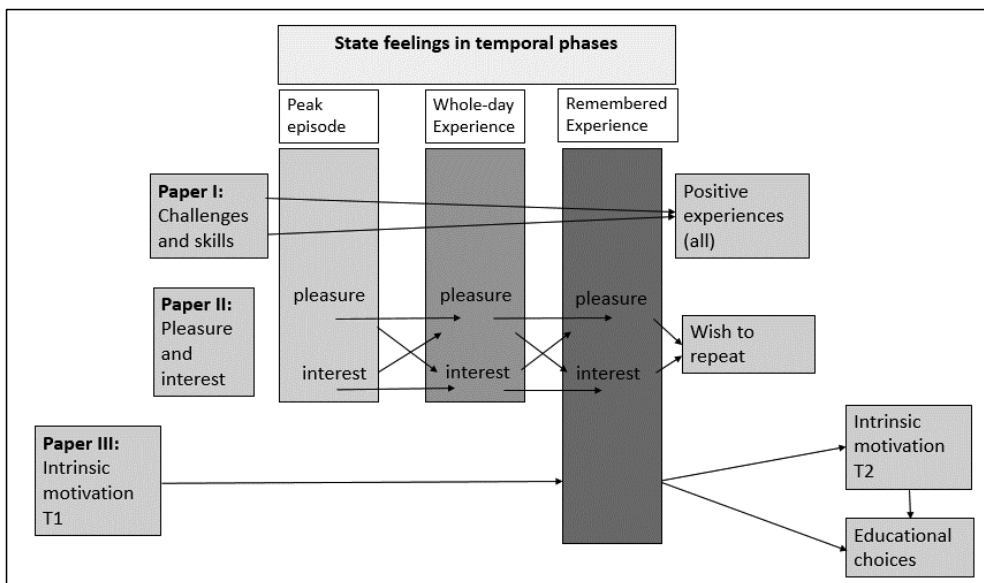
Third, emotions are important in motivation. However, emotions have different functions in different temporal perspectives, for example: being supportive to already established preferences in a long time perspective, and being a trigger to new interest development from more spontaneous experiences. The aim of the third paper was to isolate the influence of positive emotions from new outdoor experiences

in the motivational process. Both the influence of emotions in the development of intrinsic motivation and the influence of positive emotions in the process of deciding to major are important study questions. This is a contribution to the general understanding of the function of emotion in the motivational process.

Aims for the papers:

- 1) *Predictors of flow experiences*: The aim was to test the role of challenges and skills in the prediction of a flow experience. Moreover, to test if an imbalance model of challenges and skills were able to explain more of the richness of positive experiences.
- 2) *On the difference between peak episodes and general, remembered experiences*: An exploration of pleasure and interest in different temporal phases of the experience will shed light over how a positive memory produces.
- 3) *The role of positive emotions in the motivational process*: The isolated influence of positive emotions from new outdoor experiences will be explored in relation to development of intrinsic outdoor motivation and the process of taking the choice of majoring in either sport or outdoor education.

Figure 1: *Model of the connection between the three papers*



1.5.1 Research hypotheses

Altogether, a complex design of data collection, including repeated measures, was chosen in the service to test nine hypotheses deduced in three papers:

1.a. Challenges and skills are not able to explain all possible experiential states during outdoor activities; the variance accounted for by the two variables and their interaction will be small (i.e., less than 10%) for many commonly reported feeling states.

1.b. A challenge–skill imbalance is a better predictor of flow than challenge–skill balance.

2.a. Peak episodes during outdoor activities, particularly during demanding activities, are perceived as more interesting than pleasant.

2.b. General and remembered experiences of outdoor activities are perceived as more pleasant than interesting.

2.c. Peak episodes perceived as interesting are more strongly related to motivation toward prospective outdoor activities than those perceived as pleasant.

2.d. General and remembered experiences perceived as pleasant are more strongly related to motivation toward prospective outdoor activities than those perceived as interesting.

3. a. Students choosing outdoor major have higher scores on both intrinsic outdoor motivation and positive emotions than all other students (i.e. students choosing sport major and students choosing other options).

3.b. Positive emotions will predict change in intrinsic motivation (T2) after the effect from preestablished intrinsic outdoor motivation (T2) has been controlled for.

3.c. Positive emotions predicts choices of outdoor major, even when controlling for intrinsic outdoor motivation (T2). For students choosing sport major and students choosing other options, a weaker relation between positive emotions and behavioral choice is expected.

2. Method

Data from two separate studies measuring outdoor experiences were collected. The first study took place within a period of 13 months, while the second study took place over five days. To investigate the role of emotions, different temporal approaches to experiences were investigated and contrasted with traits indicating motivation and educational choice. The primary goal with Study 2 was to make a replication of the main findings from Study 1 for the critique presented in the first paper.

2.1 Outdoor experiences

In capturing experiences, a close approach to real-time experiences was chosen: Two three-day hikes that were part of an existing educational program, one each semester. Moreover, a direct approach to concurrent experiences was selected, in addition to the possibility to follow up with the participants after the outdoor events through remembered experiences. In this way, the outdoor experience was not manipulated by the researcher but followed some ordinary routines for organization and didactical considerations. Hence, it was possible to study the function of emotion in the motivation and process of educational choice. The frames of outdoor experiences were based on values in the Nordic Friluftsliv discourse (Henderson & Vikander, 2007) and the curriculum of the university college, including practical activities in free nature, didactical reflections, and social gathering. The focus was on learning outdoor skills and on inspiration for seeking outdoor experiences by simple means and traditional knowledge, not on competition or any kind of performance or qualification. A limitation of this approach is that there might be differences between the intensities and varieties of leisure time experiences without a guide or leader, in comparison to participation in an organized group experience. There might also be differences in being alone or with friends and family and across cultures. However, the focus of the thesis is not to identify the variability of all experiences, but rather to investigate some differences in our perception and memories of positive emotions and the role of these experiences in the motivational process.

One excursion took part in September on an island (Yksnøya), which offers very nice conditions for simple living and an introduction to coastal activities, including canoeing and rowing wooden traditional boats. The course had a focus on basic outdoor skills, including rescuing exercises in cold water. The other excursion took place at Standaleidet, which is a ski cabin in the heart of “Sunnmørsalpene,” the Alps of Sunnmøre. Situated about 400 meters above sea level, this is a great location for mountaineering and skiing on alpine peaks. This course had a special focus on safety in potential snow avalanche terrain and involved rescuing exercises and snow digging, including snow profiles, snow caves, and igloos. Both excursions were divided in two groups of 32 students and two teachers. First, 32 students participated for three days. Second, the next 32 students participated for new tree days. Hence, both Yksnøya and Standaleide were studied for 3+3 days. The same teachers did the first and second trips, but there were some changes between teachers on Yksnøya and Standaleidet. Some activities were in large groups and others in smaller groups. Both excursions had sunny weather, in particular day two at Yksnøya for both groups (Tuesday and Thursday), where the temperature also was high.

Outdoor experiences was also collected at Nigardsbreen (Study 2). This was an introduction to glaciers course with long days at the glacier and time for gathering and socializing in the evening. Every day during the glacier course, the participants had about a one hour hike to enter the glacier. Students divided into small groups of eight to nine participants, each followed by one teacher. This course had a wide learning goal, including geography, history, and botanic and practical skills. The practical part of the course started with basic techniques for moving on the ice, followed by rescuing exercises and exploring the ice, divided into preferences for climbing or walking. Some students were let down into a steep hole of blue ice and trained to climb up again. The weather was unstable; typically, it varied between rain and sun, all in the same day.

2.2 Participants

2.2.1 Study 1

All sport and outdoor students in the first year of a physical education program from a university college in Western Norway were followed through an ordinary school year (2008/2009). They were informed that they could withdraw from the research at any time. In the beginning, the whole group included 67 students, but three of them left the study program within the first month of ordinary study, giving a number of 64 students who finished the whole study year. The sample consisted of 41% females and the mean age was 21.2 years. Data were also collected from a control group of 60 students who participated in the first year of a teacher education program. This student group was selected because the size of both groups were about equal and both programs involved first year students. Trait questionnaires were collected at the same moments of measurements for both groups.

2.2.2 Study 2

The second study involved a five-day introduction to glacier course, with a group of outdoor students from the same university college (June, 2011). These students had chosen outdoor education in particular. No students from Study 1 were represented in this group. The group consisted of 27 students, which is all the students in the study program. They gave informed consent to participate. One student was excluded from analysis because of manic behavior and suspicion of mental illness. This student only partly answered the questionnaires, and the answers diverged from the others, typically by indicating low scores on positive feeling states when asking about peak episodes. The rest of the sample consisted of 26 students, yielding a sample of 54% females and a mean age of 23.5 years.

2.3 Instruments

2.3.1 Instruments appearing in Study 1 and Study 2 for Paper 1

Peak episodes. Students were asked to recall their *peak episode* and make an evaluation of their *whole-day experiences*. Utilizing an approach of specific moments, the day reconstruction method (DRM) (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004), or more specifically, the event reconstruction method (ERM) (Grube, Schroer, Hentzschel, & Hertel, 2008), refers to an inductive understanding of experiences: in the choice of this method, positive experiences were pinpointed in the capture of the “best moment of the day.” The peak episode was first described in the students’ own words. Subsequently, they reported quantitatively on this particular experience with a set of subjective experiences. They reported on the same set of subjective experiences when asking for “the day as a whole” as well. At Yksnøya, research assistants collected the data (the two field teachers), while at Standaleidet, I was collecting data myself. Later, one week and one month after every excursion in Study 1, I visited the students during ordinary classes and asked for their *remembered experiences*. These experiences were reported on the same set of subjective experiences (see appendix III).

The concept of “peak episode” is different from Maslow’s original notation of peak experiences. These experiences are very rare in the original terms, and the feelings related to these experiences are very intense and acute expressions of identity (Maslow, 1961, 1974, 1976). Our interpretation is simply a categorization of the “best experience of the day” as a capture of a happy moment, which possibly was different from the more overall perspective of the day, captured in the whole-day experience. Similar notations of peaks are used in the experience and emotion literature as an identification of a certain moment in the experience (see, for example, Fredrickson, 2000b).

Skills. Measures of skills were obtained by a separate question introduced as follows: “Please circle the number that best reflects your skills during the episode.” Then a box appeared with the following heading: “During this episode, my skills were:”

Inside the box an endpoint labeled numerical response scale was presented, running from 1 (not good enough) to 7 (very good).

Basic Emotions State Test (BEST). Measures were obtained from a series of items tapping both positive and negative feeling states using unipolar response scales ranging from 1 (not felt at all) to 7 (felt at a very high degree). Items included feelings such as satisfaction, pleasure, happiness, fear, anger, frustration, sadness, engagement, interest, and enthusiasm. Although this is a composition of three clusters of experiences—hedonic feelings with three indicators, eudaimonic feelings with three indicators, and negative feelings with three separate feelings—the scale appears as a supplement to the field of alternative scales, which do not separate between hedonic and eudaimonic elements (Vittersø, Dyrdal, & Røysamb, 2005). The six positive feeling state items differed according to different temporal conditions: Cronbach's alpha was $\alpha = .88$ for peak episodes, $\alpha = .87$ for whole-day experiences, and $\alpha = .97$ for remembered experiences.

Challenge and meaning. Two items from the original flow-simplex (Vittersø, 2004) were included in the analysis: "Challenge" was measured separately as item number 4 on the 7-item scale. This was a binary variable ranging from 1 (challenged) to 7 (tame) on a Likert scale. The item was reversed for analysis. "Meaning" was measured as item number 6 and reversed in order to make high scores indicative of a high degree of meaningfulness. The flow-simplex is a bipolar adjective scale: pleasant – unpleasant, interesting – uninteresting, engaged – not engaged, tame – challenging, easy – difficult, meaningful – meaningless, and frustrating – not frustrating.

Flow State Scale 2 (FSS-2). To provide yet another set of flow indicators, a short version of the Flow State Scale (FSS-2, Jackson & Eklund, 2002) was included in the questionnaire. To create this scale, the nine items presented by Rogatko (2009) were used as core items of the FSS-2 scale. The questions reflected the following nine dimensions of flow: Clear goals ("I knew clearly what I wanted to do during the

trip”), immediate feedback (“It was really clear to me how my performance was going”), concentration (“My attention was focused entirely on outdoor activities”), merging of action and awareness (“Things just seemed to be happening automatically”), a sense of control (“I had a sense of control over what I was doing”), autotelic experience (“I really enjoyed the outdoor experience”), transformation of time (“The way time passed seemed to be different than normally”), loss of self-consciousness (“I was not concerned with what others may have been thinking of me”), and challenge–skill balance (“I was challenged, but I believed my skills would allow me to meet the challenge”). I translated these items into Norwegian, and the response option for these items varied from 1 (strongly disagree) to 5 (strongly agree). Note: This scale is not reliability tested and is a supplementary approach to testing the role of challenges and skills on flow characteristics. Here, the scale is not a measurement of flow experiences. The Cronbach’s alpha was $\alpha = .68$ for these nine items. (See Appendix III.)

Peak, whole-day, and remembered experiences. Subjective experiences were captured in light of three different approaches of temporality: *Peak episodes*: The students were asked to reflect on the different events and activities in which they participated during the day and then report their challenges, skills, and subjective experiences when reflecting on the best moment during the day, i.e., the peak episode of the day. *Whole-day experiences*: Every evening during the trips, the students were asked to report their challenges, skills, and subjective experiences when thinking of the day as a whole. *Remembered experiences*: In Study 1, after the trips (one week, one month, and three months), the students were asked to report their challenges, skills, and subjective experiences when reflecting on how they remembered the trip.

2.3.2 Instruments in Study 1 for Papers 2 and 3

Wish to repeat. The students were asked to answer the single item question “How likely is it that you would repeat a trip like this, but on a private basis (not arranged by the university)?” Responses were given on a scale of 1 (no, it is not likely) to 7

(yes, very likely). Four measures were collected in retrospect from each student and further computed into the variable.

Intrinsic outdoor motivation. A Norwegian translation of the Behavioral Regulation in Exercise Questionnaire (BREQ2; Markland, 2000) was given at the start of the first semester and the end of the second semester (see Appendix II) and utilized for two motivational domains: sport motivation and outdoor motivation. To measure motivation for the outdoor domain, we adjusted motives in the scale so that they were outdoor experience variables instead of sport exercise variables. For example, Item 4: “I do outdoor activities because they are fun.” The reliability of the four items (Items 4, 10, 15, and 18) was very good, with Cronbach’s $\alpha = .84$ for T1 and $\alpha = .92$ for T2. The reliability of the four items were very good, with Cronbach’s $\alpha = .84$ for pre-event intrinsic motivation and $\alpha = .92$ for post-event intrinsic motivation.

Positive emotions. The summed score of six remembered positive emotions from BEST was computed and averaged after the two events. These measurements were collected one week and one month after the events. For this index, the Cronbach’s alpha was $\alpha = .94$ after the first event (Positive emotions 1) and $\alpha = .97$ after the second event (Positive emotions 2).

Intended educational choice. At the end of the second semester, the students were asked about their plans for the next year. They responded by choosing one out of three categories: 1) outdoor education, 2) sport education, and 3) other choices. These choices were computed into three dummy variables suitable for correlation and regression analysis: intended sport, intended outdoor, and intended other. These data are not included in the analysis. Intended educational choice correlated $r = .80$ with actual educational choice.

Actual educational choice. Next autumn, the students were contacted by administration staff only to report their choice of education. This was a single question on telephone, which the administration staff reported on the same

categories: 1) outdoor education (major), 2) sport education (major), and 3) other choices, computed as dummy variables. The choices were computed into three additional dummy variables: sport choice, outdoor choice, and other choice.

2.3.3 Supplying instruments in Study 1 and Study 2

Demographic variables were included in both studies (see Appendix II). There was non-significant correlations between demographic variables such as gender and age on the dependent variables, and these variables were not further analyzed. However, there might be more complex associations, such as in the perception of challenges and skills (independent variables) or reports of peak episodes, which were not tested for. We also included an “expectation before the excursion” questionnaire, which was collected before the two excursions. These data are not included in the thesis. For an overview of all trait questionnaires included in Study1, see Appendix II. In Study 2, we collected some data on a self-constructed variable (“deep experiences”), which is not analyzed in this thesis. In addition, we included a short version of the trait questionnaire used in Study 1 and included the New Ecological Paradigm (NEP) scales. Neither of these traits variables is included in the analysis in the thesis. For intrinsic sport motivation, Cronbach’s $\alpha = .83$ for both pre- and post-event motivation. However, this measure was not included in analysis.

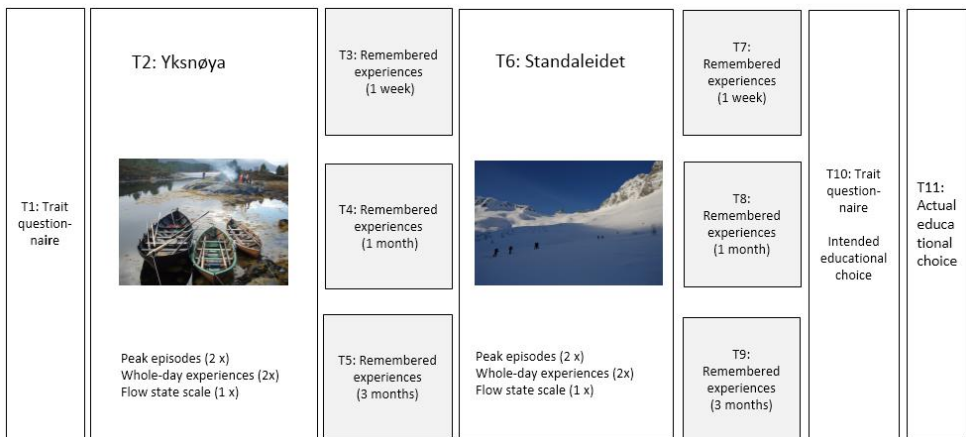
2.4 Procedure

Trait questionnaires:

At the start of the first semester and at the end of the second semester in 2008/2009, a questionnaire was presented to the students of both the study group and the control group (see Appendix II). This was presented in ordinary classes. The design made it possible to conduct a quasi-randomized controlled study in order to analyze the influence of experiences on traits. However, the idea to analyze between groups variability on traits was left.

State questionnaires: Every day of the excursions, the students filled in a state questionnaire. They filled in the questionnaire during the evening, after having dinner and finishing the practical activities. The different time intervals of the data collection is illustrated from T1 (start of collection) through T11 (end of collection) (See Figure 2). Identical questionnaires were distributed every evening during the outdoor events for T2 (Yksnøya) and T6 (Standaleidet) in Study 1 and during the glacier trip at Nidgardsbreen in Study 2 (See Appendix III). Peak episodes and whole-day experiences were collected during the event. Every time remembered experiences were collected (T3, T4, T5, T7, T8 and T9), the same questionnaire was repeated, only with a change in the presentation of the study, e.g., “Now it is about one month since you were at Yksnøya. Please recall the trip and report on how you remember it.” For every person, 16 reports of single experiences were collected. However, for analysis, the data of remembered experiences three months later were removed. The collection of four peaks, four whole-day experiences, and four remembered experiences gave a balanced measure of different time perspectives.

Figure 2: Model of the data collection for Study 1



2.5 Analysis

2.5.1 Data analysis and handling of missing data

Different procedures were performed for missing data in relation to different ways of organizing the data. In the first paper, data (both for Study 1 and Study 2) were organized following the logic of the chained p-technique (Jones, 2007). Using this technique, all single experiences are contributors to the N. Using this procedure, 14 separate reports from each individual were included. This amounted to a gross sample of 896 possible self-reports in Study 1. Separated into concurrent and remembered experiences, we were able to collect 474 (out of 640 possible) concurrent episodes and 224 (out of 256) remembered experiences. In Study 2, we were able to collect 260 (out of 260) concurrent experiences. For most of the reported analysis, missing data were treated with a listwise delete procedure, as provided by the IBM SPSS statistical program (version 19.0). Although this analysis provides a strong N with the repeated measures, this kind of approach can be criticized as having the problem of nested data (Aarts, Verhage, Veenvliet, Dolan, & van der Sluis, 2014). We were able to remove between person variance by utilizing an analysis of the experience fluctuation model (see, for example, Delle Fave et al., 2011).

For the second paper, data were organized differently. In this paper, we were looking for dynamics within each person in order to examine if there were any general patterns in the peak episode, in the memory process, and in the preference for new hikes. Thus, the data were organized with all different experiences organized into each person. Interest and pleasure were thus averaged into the subject means in the peak episode, in the whole-day experience, and in the remembered experience. The N in this study is 64. This is a weaker sample size for conducting multivariate methods, operating on the limits of acceptable values. Hence, findings have to be interpreted with care. However, the strength of the design is its repeated measures on each participant: four peak episodes, four whole-day experiences, and four remembered experiences. Missing data on single experiences were averaged to the general mean for the analysis conducted in IBM SPSS (version 21).

In the third paper, data were also analyzed within each person, operating with $N = 64$. In this analysis, we included measures from the pre- and post-questionnaire on traits and motivations. Hence, a new file was created with the pre- and post-measures of intrinsic motivations, as well as for the study choices. In addition, two sum scores of six positive feelings in the “remembered positive emotion” from Yksnøya and Standaleidet were included. Missing data were deleted listwise in the correlation analysis conducted in IBM SPSS (version 21). The lowest operating N was related to the correlations between pre-event intrinsic motivation and actual choice ($n = 45$). The highest operating N was for the variable “remembered positive emotion” ($n = 64$).

Paper I

Multiple regressions. A series of multiple regression analyses were conducted on the file containing both within-participant variations and between-participant variations. Challenges and skills and the interplay variable of challenges and skills were the dependent variables, and the scope of subjective experiences was the independent variable. The result for each single experience was reported. Furthermore, challenges and skills were operated as category variables, sorted by differences between challenges and skills. Based on the idea that it is not only the balance condition between challenges and skills but the match between high challenges (HC) and high skills (HS) (Delle Fave et al., 2011), we made a categorization based on challenges and skills higher than four. This operationalization led to the three categories: $HC > HS$, $HC = HS$, and $HC < HS$. For the subsequent experiences, we made a catchall category of low challenges and/or low skills (LCLS).

Regressions nested on the subjective mean. A procedure capturing challenges and skills centered on the subjective mean was developed in the experience fluctuation model (EFM: Massimini & Carli, 1988). Here, the relationship between challenges and skills is expressed in a circular presentation. Repeated experiences are transformed to z-scores based on the individual mean and the individual standard deviation. Further details of the EMF analysis was given by Delle Fave et al. (2011).

Paper II

Factor analysis. We used the communalities from maximum likelihood factor analysis to estimate how much pleasure variance and how much interest variance the concept of positive emotions could account for. Using factor analysis on a sample size of $N = 64$ can be discussed. However, whether the number of observations or subjects-to-variables rule of thumb is the best minimum indicators is not clear. For example, excellent recovery of population factor structure was found for a sample size of $N = 60$ and 20 variables (MacCallum, Widaman, Zhang, & Hong, 1999). Furthermore, a minimum of three factors is critical. We did not, however, use the factor analysis to explain the feeling states of “interest” or “pleasure.” Rather, our ambition was the opposite: to see if pleasure was able to be a stronger component of the remembered experience than the peak episode, and respectively for interest. Thus, three separate factor analyses were conducted: 1) peak, 2) whole-day, and 3) remembered.

Regression analysis. In order to reduce situational differences among the peak episodes, we conducted eight different ordinary least square (OLS) multiple regression analyses, each with one dependent variable and two independent variables. In the first set of analyses, the four whole-day pleasures were used as dependent variables and, in turn, regressed on peak pleasure and peak interest (as independent variables). In the second set of regression analyses, whole-day interest was successively regressed on peak pleasure and peak interest. The use of regression analysis of the sample size can similarly be discussed. However, the OLS estimation is mainly a test of the structures of the variables, indicating certain patterns, given normal distribution. The findings from the OLS multiple regression analyses are somewhat uncertain and need to be replicated.

Path analysis. Further exploring the relation between pleasure and interest in the temporal perspective, we created a path model in Mplus (version 6) with $df = 0$, i.e., a fully saturated model. Through this choice, our aim was not to identify how the data fit to the model, but it was to test the parameters within the chosen study object: the

internal interplay between pleasure and interest on respectively peak, whole-day, and remembered experiences, measured on the wish-to-repeat variable. Using a step-by-step approach to the research questions, we controlled the basic covariation between the study variables.

Paper III

Correlations. Correlations with all the study variables were conducted with all dummy variables on choices and the continuous variables on intrinsic motivation and positive feelings. To compare significant differences between two groups, a one-way ANOVA was conducted. To test whether the correlations did significantly differ, we used an Internet calculator that tested the Fisher's transformation of r to z (Lowry, 2001-2014).

Regression analysis. Two regression analyses were calculated with IBM SPSS (version 21). First, we tested the effect of positive emotions from the first and second event and pre-event intrinsic outdoor motivation (independent variables) on post-event intrinsic outdoor motivation (dependent variable) in a multiple regression analysis (OLS). Second, a logistic regression analysis included intrinsic outdoor motivation in the post-event situation and positive emotions as independent variables, and actual educational choices as dependent variables. Two models were compared. The first model included only one independent variable, while the second model included two independent variables. Three different logistic regression analysis were conducted in both versions, one for each educational choice.

2.6 Reliability, validity, and generalizability

An analysis of sample 1 appears in Paper I, Paper II, and Paper III. This approach is both a weakness and strength. The strength is that different perspectives deepen the knowledge of experiences. The weakness is that qualities in the population (for example, cultural background, and formal experiences), are not controlled for. Another issue relates to the collection of data, for example, the effect of using a research assistant versus not. However, given the amount of repeated

measures, it is likely that the problems with assistant versus researcher are not particularly severe. The papers are independent expressions of different aspects of the experience. Furthermore, for Paper I, we were able to replicate the main findings.

Positive emotions were measured differently in the three papers. In Paper 1, positive emotions were included in all temporal perspectives for all participants, i.e. peak episodes, whole-day experiences and remembered experiences. The three hedonic feelings (pleasure, satisfaction, happiness) had Cronbachs alpha, $\alpha = .91$, and the three eudaimonic feelings (interest, engagement, enthusiasm) had $\alpha = .73$. All positive emotions including six feelings had $\alpha = .85$. In paper 2, individual means of interest and pleasure were measured in peak, whole-day and remembered conditions. Pleasure in these three conditions had $\alpha = .82$. Interest in these three conditions had $\alpha = .90$. Comparing pleasure and interest in peak episodes, $\alpha = .62$, comparing pleasure and interest in whole-day experiences, $\alpha = .80$, and comparing pleasure and interest in remembered experiences, $\alpha = .82$. Including all measures of pleasure and interest in all temporal conditions by subjective means ($N = 64$), $\alpha = .90$. In Paper 3, only remembered experiences were included, from two separate hikes. All six feelings (hedonic and eudaimonic) were included in this measure and averaged as a mean score ($N = 64$). For Yksnøya, $\alpha = .94$, and for Standaleidet, $\alpha = .97$. The difference in Cronbach alpa's demonstrates that the given perspective of positive emotions matters.

The discussion of the role of challenges and skills (Paper 1) in the prediction of a flow experience in particular or positive experience in general, regards questions of validity. While much flow research seem to embrace the challenge–skill ratio, less research have tested this ratio empirically. To test if this ratio is ontological true, the emotional approach adds important knowledge. Primarily because of the function of emotions: Every experience feel something. Emotions can inform us about our thinking (Oatley, 1992).

In the Norwegian translation of the word skills, different synonymous words could have implications for the findings. In Study 1, the word “evner” (more like capabilities) was the translation of skills, while in Study 2, the word “ferdigheter” (more like abilities) was used. However, these small language differences did not change the main findings from Study 1. Likewise, the measure of challenge, which

corresponds to “utfordringer” in Norwegian language, requires a comment. This is a bipolar measure on a scale from “tame” to “challenge.” Instead of defining the mid-position (4 on the Likert scale from 1-7) as a medium challenge in the unipolar scale, this is a neutral position on the bipolar scale. Challenging situations then are reported from 5 to 7. A strength with this bipolar measure is that both the direction of the scale and the intensity (distance from center) are captured, which make the quality of the data stronger (Lavrakas, 2008).

Whether feelings induced from Yksnøya and Standaleidet influences by situational, personal or cultural factors, has not been controlled for. Neither qualities with the teaching or the relational aspect with the teachers. Hence, it cannot be concluded that outdoor events on Yksnøya and Standaleidet include the same emotional experiences for other groups as with the sample group. However, the pattern of emotional dynamics is likely to be identified for other samples and for other activities.

The two samples were from the same university college in Norway. In the selection of these samples, these contain regional as well as national students. The number of regional and national students corresponds to other sport and outdoor studies in Norway outside the big cities. The size of the student groups was about the same as the largest study programs in other places. In Norway, there were about four places offering a major in outdoor education when these studies were conducted. Hence, the samples would be representative of study programs in sport and outdoor education in Norway. However, the sample size is limited, and replications of the findings from other institutions would increase the generalizability of the findings. Moreover, the application of the findings for the general audience must be interpreted with care. Sport and outdoor students may have different attributions from non-sport and non-outdoor students, which requires closer study.

2.6.1 Measurement of experiences

When capturing peak episodes, we used procedures described in the DRM (Kahneman et al., 2004) and ERM (Grube et al., 2008). Using this approach, the study has a more inductive character to understand the core qualities of positive

experiences than through the use of the experience sampling method (ESM) (Hektner, Schmidt, & Csikszentmihalyi, 2007), which is a method capturing random moments using electronic devices programmed for random calling. In our study, the inherent composition of the positive experience was of particular interest, and thus the choice of the DRM/ERM seemed to be a good approach. The ESM is argued to have good ecological validity due to the small distance between the situation and the report. However, there are similarities between the method of asking directly after random moments and the method of asking about particular moments some hours later: the different time perspectives of reporting is in a comparative study of ESM and DRM found to be marginal (Schwarz, Kahneman, & Xu, 2009). In both methods, the measurement of experiences is retrospective.

Although the reliability of the DRM/ERM in comparison to the ESM is good, there are philosophical challenges in the process of selecting an experience. Selecting a peak episode relates to personal preferences, and therefore, the retrospective perspective of the experience seems to include a moral dimension (Bok, 2010, p. 98pp). Our peak episodes then include evaluations. However, all experiences captured in retrospect, either by measuring experiences at random (ESM) or a reconstruction in the evening (DRM/ERR), are affected by this normativity. Alternatively, to overcome this problem, biological measurements could be included.

While the DRM/ERR approach is used to measure outdoor experiences, the systematic approach is primarily focused on emotional fluctuation. Alternatively, there would be many other approaches to the same study target, for example, by observation of feelings or qualitative interviews. For example, Merleau-Ponty (1994) argued that language not is a ready thought but has the function of finishing off a thought (p. 142). In his theory, there is a distinction between primary and secondary language terms. Only the first language term has the function of being perceptually empiric. Hence, the study of language could be an additional approach to understanding perceptions and meanings. On the other hand, language could also have limitations. It is hard to describe emotional intensity without quantification. The DRM/ERR offers a methodology for selecting certain moments, which can then be

analyzed and contrasted. Hence, the use of repeated questionnaires using the same batteries of experiences seemed to be a reliable approach.

2.6.2 Ethics

Participation in the study was voluntary and informed consent was given.

Participation in the questionnaires was increased by my presence as the researcher. I collected all questionnaires for the second event of Study 1 and all of Study 2. In these groups, I was not related to the students as a teacher. I had no responsibility for teaching or assessing the students. I was only “the researcher.” However, whether the participants felt group pressure to participate in the questionnaires is hard to say. There was a general positive attitude about joining the project, and it was easy to deliver “blank questionnaires” without the participants questioning their contributions. I maintained ordinary standards of anonymity during data collection and storing of the data; the data were not personally identifiable. The data were coupled with anonymous codes (i.e., the mother’s initials and day of birth), and if any person came across the questionnaires, they were not able to identify the informants. Administration staff conducted the follow up-interview the next autumn. The person noted the anonymous codes without coupling these codes to names. I was able to collect a list with only anonymous codes and their educational choices.

3. Results

3.1 Paper I

The predictor variables challenges, skills, and the interaction variable of challenges and skills were tested on a variety of subjective experiences. The predictors in Study 1 were able to explain between 2% (fear) and 16% (interest) of explained variance for all subjective experiences, with an overall mean of 9%. For Study 2, the lowest explained variance was 3% (meaning) and the highest was 24% (engagement), with an overall mean of 14% of explained variance for all subjective experiences. The findings indicated generally low explained variance in the variety of subjective experiences. There were some exceptions in Study 2, where the explained variance exceeded 20% for engagement and enthusiasm.

Moreover, when challenges, skills, and the interaction variable of challenges and skills were analyzed as four classes of mathematical expressions (HC > HS, HC < HS, HC = HS, and LC/LS), the different expressions of subjective experiences did not fit into the conceptualization of the balance of challenges and skills as the most optimal experience. For the variables interest, happiness, and pleasure, together with the nine items in the FSS-2 scale, the explained variance in Study 1 was only significant for interest, $R^2 = .04$, autotelic experience, $R^2 = .02$, and challenge–skill balance, $R^2 = .02$. An analysis of dummy variables on the same items was not able to explain more than 1% of change in subjective experiences. For Study 2, the explained variance was significant for pleasure, $R^2 = .06$, feedback, $R^2 = .11$, awareness, $R^2 = .08$, control, $R^2 = .10$, and loss of self-consciousness, $R^2 = .07$. Actually, none of the tests identified the HC = HS condition as a significantly better condition for positive experiences than other expressions. In Study 1, hedonic feelings such as happiness, satisfaction, and pleasure followed skills ($\beta = .26 - .31$, $p < .001$). Challenges were only significant for satisfaction ($\beta = .11$, $p < .01$). For eudaimonic feelings, interest, enthusiasm, and meaning followed challenges ($\beta = .20 - .23$, $p < .001$), but interest, engagement, and enthusiasm also followed skills ($\beta = .23 - .34$, $p < .001$).

3.2 Paper II

By the separation between pleasant and interesting feelings, patterns of emotional dynamics were explored. During momentary experiences, episodes characterized as “exercising basic outdoor skills” was most commonly reported as peak episodes (140 out of 235 peak episodes, 60%). For these peaks, interest was reported as higher than pleasure in three out of four peak episodes ($M_{all,pleasure} = 5.12$, $M_{all,interest} = 5.82$). Including whole-day experiences and remembered experiences, the interest-higher-than-pleasure tendency was still significant, but the intensity of interest was more pronounced in the peak interest than the whole-day interest ($t[63] = 3.10$, $p = .003$) and marginally more intense than the remembered interest ($t[63] = 1.93$, $p = .059$).

In addition, a set of factor analysis showed, first, that 13% of the variance in the pleasantness variables and 34% of the variance in the interestingness variables was attributed one common factor in during the peak episodes. Second, for remembered experiences, 72% of the pleasantness against 35% of the interestingness variable could be attributed to the common factor, indicating that the interest-higher-than-pleasure tendency was turned opposite for remembered experiences.

Significant cross-loadings from peak interest to whole-day pleasure were observed, as well as from whole-day interest to remembered pleasure, when analyzed on the variable “wish to repeat.” The stability of interest from peak to whole-day was significantly higher than the stability from peak pleasure to whole-day pleasure. None of the other stability coefficients were significantly different from each other. Both remembered pleasure and remembered interest predicted the participants’ “wish to repeat such a hike,” with approximately equal strength, with $\beta = .26$ ($p = .003$) for remembered pleasure and $\beta = .31$ ($p = .001$) for remembered interest. However, looking at the predicting influence of remembered experiences on the prospective motivation for outdoor experiences, the loading from interest to pleasure was not fully mediated, as predicted in the hypotheses. Although there is mediation, a substantial part of interest remained in the remembered experience.

3.3 Paper III

Intrinsic outdoor motivation was associated with the choice of outdoor education. For students majoring in outdoor education, intrinsic motivation was higher in both the start of first semester (T1) ($M_{\text{outdoor}} = 4.86$, $M_{\text{allother}} = 4.07$, $F [1, 43] = 8.20$, $p = .006$) and in the end of second semester (T2) ($M_{\text{outdoor}} = 4.86$, $M_{\text{allother}} = 3.88$, $F [1, 48] = 10.58$, $p = .002$). Students majoring in outdoor education also reported higher positive emotions after the second event than all other students did ($M_{\text{posem2.outdoor}} = 6.01$, $M_{\text{posem2.allother}} = 5.05$, $F [1, 49] = 4.91$, $p = .032$), while after the first event, this was not significant ($M_{\text{posem1.outdoor}} = 5.84$, $M_{\text{posem1.allother}} = 5.36$, $F [1, 48] = 0.37$, $p = .849$). Intrinsic outdoor motivation at T1 predicted intrinsic outdoor motivation at T2 ($\beta = .72$, $p < .001$). This variable could account for 52% of the variance in the T2 intrinsic motivation variable. Including positive emotions in the regression model, the explained variance increased to 64%. Emotions from the first event were not a significant predictor ($\beta = .16$, $p = .172$), while emotions from the second event were ($\beta = .43$, $p < .01$). In the model including positive emotions from both events, the predictor of intrinsic motivation from T1 was about equally as strong as positive emotions from the second event ($\beta = .50$, $p < .001$). Hence, positive emotions from new events were able to explain an increase in 12% in intrinsic motivation.

Including educational choices, the differences between positive emotions and intrinsic motivation appeared more clearly. For outdoor students, when intrinsic motivation was entered separately in the regression analysis, this variable had strong odds of leading to this choice ($OR = 12.63$, $SE = 1.16$), while positive emotions were less strong ($OR = 3.36$, $SE = 0.57$). When both variables were entered in the model, positive emotions was not significant for outdoor students, while for sport students, positive emotions turned to be a strong predictor ($OR = 8.99$, $SE = 0.83$) while positive emotions was negative for other students ($OR = -1.88$, $SE = 0.70$). Intrinsic motivation operated more specifically, and positive emotions operated more generally, which offers different information about the motivational process, including educational choice.

4. Discussion

As humans, we have the ability to observe our outdoor experiences from the inside as features associated with an outdoor activity. This includes emotions, memories, and different kinds of motivations and meanings. Moreover, emotions change over time, a dynamic that is less obvious in our self-reflection of experiences. How we emotionally engage in the outdoors over time thus informs us about the general functioning of human consciousness. By observing experiences, including pleasant and interesting feelings, some patterns became visible. The results revealed that feeling states can successfully be distinguished between hedonic and eudaimonic components (Paper I and II). In particular, this distinction appeared to be important during momentary experiences. In addition to explaining emotional dynamics in the outdoor setting, the general findings contribute to the understanding of the role of positive emotions in the process of making positive memories of experiences, which influences motivational preferences, intrinsic motivation, and educational choice (Paper II and III).

4.1 Challenges and skills as predictors of positive emotions

Knowledge of the predictive role of challenges and skills has important application value for the outdoor educator, as the adventure experience paradigm and the flow channel models (by three, four, or eight channels) suggest that situations characterized by a balance between challenges and skills are optimal for the prediction of good experiences. The educator can decide whether the facilitation of activities including challenges and skills is important. Alternatively, with the aim to facilitate positive emotions, the educator could provide activities that have other characteristics, like a focus of either hedonic or eudaimonic elements in the experience. Hedonic elements build life satisfaction, eudaimonic elements build personal growth, and both are important for a positive experience and a good life (Vittersø & Søholt, 2011). However, in searching for experiences that are good for other people, the relevance of the challenge–skill ratio on positive emotions adds

important information about how these experiences can be identified. The study of emotional fluctuation contributes to empirical investigations of the predictive roles of challenges and skills.

The empirical tests of the challenge–skill ratio (CSR) discovered very limited explained variance of challenges and skills for emotional feeling states, meaning, and the nine dimensions of flow (Paper I). Hence, this prediction model of positive emotions has limited value. This finding corresponds to a previous analysis of challenges and skills, which indicated a 7% variance in how happy people felt in their lives and 8% in how strong they feel (Csikszentmihalyi & Massimini, 1985). Another early study estimated that challenges and skills only could explain 4.4% of emotional experiences (Voelkl, 1990). Including individual variation in the Experience Fluctuation Model (EFM), the explained variance in Paper I was even weaker, between 2-3% on those variables that were significant (pleasure, interest, challenge-skill balance, autotelic, concentration, awareness, and control). For Study 2, only three variables were significant (pleasure, interest, and concentration), but the explained variance was somewhat higher, between 10.8% and 15.2.

More recently, the explained variance of challenges and skills was set out to be tested in a meta-analytic investigation (Fong, Zaleski, & Leach, 2015), and Paper 1 was included in this meta study. The results indicated an overall moderate relationship between challenge–skill balance and flow. Thus, the results go, to some extent, against our main critique in concluding that challenge–skill balance has little explained variance on positive experiences. In our findings, challenge–skill balance was not able to explain either hedonic nor eudaimonic feelings or typical flow descriptions in the FSS-2. Moreover, the authors in the meta study identified several moderators of the CSR. For participants older than 30 years, the correlation between challenge–skill balance and flow was lower among the youngest participants (Fong et al, 2015). As age increases, the correlation increases. There are also cultural variations. For samples outside the USA, the correlation between challenge–skill balance and flow was stronger than for US participants. Moreover, collectivistic samples had a stronger correlation in comparison to individualistic samples. Leisure context had a stronger correlation than work/education contexts. Hence, there are

many factors that regulate the relevance of challenges and skills for flow experiences. The need of moderators in the relevance of challenges and skills is also found in other studies, for example, in the need for perceived importance of the activity (Engeser & Rheinberg, 2008). Moreover, the cultural variation in the importance of flow for intrinsic motivation was identified earlier in the opposite direction, where collectivistic cultures are more oriented toward mastery practice (low challenge, high skills) in comparison to individualistic cultures, which are more flow conducive (high challenges and high skills) (Moneta, 2004).

The difference between flow experience as a phenomenological description (Csikszentmihalyi, 1975, 1990) and flow experience as a standardized scientific concept concerns complex questions of validity. The question whether this assumption is ontologically true is a central claim when discussing validity (Borsboom & Mellenbergh, 2004). Hence, whether challenge–skill balance is a moderate predictor of flow experiences in general or whether challenge–skill balance is a moderate predictor of the standardization of the nine-dimensional approach (like the FSS-2) appears to be two different questions. For example, there are studies that typically identify less than nine dimensions within the flow experience. Analysis of five papers on qualitative approaches to flow dimensions during 114 elite sports athletes revealed that the dimension mostly reported was “concentration in the task at hand” (80% of the reports from athletes), followed by “action-awareness merging” (Swann et al., 2012). Challenge–skill balance was reported for 41% of the athletes experiencing flow, ranked as dimension number seven. Moreover, on average, a study of Japanese athletes reported 5.8 dimensions that occurred simultaneously (Sugiyama & Inomata, 2005), indicating that a flow situation may be described differently than these nine dimensions at once. Swann et al. (2012) found in their systematic review that the top five indicators of flow in sports were appropriate focus, effective preparation, optimal motivation, optimal arousal, and positive thoughts and emotions, which go beyond the challenge–skill approach.

Thus, a validity question relates to the causal direction of challenges and skills in the flow experience. From the original description of the phenomenology of flow, challenge–skill balance was typical when reflecting on flow experiences *in*

retrospect. However, this does not make challenges and skills *predictors* of flow. The findings from Paper I contribute to a critique of using challenge–skill balance as an inducer of flow experience. Positive emotions were not identified in the challenge–skill balance condition in any of the tests, nor for other typical characteristics of flow, such as meaning, or the nine dimensions expressed in the FSS-2.

4.2 The imbalance model of challenges and skills

Alternatively, challenges and skills could have different functions in the prediction of a positive outdoor experience. When including the distinction between hedonia and eudaimonia, Paper 1 demonstrates that challenges and skills carry different information as predictors of positive emotions in the outdoors. The role of challenges and skills in the prediction of positive emotions in the outdoors is thus more complex than the role of challenges and skills as predictors of a particular flow experience. Hence, in understanding the dynamics that influence positive outdoor experiences, the differences between emotions associated with challenges and emotions followed by skills supplement the theoretical understanding of a positive experience.

The functional well-being approach explains that different positive feelings correspond to different action readiness, where eudaimonic and hedonic feelings represent different action readiness (Vittersø, 2013b). The results from Paper I support this line of research in indicating that challenges and skills play separate roles in the prediction of distinct positive feelings. The feeling state of pleasure peaked in channel 3 (high skills and medium challenges), both for Study 1 and Study 2. The findings underscore that using skills is more typical for hedonic feelings than a balance of challenges and skills. Hence, for pleasure, satisfaction, and happiness, using skills is typical (Paper I). These results are in line with other analyses typically associating hedonic feelings with the “control” (channel 3) sector in the EFM (Clarke & Haworth, 1994; Ellis et al., 1994). These findings are replicated by refined approaches to feeling states and variations of challenge–skill combinations, which underscores that enjoyment, happiness, and intrinsic motivation are more related to

the control zone through high skills matched with moderate challenges (Lambert, Chapman, & Lurie, 2013). These results support the view that hedonic feelings relate to broadened attention and less complexity. These authors argued that the EFM should be revised in order to identify flow as a condition of skills higher than challenges. Hence, they suggest revising the flow channel from challenge–skill balance to high skill and moderate challenge. However, the question of whether happiness and enjoyment are appropriate feelings *during* or *after* flow is not discussed. Including temporal perspectives, there is a possibility that the prediction model of high skills and moderate challenges produces positive experiences but perhaps not a flow experience. Narrowed attention is typical *during* the flow experience, which is less typical for hedonic feelings. However, *after* the flow experience, broadened attention and hedonic feelings would be typical.

Another contribution to the EFM is a study of fluctuating moments as expressions of sine curves by challenges and skills (Inkinen et al., 2013). In this study, high-activated positive affect was followed by high challenges and skills and less activated positive affect was followed by lower challenges and skills. While this is a general support to the EFM, these authors contribute to a mathematical model of explaining affect by challenge–skill variation. Flow experience was not related to absence of negative feelings. Thus, support was given the idea that flow connects to Eudaimonia. However, in their discussions of the findings, the authors argued that eudaimonic and hedonic motives are different approaches and that optimal experience is not purely being hedonic. In the process of being attracted to challenging activities, they explained that the hedonic and eudaimonic component is diverse: “In such a process [i.e., eudaimonic], hedonic moments of high positive affect and the absence of negative affect are probably quite rare and occur mostly when challenges are already solidly under control” (p. 909-910). Hence, these authors actually argue for the FWBA, which is an understanding that information processing is a complex process of different phases of action readiness. While narrowed attention is unrelated to hedonic feelings, it is likely that when there is no longer a need for such intense concentration (i.e., the situation is under control), the attention broadens and hedonic feelings are likely to be followed by a positive, broadened evaluation. Thus, the

succeed at a challenging task is awarded with positive feelings, but this is perhaps not a description of only flow experiences but rather a description of a coping experience, a judgment over a coping process. In the findings, challenge was somewhat associated with eudaimonic feelings, but skills were associated with both eudaimonic and hedonic feelings (Paper I). While the trigger condition of eudaimonic feelings has a complex character (Hidi & Renninger, 2006), hedonic feelings have the function of stabilizing, broadening attention, and readying people for new tasks. Typically, an evaluation of a positive experience would be hedonic.

In Paper I, challenges were related to eudaimonic feelings in Study 2 but not in Study 1. Hence, there seem to be different conditions in which challenges are relevant for a positive experience. One explanation could be that challenges can be both motivational and amotivational. The value of striving for challenging goals and seeking for meaning is argued in the eudaimonic well-being approach (Deci & Ryan, 2008b; Kopperud & Vittersø, 2008; Ryff, 2013; Straume & Vittersø, 2012). Challenges are thus very important in a general perspective of well-being. For example, workplaces with *engaged* employees do a better job of keeping employees, satisfying customers, and being financially productive and profitable (Harter, Schmidt, & Keyes, 2003; Schaufeli, Bakker, & Van Rhenen, 2009). Job engagement is thus a core component of well-being in the workplace. Furthermore, complex work situations increased inspiration and decreased happiness (Straume & Vittersø, 2012). It is possible that the participants in Study 2 experienced higher motivation than the participants in Study 1. It is reasonable that there could be motivational differences related to the specific activities. While Study 1 included sport students, of which only nine of the 64 participants continued with outdoor education after the first year, Study 2 included only outdoor students. Moreover, Study 2 was an introduction to advanced skills, utilizing climbing equipment for glacier walking.

Hedonic feelings were poorly associated with challenges (Paper I). While skills typically go with hedonic feelings, skills also go with eudaimonic feelings. Skills are thus important in producing a variety of positive emotions. This is an important finding for the practical field, suggesting that using skills is a safer approach to a positive experience than facilitating a challenge–skill balance.

However, in finding predictors for eudaimonic feelings, challenges have a complex role. Alternatively, when examining the eudaimonic feeling of “interest” in particular, this state can be triggered in various ways. For example, as presented in the “four phase model of interest development,” the trigger experience in phase 1 is related to *positive or negative affect*, while the more developed and articulated interest in phase 4 is based on a *two-way process* of emotion and cognition (Hidi & Renninger, 2006). Taking this perspective, there are several potential trigger experiences possibly, but not necessarily, related to challenge. Besides, this affective state could be a result of spontaneity or new experiences, not necessarily from using cognitive resources like striving for challenges.

To summarize, challenges and skills as separate dimensions are important in the prediction of distinct positive emotions. Furthermore, the separation between hedonic and eudaimonic elements are informative in understanding predictors of positive emotions. The distinct dynamics in hedonic and eudaimonic action readiness follow, to a certain degree, the distinct dimensions of challenges and skills, but skills are associated with both hedonic and eudaimonic feelings, and challenges are only partly associated with eudaimonic feelings. To understand more about the emotional dynamics within Friluftsliv, the findings suggest that eudaimonic feelings like engagement, interest, and meaning are sometimes associated with self-reported challenges, while both hedonic and eudaimonic feelings are associated with self-reported skills.

4.3 Specific and general experiences

In the second paper, the results indicated that remembered experiences were more important for prospective motivation than momentary experiences, such as peak episodes and whole-day experiences. This finding generally replicated the existing research (Wirtz et al., 2003). The distinction between the experiencing self and the remembered self sheds important light on the conceptualization of happiness (Kahneman & Riis, 2007) in paying attention to the temporal perspective in making evaluations. What we experience in the moment is different from what we think of

the experience in retrospect. Our memory makes a story of our experiences, which allows the conceptualization of experiences to be influenced by the dynamics of “focusing illusions” (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2006). In making stories of our lives, the distinction between our subjective perceptions of experiences as contrasted to more objective measures of experiences adds new knowledge to the understanding of human motivation and behavior (Kahneman, 2011). Understanding the factors that influence our remembered experiences is thus a key question in understanding the dynamics of motivation.

Moreover, the findings contribute to a more refined understanding of how experiences are reported along the temporal gap. Peak episodes predict remembered experiences if this peak was an *interesting* experience (Paper II). This finding is consistent with neuropsychological approaches in that episodes reported with high arousal seem to make the memory more vivid and contextual (K. Schmidt, Patnaik, & Kensinger, 2011). Including the distinction between pleasure and interest, more nuances are added to our understanding of how we produce positive remembered experiences. Pleasant peaks do not have this predictive role on the remembered experience. In the peak episode condition, the feeling of interest was most pronounced, but this pattern was not true for all peak episodes. The general finding that peak episodes are important for positive remembered experiences is supported by the peak-end-rule: it is the peak and the end that are the most important predictors in a positive memory (Fredrickson, 2000b). Moreover, memories of events consist of a few stills rather than the general day-to-day evaluation (Fredrickson & Kahneman, 1993). Paper II contributes to this picture by identifying that events reported as interesting follow the patterns of the peak-end-rule, but not peak episodes reported as pleasant. However, in Paper II, the end of the experience was not typically captured, other than as remembered experiences one week and one month after the events. The end might be very important in an outdoor event too, as there could be similarity to the evaluation of holiday events: when the peak-end-rule rule was tested on holiday events, remembered overall happiness was better predicted by end happiness than both peak happiness and happiness throughout the event (Kemp, Burt, & Furneaux,

2008). However, in this study, happiness was not distinguished between hedonic and eudaimonic elements.

Paper II illustrates that the distinction between eudaimonic and hedonic experiences is especially important in identifying peak episodes for a positive remembered experience. There are qualities within the event or experience that influence the emotional experience. Interesting peak episodes have a significant contribution to the remembered experience. The distinction between hedonic and eudaimonic experiences is generally identified during different contexts, for example, days at work. The feelings of “pleasure” and “engagement” typically represent hedonic and eudaimonic state perspectives of well-being at work (Kopperud & Vittersø, 2008). Moreover, while experiences during *breaks* typically have a hedonic characteristic, experiences during *core work* typically have a eudaimonic characteristic (Kopperud & Vittersø, 2008; Straume & Vittersø, 2012). The eudaimonic component influences personal growth, while the hedonic component influences life satisfaction, in line with FWBA. Eudaimonic and hedonic experiences have different functions in a long- and short-term perspective, taking the state and trait perspective. For example, while eudaimonic experiences seem to be important to personal growth at work, personal growth also seems to increase sick leave (Straume & Vittersø, 2015b). A high level of life satisfaction was, conversely, associated with reduced sick leave. Hence, a functional understanding of how hedonic and eudaimonic feelings interplay improves our knowledge of a good life in many areas of functioning. During Friluftsliv, interesting peak episodes serve to maintain a positive memory of the hike, which again is functional in predicting prospective motivation to engage in Friluftsliv.

Paper II also identifies a change in our perception of experiences from the peak episode through the whole-day experience to the remembered experience. There is a transformation of emotion from the peak episode through the whole-day experience to the remembered experience not only in intensity but also in valence. Interesting peak episodes are felt as more pleasant as time goes by, and this effect is significant from the peak episode to the whole-day experience and even strengthens to the remembered experience. Hence, the valence of a positive feeling is not

constant, but it changes depending of the temporal perspective of the experience. In the description of general and remembered experiences, this refers to emotions related to outdoor experiences during the two semesters and not general experiences in the interpretation of life evaluations. The findings support earlier research that critical analysis of *happy moments* increased the feeling of interest, while a pure reconstruction of the experience increased the feeling of pleasure (Vittersø, Overwien, & Martinsen, 2009). While these effects were identified in a laboratory setting, like a classroom experiment, Paper II contributes with adding ecological validity in a context of outdoor experiences.

The identification of peak episodes as the “best experience of the day” indicated that the typical *specific* experience “exercising basic outdoor skill” is reported as an interesting experience (Paper II). The other categories of peak episodes, including cooking, admiring nature, experiencing humor, socializing, completing a task, or other experiences, could perhaps be characterized by broadened attention to the situation and then is perceived as being more pleasant. Hence, on the level of peak episodes, the distinction between interesting and pleasant experiences informs us about different kinds of intentionality during experience. The feeling of interest has higher complexity (Eckblad, 1981) but is also directly linked to motivation (Tomkins, 1970). Including the different roles of challenges and skills in the prediction of pleasure and interest (Paper I), more knowledge adds the idea of a peak episode. Using skills predicts both pleasure and interest. Perceived challenges also predicts interest. However, these predictors are not particularly strong, explaining 8 % of the variance for pleasure and 16 % for interest.

The different intentionality represented by the feeling of interest as narrowed attention, and pleasure as broadened attention, can also shed light on the patterns of variability found in a study by Hull, Stewart, and Yi (1992): During *uphill hiking*, people reported more boredom and were less oriented toward beauty. During *downhill hiking*, however, people reported less boredom and were more oriented toward beauty. Different kinds of attention regulation can explain this variability. While the uphill hike is oriented toward hard physical activity and possibly a narrow focus on the body, downhill hiking can be characterized by gentle physical activity

and pleasant feelings, opening the attentional mood to see the beauty of nature, in line with the broaden-and-build theory of positive emotions (Fredrickson, 2004). As positive emotions have different roles in our attention, positive emotions have different functions in relation to well-being. Reports of interesting peak episodes were further associated with personal growth, while reports of pleasant whole-day experiences were associated with life satisfaction, but life satisfaction and personal growth were not related (Løvoll & Vittersø, 2013). Distinct positive emotions thus carry different information regarding well-being.

In the motivational process, the findings from Paper II support the ideas from the FWBA in that eudaimonic experiences are associated with accommodation and growth (Vittersø, 2013b). To make this happen, a hedonic evaluation of the experience in retrospect might help us to get ready for new eudaimonic experiences and overcome the fear of feeling uncomfortable. Hence, this explains why the experience is felt more pleasantly in the general perspective. Another explanation for why the valence of the experience can change is that memories of happiness are changeable and liable to reconstruction (Kemp et al., 2008). In this process, specific experiences, like trying a new skill, might carry a potential to be remembered, particularly if we like the idea of mastering this skill. Moreover, we change our perceptions of events depending on time perspectives (Trope & Liberman, 2003).

Paper II contributes to the theoretical grounding of positive emotion. The distinct feelings of pleasure and interest, particularly in the peak episode condition, reflect different action readiness. In this picture, flow theory is plausible in the explanation that specific experiences, such as canoe rescuing or skiing, refer to selective attention in the description that selective attention is associated with merging action and awareness, the transformation of time, and a loss of self-consciousness (Csikszentmihalyi, 1975, 1990). Selective attention to a specific experience relates to interest in Paper II. On the other hand, the broaden-and-build theory of positive emotions is plausible for explaining the role of attentional broadening by affective feelings (Fredrickson, 2004). Typically, attention relates to a wider perspective, like in the whole-day and remembered time perspective of the

experience, which was typically identified with pleasure in Paper II. Positive emotions thus seem to operate with two distinct types of action readiness.

The finding that interesting peak episodes lead to positive evaluations in retrospect is important in terms of understanding the role of eudaimonia and philosophical happiness. Eudaimonic peaks seem to be more important in our general positive memory than hedonic peaks, but there are other factors in the evaluation of an experience that are not approached. For example, the qualities of the natural sites could influence our memories of experience. Looking at cognitive evaluation theory, one of the sub-theories of SDT (Deci & Ryan, 1985), attachment to place could influence our memories as an external event. Hence, there is a possibility that being exposed to these sites has a powering effect that produces, for example, the feeling of interest. People seem to be more happy in natural surroundings (MacKerron & Mourato, 2013). However, other factors could influence the results, like traits and motivations. For example, there could be a selection problem where all the students included in the study were generally positive about trying these kind of events.

4.4 Positive emotions build intrinsic motivation

The experiences of the hikes during the two semesters matter in several ways (Paper III). Remembered positive emotions seem to influence intrinsic motivation and correlate with the choice of majoring within outdoor education. There was support for the SDT in understanding the role of pre-established intrinsic motivation toward the activity in reporting positive emotions from the activity (Deci & Ryan, 1985; R. M. Ryan & Deci, 2012). There was also support for the broaden-and-build theory of positive emotions (Fredrickson, 2004) in the finding that positive emotions increase the general level of intrinsic motivation. Despite the difficulties in separating positive emotion from intrinsic motivation, including high correlations between these concepts, the findings contribute to refined knowledge of different functions between these constructs. Positive emotions are important builders of intrinsic motivation, but they seem to function more generally than intrinsic motivation. For behavioral

choice, intrinsic motivation predicts choosing an outdoor major. Hence, intrinsic motivation operates more specifically.

Positive emotions were reported more intensively after the first event as compared to the second event. While positive emotions from the first event were reported to be high for all groups of students, there might be something within this experience that influenced the emotional experience. Perhaps for this group, seashore experiences in general felt more intense than mountain experiences; differences in nature qualities should be considered (MacKerron & Mourato, 2013). Moreover, the event at the beginning of the semester involved sunny weather and socializing with new friends, which could be exciting. Positive emotions from the second event, however, differed between groups. Outdoor students reported positive emotions more intensively than the other two groups. This group also reported higher intrinsic motivation in the pre-event situation. Intrinsic motivation generally predicts positive emotions. However, positive emotions from the second event increased the level of intrinsic post-event motivation. One explanation could be the time factor from the first to the second event. Another explanation could be that the outdoor group had higher cognitive resources in meeting winter conditions with low temperatures in terms of being intrinsically motivated. Furthermore, positive emotions could be induced by striving and commitment toward a certain goal, as typically explained in flow theory (Csikszentmihalyi, 1975, 1990). Positive emotions could also be a result of trying a new skill or being exposed to a new landscape.

Flow theory suggests that being in flow is motivating itself (Csikszentmihalyi, 1975, 1990). Improvement of flow theory thus benefits from the findings in Paper III: the emotional experience, when reflected in the memory of the experience, also has a powerful effect on increasing intrinsic motivation. Flow is not only the “technical state of intrinsic motivation” (Csikszentmihalyi & Csikszentmihalyi, 1988, p. 3), emotions inherent in an outdoor experience can in retrospect increase the intrinsic motivation to higher levels. In this process, this emotional memory is internalized by cognition, which is an important factor of building intrinsic motivation. Support was given to the communication theory of emotion (Oatley, 1992). Emotion has an independent influence on our intrinsic motivation. This is not only in the light of the

motivation we feel from positive emotions, but there is also a process going from the memory of a positive event to the development of intrinsic motivation. Even if this effect was small, there is evidence that previous experiences and motivations cannot explain the entire process. Hence, understanding motivational processes and studying emotions contribute to a refined knowledge on the function of emotions.

Positive emotions, measured in retrospect as a cluster of hedonic and eudaimonic feelings, served to increase the general level of intrinsic motivation (Paper III). Support for a *general positive evaluation* for prospective motivation is given within the SDT (Deci & Ryan, 1985, 2008a). Positive emotions from the satisfaction of situational needs serve to promote interest for the activity domain. Including findings from Paper II, there is a difference in whether feelings are measured as peak episodes, whole-day experiences, or remembered experiences. Eudaimonic peak episodes are generally remembered as more pleasant as time goes by, while hedonic peak episodes do not seem to have a cross-loading to eudaimonic feelings. Hence, the remembered experience includes both eudaimonic and hedonic peak episodes and eudaimonic and hedonic whole-day experiences.

4.5 Prediction of educational choices

Paper III set out to investigate the role of positive emotions in the motivational process of choosing a major. Following the SDT, positive emotions were important for the building of intrinsic motivation, but for educational choice, the role of positive emotions was more complex (Paper III). When including both intrinsic motivation and positive emotions in the logistic regression analysis, only intrinsic motivation was significant for those who choose an outdoor major. Those who choose sport major reported significantly higher levels of positive emotions compared with those not choosing a sport major. To interpret the findings, positive emotions and intrinsic motivation may have separate functions in the motivational process. Positive emotions seem to operate more generally, while intrinsic motivation separate the different groups. In order to choose an outdoor major, positive emotions from the second event then needed to be internalized into the more specific concept of intrinsic

outdoor motivation. There must be a cognitive process after the positive evaluations that fits into patterns of liking the specific activity in general terms. Those who reported positive emotions but who did not internalize these into patterns of intrinsic motivation thus tended to choose a sport major or another choice.

The finding of the function of emotions in educational choice supplements existing research on education and emotion. While positive emotions are necessary to maintain a motivation for learning (Elliot & Pekrun, 2007; Higgins, Shah, & Friedman, 1997; Pekrun, 2006, 2007), the findings from Paper III highlight the importance of positive emotions being internalized into intrinsic motivation. Hence, positive emotions are not sufficient to maintain interest for long-lasting learning; they need to internalize into patterns of intrinsic motivation for those who continue a major in outdoor education. In general, this is a support for the theoretical framework of SDT due to the necessity of developing patterns of intrinsic motivation in order to want to continue doing an activity for a long time (Deci & Ryan, 1985; R. M. Ryan & Deci, 2012).

Educational choices could be driven by intrinsic motivation but also by other motivation regulations dependent of the difference between activity focus and outcome focus. While the function of positive emotion was identified earlier as important in behavioral choice (Ariely & Carmon, 2003), the findings from Paper III refine these findings for educational choice. Positive emotions are important as they correlate with educational choice. However, the intensity of these emotions do not predict educational choice. Rather, how positive emotions internalize into patterns of intrinsic motivation leads to educational choice.

4.6 Integration of findings from the three papers

First, the challenge–skill ratio for the prediction of positive emotions has clear limitations (Paper I). For entering the flow zone, a standardization of flow measurement through challenge–skill balance may be a simplistic approach to a complex phenomenon. The scientific concept of flow needs to be further improved. The findings are in line with other critical approaches to the challenge–skill

standardization of flow (Houge Mackenzie et al., 2011; Keller & Landhäuser, 2012; Straume & Vittersø, 2015a; Swann et al., 2012; Voelkl & Ellis, 1998). However, skills and challenge separately appear as ingredients to a positive experience. As positive emotion is a broad concept, a refined prediction model of positive emotions should include the finding that different types of action readiness have different predictors.

Skills generally relate to a range of positive emotions. Understanding eudaimonic experiences and the function of challenge includes not only the self-perception of challenge but also motivations, traits, and coping strategies, such as a growth-oriented mindset (Dweck, 2006) or the willingness to approach challenges within a particular activity versus avoidance behavior (Elliot & Pekrun, 2007). However, canoe rescuing in cold water and rescue training in a snow avalanche environment were most often chosen as the peak episode of the day (Paper II), indicating that challenges, such as suffering in cold environments, are often included in a positive evaluation.

Second, there is a difference in how positive emotions are remembered that is relying of hedonic and eudaimonic qualities of the experience (Paper II). Interesting peak episodes directly relate to a positive remembered experience. For pleasure, a path from pleasant peak episodes through pleasant whole-day experience leads to a pleasant memory. This is a refinement of the peak-end rule (Fredrickson, 2000b) in determining qualities with a peak episode for a positive evaluation. Only interesting peak episodes have a direct influence on positive memory. Eudaimonia is important during an event in the positive evaluation of experiences when selecting episodes that are typically more meaningful than pleasant. Moreover, emotions change during different phases. When experiencing interesting episodes, these turn to be more pleasant as time goes by. This finding offers support to the FWBA by identifying different feelings for different types of action readiness (Vittersø, 2013a, 2013b). During an experience, seeking personal growth is preparing the individual to strive for meaning and realization, while after the experience, it is more functional to think hedonically about the experience, stabilizing the individual and readying him/her for new tasks. Tested on prospective motivation, both interest and pleasure predicted the

willingness to repeat a similar hike. Hence, while there is a transformation from interest to pleasure, this transformation is not total, as some of the variance of positive emotions remains as interest. Moreover, it was only the remembered experience that predicted prospective motivation, a finding that is in line with other studies (Wirtz et al., 2003). Paper II contributes to a refined understanding of how we evaluate positive emotions over time, how the peak-end rule can be refined, and how our functional memory changes by different temporal perspectives.

Third, positive emotions influence intrinsic motivation and educational choice (Paper III). Positive emotions have a unique building effect on intrinsic motivation, including when controlled for the effect from pre-established intrinsic motivation. This finding is in line with the broaden-and-build theory of positive emotion (Fredrickson, 2004), as well as the recognition of emotion in our communication systems (Oatley, 1992). Emotional experiences are important in understanding how people can produce intrinsic motivation. Intrinsic motivation is conceptually different from positive emotions when including behavioral choices. For those who choose an outdoor major, positive emotions were fully internalized in intrinsic outdoor motivation, while for other groups, this process was not finished off, resulting in other choices. Positive emotions seem to operate more generally, while intrinsic motivation operates more specifically to particular motivational domains. A general support for the SDT is found in the importance of being intrinsically motivated for long-lasting learning (Deci & Ryan, 1985; R. M. Ryan & Deci, 2012).

4.7 Strengths and weaknesses

This thesis contributes to some dimensions of positive experiences: the challenge–skill dimension, different temporalities and consequences of motivation, and educational choice. The normative aspect of identifying positive experiences was not the general aim of this thesis. The strength of the study design is the opportunity to follow the same individuals over time, i.e., 13 months, with many repeated measures. While many studies with repeated measures experience a decrease in the response rate over time, the situation was different for Study 1. There was a general

increase in the response rate to experience sampling from Yksnøya (one month after the start of Study 1) to Standaleidet (after seven months). The missing of remembered experiences was a result of school participation and not a result of willingness to participate in the questionnaires. As for Study 2, there was 100% participation, which indicates that the target group had a special motivation for participating in the study, even though no gifts were offered for participating.

The character of the papers has an explorative nature. Because of the difficulties of capturing outdoor experiences in a long-term perspective, a series of new studies could create the foundation for conducting a meta-analysis and more causal discussions in determining the necessary and sufficient conditions of the findings. However, the general findings shed light on complex structures in a kind of gestalt approach to outdoor experiences. There are, however, many limitations related to the findings. The sample size was limited, and outdoor experiences were examined in one sample (except for including Study 2 in Paper 1). The use of SEM on this sample size is close to the acceptable limits. However, using saturated models, the purpose of the analysis was more to determine differences within variables than identifying causal models.

In the discussion of temporality, remembered feelings were empirically more important than momentary feelings (Paper II). This conclusion could be affected by limitations in the measurements of feelings and the critique of phenomenologism as a reduction of phenomenology (Halak et al., 2014). Momentary experiences could potentially carry deep and life changing moments, as in the original descriptions of “peak experience” (Maslow, 1968), deep flow as meaningful in the moment (Csikszentmihalyi, 1975, 1990), transcendent experiences explained as “plateau experiences” (Buckler, 2011), and also spiritual or religious experiences. Evaluations of the *peak episode* and the *whole-day experience* do not necessarily capture such moments. Furthermore, these kind of moments are typically rare. Because the study occurred within the frames of an educational outdoor program, this does not cover the richness of nature experiences in terms of place, being in a group, and experiencing different kinds of instructions. Hence, further exploration of the power of momentary experiences is required.

Another aspect of the experiences is the duration of events. Study 1 captured experiences from two three-day events. Study 2 captured experiences from one five-day event. Three days is perhaps too short to open for positive feelings caused by contemplation or mindful presence in nature. Perhaps there are dynamics that are overlooked in this selection of events when pinpointing the power of emotions in outdoor experiences. It takes some time to adjust to the group experience and leave the everyday life behind. How long this process takes is probably person dependent, but there might be some patterns here related to the duration of the event. Perhaps hikes with a longer duration would have a stronger emotional effect on motivation regulation and educational choice. On the other hand, strong, positive emotions could occur very spontaneously, also for short hikes.

The selection of students from one particular university college is a clear limitation. While the representation of a “typical Norwegian sport- and outdoor student” is covered to a certain degree by this selection, there could be differences between universities that influence the results. For example, sport and outdoor students attending school in cities could have better grades and be more motivated in general. The general ambition was to look into the dynamics of emotion and motivation that operate on a general level, including motivated as well as less motivated persons. Taking this perspective, Friluftsliv and sports operate as distinct domains of motivation (Paper III). Hence, the selected group included motivational variation. However, the sample size is limited, and replications are necessary in order to generalize the findings.

Many aspects relating to flow theory are explored; the challenge–skill dimension, emotional dynamics, and intrinsic motivation are all relevant contributions to the flow concept. However, the approach to flow was more indirect in an ambition to contribute to the general aspects of positive experiences. Another question is whether flow experiences are important in the general perspective of positive outdoor experiences, or if other conceptualizations are more informative. For example, flow experiences could also be destructive. A high level of flow is found within illegal graffiti sprayers (Rheinberg & Manig, 2003). The concept of flow and the ethical question of eudaimonia are thus appropriate. Flow experiences are

typically associated with “flourishing” (Keyes, 2007), where humans function at their best, which is related to a person’s perception of goal and meaning. However, the ability to take responsible and make wise decisions might follow structures other than being in flow. For example, during climbing and kayaking, less experienced people are more likely to experience flow than more experienced individuals (Shüler & Nakamura, 2013), indicating that the flow experience is more about affective feelings, referring to increased dopamine release (Ashby et al., 1999), than being highly skilled or finding deeper meaning with the activity. Furthermore, risky behavior was mediated by self-efficacy, which was increased by flow (Shüler & Nakamura, 2013). Flow activities are also typically associated with modern extreme sports (Willig, 2008), thus dealing with risk perception. Whether meaning in such activities is an individual interpretation or whether it involves ethics through reflections on eudaimonia remains as a philosophical question. Arne Næss would say that this distinction relates to self-realization (individual) versus Self-realization with capitalized S (global, including the earth perspective) (Næss, 1986). On the other hand, the findings contribute to general aspects of positive emotions, and it is likely that these aspects also yield the emotional understanding of flow experiences.

4.8 Implications

The three papers contribute to our understanding of how we experience the outdoors, how we produce positive emotions, and how positive emotions function in the motivational process of engaging in Friluftsliv. The findings have implications both for theory improvement and for practical didactical work.

4.8.1 Practical implications

As experiences, to a certain degree, are within the influence of a guide or teacher, the knowledge contributes to many parts of didactical thinking—from planning activities, through attention to emotional experiences during an event, to an evaluation of the event and the after-reflections in terms of the internalization of positive emotions into intrinsic motivation. With the identification that positive

emotions have a powering effect on prospective motivation, intrinsic motivation, and educational choice, there are good reasons to engage emotionally in the outdoor experience. As teacher enthusiasm predicts student enjoyment (Frenzel, Goetz, Lüdtke, Pekrun, & Sutton, 2009), outdoor guides and teachers should be encouraged to share their passions for both the eudaimonic and hedonic dimensions of Friluftsliv.

It is hard to predict positive emotions in the outdoors, but chasing these through challenge–skill balance is a less fruitful approach than focusing separately on challenges and skills (Paper I). Building skills seems to be an overall better approach to predicting positive emotions. The findings from Paper I shed light on the adventure experience paradigm, which encourages a balance of challenges and skills, interpreted as a *balance of risk and competence*, as the most attractive experiential zone (Csikszentmihalyi & Csikszentmihalyi, 1990; Jones et al., 2003; Priest, 1990). Based on the empirical investigations of the relative importance of challenges and skills, this approach to “adventure experience” is too simplistic. Rather, there are reasons to conclude that 1) positive experiences require multiple explanations and 2) flow theory needs improvement in determining reliable predictors of flow. Thus, a revision is needed of the didactic framework of the perception of challenges and skills (or competence and risk) as most optimal.

For the practical didactical work, the knowledge that there is a transformation from interesting to pleasant feelings (Paper II) could imply that the experience of unpleasant feelings, like being cold, wet, and exhausted, does not necessarily lead to a negative memory if this experience relates to some kind of meaning. In this perspective, the outdoor leader or teacher has a very good opportunity to influence the interpretation of events. In paying attention to emotional experiences during and after hikes, the feeling of interest can have a direct association with the remembered experience. The guide or teacher could use strategies to identify interesting feelings during an event to make this a conscious feeling.

Remembered positive emotions build intrinsic motivation (Paper III). The evaluation of new experiences matters in the building of intrinsic motivation, which is good news for guides and educators in their efforts to facilitate good experiences in the outdoors. A consequence of the findings is that the emotional experience during

hikes matters and that by paying this attention, our contributions as informed teachers or guides may influence participants' motivation. In building intrinsic motivation, the self-determination approach suggests that satisfaction of the psychological needs of relatedness, competence, and autonomy is important (Deci & Ryan, 2008a). From Paper III, positive emotions from new experiences further increase the level of intrinsic motivation. Both a focus on satisfaction of needs and a focus on positive emotions increase the level of intrinsic motivation. Moreover, the role of competence seems to be the most important factor for motivation toward physical activity (Jaakkola, Washington, & Yli-Piipari, 2013). Using skills relates to satisfaction of psychological needs, which is associated with pleasant feelings (Paper I). Hence, there could be a link between using skills and increased satisfaction of psychological needs.

With regard to prospective motivation and educational choices, the value of positive emotions is an important finding. To a certain degree, this could be influenced by a teacher through focusing on positive emotions or using techniques that strengthen positive emotions during hikes. Hence, designers of outdoor programs benefit from this knowledge when making outdoor programs. For example, talking about experiences has a double effect, increasing positive emotions in the moment and creating awareness of the memory. Using metaphors and rich descriptions seems to promote this process (Burns, 1998, 2001). Combined with the knowledge of the experiencing and remembering self (Kahneman & Riis, 2007), there is evidence that making some effort in the construction of the remembered self by focusing on eudaimonic and hedonic components of an experience provides prospective motivation. Moreover, after-reflections are very important in how we remember experiences and what feelings that are cultivated. Positive emotions have a very important role in producing motivation toward outdoor activities, a view that challenges the idea that formal experience, culture, and personality traits are the essential factors. It is never too late to commit to the outdoors.

4.8.2 Implications for future research

Generally, the study should be replicated due to the sample size of 64 (Study 1) and 26 (Study 2) students. Ideally, a replication of these kinds of studies with other sport and outdoor students in other geographical areas would give strength to the findings. Furthermore, the hypotheses need to be tested in other activity domains in order to examine whether the general findings of CSR, emotional transformation from interest to pleasure over time, and the mediation model of positive feelings through intrinsic motivation hold in domains other than the outdoor activity domain and in Norwegian culture. Moreover, inductive approaches to certain qualities of experiences might discover core elements in the experience, which would be very helpful in the further mapping of predictors and indicators of positive experiences. In general, more work on the fine balance between emotional and cognitive elements of positive experience in general and flow experience in particular is needed. Inspired by the distinction between promotion-related challenge and prevention-related challenge (Higgins et al., 1997), the role of challenges in positive experiences should be conceptually developed. Self-determined and promotion-related challenges might be very important in identifying positive experiences, for example, by the effect of realizing dreams of overseas sailing, reaching climbing goals, etc., as long as the passion for these activities has a harmonious character (Vallerand, 2008).

The study of feeling states is a fruitful approach, but additional methods of measuring feeling states are very promising and would be a good supplement in the mapping of experiences. For example, the very precise change from one moment to another is very interesting to capture. Biological approaches add more precise measurements, from moment to moment. Flow experiences connect to higher order attention that possibly wires together with our thinking in general, from self-conceptions and memory to ethical reflections. Based on the discussion of executive function and flow theory, the role of attention systems in the brain is very relevant in coming closer to momentary changes in optimal experiences. Thus, grounded approaches to flow in the brain are necessary, and there is promising technology capturing the differences from moment to moment, including functional magnetic resonance imaging (fMRI) studies and studies of dopamine release during certain

moments (Salimpoor, Benovoy, Larcher, Dagher, & Zatorre, 2011). Moreover, in the mapping of emotions, fMRI-studies have demonstrated that different emotions (anger, disgust, envy, fear, happiness, lust, pride, sadness, and shame) correspond to neural activation in distinct parts of the brain (Kassam, Markey, Cherkassky, Loewenstein, & Just, 2013). In future, perhaps flow experience will appear as patterns of neural activation.

Future research should go deeper into the different descriptions of experiences and feeling states in order to see whether there are patterns between dispositional characters and preferences of experiences. For example, is it more motivating to push the inexperienced to learn new basic outdoor skills, including physic demands, or is it more motivating to nourish the pleasant experience by spending time sitting close to the bonfire, having a nice cup of coffee? So far, both approaches build the motivational process as long as the memory of the experience is good. More research is needed on the relative influence of hedonic and eudaimonic elements for people low on motivation. Future research should also include interventions of promoting positive emotions during hikes. It is likely that positive emotions can be induced and trained (Fredrickson, Cohn, Kimberly, Pek, & Finkel, 2008), including in the outdoor domain.

5. Conclusions

The present thesis offers several insights in the inner experience of the outdoors. Findings indicated that the golden challenge–skill ratio as a predictor of positive experiences in general and flow experiences in particular is a simplistic approach to understanding the richness and variety of positive experiences (Paper I). Rather, an imbalance model of challenges and skills seems to be more informative in the capture of positive feelings than the initial balance model. Further findings, through the separation between eudaimonic and hedonic elements, discovered structures in the way experiences are processed in the consciousness (Paper II). While interest typically relates to peak episodes, pleasure becomes increasingly pronounced as time goes by when thinking of the experience. The affective dimension is thus somewhat delayed from the experiential moment. A remembered experience is most important in the prospective perspective of motivation. Hence, there is a difference between specific and general experiences, which reflects differences in attentional action readiness. The last findings relate to the dynamics between positive emotion and intrinsic motivation on educational choice (Paper III). While positive emotion and intrinsic motivation were both important for educational choice, these concepts occurred as different phenomena. Positive emotions seem to operate more generally, while intrinsic motivation seems to operate more domain specifically. The findings contribute to a refined understanding of the predictors of positive experiences, the understanding of experiences in the memory process, and the isolated role of emotions on motivation. The study offers insights into theory improvement on flow and the function of positive emotions, as well as knowledge about the practical didactical field on how outdoor experiences are processed, remembered, and transformed into intrinsic motivation. For educators, guides, and coaches, knowledge of how positive emotion are induced, what constitutes a good memory, and the importance of positive emotions in motivational processes provides the necessary basis for making informed decisions in increasing engagement, well-being, and motivation for Friluftsliv.

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