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Experiences matter: Positive emotions facilitate intrinsic motivation

Helga S. Løvoll^{1,2*}, Espen Røysamb^{3,4} and Joar Vittersø⁵

Abstract: This paper has two major aims. First, to investigate how positive emotions and intrinsic motivation affect each other over time. Second, to test the effect of positive emotions and intrinsic motivation on subsequent educational choices. Through two ordinary study semesters, 64 sport students in Norway reported on their intrinsic motivation for outdoor activities (twice) as well as positive emotions after two three-day outdoor events (four times). Next autumn, students study choice was collected. Pre-established intrinsic motivation increased the level of positive emotions, as suggested by the self-determination theory. Additionally, positive emotions increased intrinsic motivation, even when the effect from pre-established intrinsic motivation was controlled for. Hence, positive emotions also had a separate building effect, as proposed by the broaden-and-build theory. Intrinsic motivation was the main predictor for students who continued with an outdoor specialization. Positive emotions were the key predictor for students who picked sport as their major. The study has implications for the practical educational field as well as for general health promotion and well-being in paying attention to the emotional experience as it demonstrates that positive emotions improve intrinsic motivation.

Subjects: Physical Activity and Health; Sports Psychology; Exercise Psychology; Education Studies

Keywords: emotions; motivation; decision-making; self-determination theory; broaden-and-build theory; outdoor education; sport education

ABOUT THE AUTHOR

Helga S. Løvoll (PhD) is an associate professor and institute leader in Department of Physical education at Volda University College. This study was a part of her PhD project. She currently connects to two research projects on positive emotions. The first project is a longitudinal study of positive emotions in physical education in lower and upper secondary schools (the REPAC-project). The second project is a multi-disciplinary study on positive emotions in relation to experiences of beauty in nature.

PUBLIC INTEREST STATEMENT

Intrinsic motivation and positive emotions have much in common; it feels good to do activities when we are intrinsically motivated. Although intrinsic motivation and positive emotions share common qualities, we tested differences between intrinsic motivation and positive emotions, to see if positive emotions could have a separate building effect on intrinsic motivation. Positive emotions from memories of 3-day outdoor events were able to explain an increase in intrinsic motivation for outdoor recreation, when controlling for earlier intrinsic motivation. The findings support the idea that new, situational experiences matter in the building process of intrinsic motivation. In the process of choosing a major, positive emotions and intrinsic motivation appeared to have different roles. Positive emotions predicted majoring in sports, while intrinsic motivation predicted majoring in outdoor recreation.

1. Introduction

Intrinsic motivation and positive emotions are related but different phenomena. For example, both are involved in regulating behavior, and both are typically associated with pleasant experiences (Csikszentmihalyi, 1990, 2002; Ryan, Huta, & Deci, 2008; Waterman, Schwartz, & Conti, 2008). However, the phenomena differ in that intrinsic motivation characteristically refers to doing an activity for inherent satisfaction rather than for some separable consequence (Ryan & Deci, 2000), while emotions are mental states with limited duration (Oatley, 1992). According to Oatley (1992), we cannot choose our emotions, but we can modify, interpret, and vary their implication. Moreover, emotions have different functions in the motivational process: emotions experienced after events follow and sustain pre-established motivation (Ryan, 2007; Ryan, Rigby, & Przybylski, 2006), but they also help us prioritize among multiple motivations in the moment (Oatley, 1992, p. 61). Thus, emotions have at least two different functions: (a) emotions follow pre-established intrinsic motivation by either giving or not giving support to the dispositional attitude, and (b) they can cause new directions for motivational interest and change behavior. A fundamental question in psychological science concerns the role of new experiences in the motivational process, and in the present paper, we investigate the role of positive emotions relating to specific events in establishing a preference for particular activities and educational choices.

Outdoor activities, here exemplified as taking a break from everyday life with a focus of using skills, moving in landscapes and feeling connected with nature, include several dimensions of health and well-being. Repeated exercise in nature connects to emotional well-being, whose effect is stronger in natural environments than in indoor or built environments (Pasanen, Tyrväinen, & Korpela, 2014). Moreover, nature has an important role in our emotional self-regulation, which adds a therapeutic value to outdoor activities (Johnsen & Rydstedt, 2013). For example, exposure to daylight and nature influences stress, mood, executive functioning, and self-regulation in a health-promotive manner (Beute & de Kort, 2014). Given the importance of outdoor recreation, or “friluftsliv” in Norwegian (Gelster, 2000; Repp, 1996; Varley & Semple, 2015), students will have a fair chance to have a job in the education system or to further qualify for nature guiding in the growing market of adventure tourism in Norway (ATTA, 2016).

1.2. Study case: On the choice of sport or outdoor major

While sport education and outdoor education might appear as similar to much of the audience, there are important differences. Both include physical activity, but while sport education mainly relates to built environments at daytime, outdoor education relates to excursions in wild nature during all seasons of the year. In Norway, these excursions normally have a duration of three to five days, including cooking and living outdoors.

Human beings have unstable, inconsistent, incompletely evoked, and imprecise goals, which challenge our ideas of predictability (March, 1978). While intrinsic motivation and positive emotions both are important concepts, there are different explanations of how the motivational process leads to behavior. Educational choice is a complex phenomenon, including both intrinsic and extrinsic motivation regulations. According to the literature, many factors influence choice of education, like gender (Jonsson, 1999), race, and socioeconomic background (Ball, Davies, David, & Reay, 2002; Reay, Davies, David, & Ball, 2001). However, the present study set out to examine the predictive role of emotional experience on the development of intrinsic motivation and the choice of major. The findings have practical implications for designing education programs and understanding the importance of students' emotional experiences during and after hikes, exemplified here as three-day events.

1.3. Positive emotions

Positive emotions have an important role in human well-being as they trigger an upward spiral of well-being (Fredrickson & Joiner, 2002) and build our thought-action repertoire (Fredrickson, 2004). Seeing emotions as a process, this view differs from evolutionary theories or social and culture theories of emotion. In the emotional process, there is a gap between the experiencing self and the

remembering self (Kahneman & Riis, 2007). For example, it is not the duration of an event that predicts the emotional memory, but there are complex dynamics in how a positive memory produces. One of these dynamics is the peak-end-rule: experiences with positive peaks and positive ends seem to predict a positive memory (Fredrickson, 2000). Consequently, positive emotions associated with positive evaluations of outdoor experiences seem to be a reliable approach in a wider time perspective. Furthermore, in the measurement of positive emotions, a scope of both hedonic as well as eudaimonic emotions might be included, as these different groups of emotions correspond to different dimensions of well-being (Vittersø, 2016). For example, feelings of pleasure and happiness are typically associated with end-states in which a goal has been achieved or a need has been fulfilled. Feelings of interest and immersion on the other hand are more commonly associated with the involvement of overcoming a challenge, and they are experienced as part of the activity that takes place before the (often difficult) goal has been reached. The two classes of positive emotions have different functions in regulating behavior, and they have different phenomenologies.

1.4. The motivational process

Self-determination theory (SDT) is a macro-theory of human motivation (Deci & Ryan, 1985; Ryan & Deci, 2012), which includes many mini theories, one of which is the organismic integration theory. Extrinsic motivation relates to different behavioral regulation, dependent on the internalization process. Internalization refers to what extent the experience of a certain activity involves behavioral regulation, and also the value that underlies it (Gagné & Deci, 2005). Fullest type of internalization, which is intrinsic motivation regulation, involves identification with other aspects of oneself, like interest and values. When the person fully transforms the regulation into his or her own, including the sense of self, there is an *integration* process. In the motivational continuum, from extrinsic to intrinsic motivation, people can integrate a new regulation or integrate an existing regulation that is only partially integrated. In the seeking of facilitators of this process, the role of new situational outdoor experiences from three-day events offers insights in how this internalization and integration process unfolds over a period of about one year. In line with empirical studies finding positive relationships between emotions and motivation regulation in sports (Blanchard, Amiot, Perreault, Vallerand, & Provencher, 2009; Weiss & Weiss, 2003, 2006), we suggest that this pattern also yields for outdoor activities. The first hypothesis regards an expected relation between the behavioral choice of outdoor education, intrinsic motivation, and positive emotions from the events.

1.5. Emotions cause changes in the motivational process

Separating positive emotions from intrinsic motivation is a difficult project. In some operationalization of intrinsic motivation, self-reports of interest and enjoyment of the activity are common, either task-specific or toward a domain (Ryan & Deci, 2000). Moreover, situational interest represented in the flow experience furthermore links to the state of being intrinsically motivated (Csikszentmihalyi, 1988). However, there are differences between liking an activity on general basis, more like a trait, and liking the specific activity or experience. For example, even if motivation regulates toward extrinsic motivation, an experience with the frames of good company, nice food, beautiful natural surroundings and not too demanding tasks could potentially produce a positive memory of the experience. Thus, there might be differences in how people think about outdoor experiences in general and how they think about this particular outdoor experience. A study conducted in the United Kingdom that compared the ordinary school context for 224 youths (13 years old) and their experiences during a 12-day hike in a remote area with their school teachers showed that autonomy supporting climate, intrinsic motivation, perceived competence, and task approach goal orientation increased during the outdoor stay (Sproule et al., 2013). There seem to be supporting factors in outdoor events. For example, these authors suggested that using the sub-theory of SDT, cognitive evaluation theory (Deci & Ryan, 1985), the environment can influence how we positively reflect on an event or social interaction.

Based on emotion theory in general (Oatley, 1992; Oatley & Johnson-laird, 1987), it is likely that positive emotions have other causes beyond just (a) cognitive disposition for outdoor motivation and (b) a result of satisfaction of basic psychological needs. Emotions can have a more spontaneous

function in changing the direction of one's interest and behavior; such emotional effects are typically induced by new events. The broaden-and-build theory explains that positive emotions expand our mind-set to look more broadly at the situation and build resources for action, opposed to negative feelings, which lead to a narrower mind-set (Fredrickson, 2004; Fredrickson & Branigan, 2005). For example, positive emotion can suddenly rise from the micromoment of a nice smell from a flower but also from the macromoment of trying a new skill. These new situations can potentially broaden our minds in thinking about outdoor experiences as interesting or valuable. Hence, the second hypothesis aims to test the role of positive emotions in the motivational process for the outdoor domain over the period from study start to study end.

1.6. Positive memories influence behavior

In studies of experiences, the given time perspectives matter when processing a memory of the event. For example, some situations, like the peak experience and the ending of the experience, are more important than the duration of the event in the construction of a positive memory (Fredrickson, 2000). Moreover, when momentary emotions were contrasted with remembered emotions, it was only the remembered emotions that influenced prospective motivation (Wirtz, Kruger, Scollon, & Diener, 2003). This finding was refined in a study of pleasure and interest during peak episodes, whole-day experiences, and remembered experiences (Løvoll, Vittersø, & Wold, 2016). Although the main finding that remembered experiences was the predictor of prospective motivation, the study identified peak episodes characterized as interesting as the strongest predictor of the remembered experience. Moreover, interesting peak episodes felt more pleasant over time. Based on this line of research, remembered positive emotions carry a strong potential for prediction of behavior. Consequently, it is likely that behavioral choice, like the choice of outdoor major, has a strong relationship with remembered experiences, while the choice of sport major or other choice is likely to have a weaker relationship with remembered experiences. The third hypothesis sets out to test the strength of the emotional influence in the motivational process leading to educational choice.

1.7. Aims of the article

An exploration of intrinsic outdoor motivation and positive emotions reported after two three-day events in the outdoors will be set out to understand the motivational process leading to the choice of major. The first aim was to analyze the role of positive emotion in the motivational process. Second, we wanted to identify predictors of educational choice, with an exploration of differences between positive emotions and intrinsic outdoor motivation. Our hypotheses regarding these relationships are as follows:

Hypotheses 1. Students choosing outdoor major have higher scores on both intrinsic outdoor motivation and positive emotions than all other students (i.e. both students choosing sport major and students choosing other options).

Hypothesis 2. Positive emotions will predict change in intrinsic outdoor motivation (T2) after the effect from preestablished intrinsic outdoor motivation (T1) has been controlled for.

Hypotheses 3. 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

2.1. Study design

The study included a 13-month follow-up methodology to examine the processes of motivation, remembered positive emotion after the events, and subsequent educational choice. Variables that are within the influence of the educator or the curriculum were of particular interest: emotional experiences, intrinsic outdoor motivation, and behavioral choices.

2.2. Participants

Sixty-four sport and outdoor education students at a university college in western Norway agreed to participate, yielding a total sample that was 41% female. Their age ranged from 18–36 years ($M = 21.2$, $SD = 2.67$). Participants were followed through a regular school year (2008/2009) and requested student reports on different outdoor activities that took place over a 10-month period. The outdoor activities were compulsory, but participation in the study was voluntary, and each participant gave informed consent separately. The following autumn (2009), we contacted the students for a single follow-up question on actual educational choice. The results from other parts of this longitudinal study have been published elsewhere and will not be reported in the present paper (Løvoll & Vittersø, 2014; Løvoll, Vittersø, & Wold, 2016).

2.3. Outdoor experiences

The students participated in two three-day courses as a compulsory part of the curriculum. The first course concentrated on coastal activities, such as use of canoes and traditional wooden boats. Living in tents on an island, students prepared self-collected seafood on a bonfire. The second course took place in the wintertime and focused on basic skills in skiing and safety in potential snow avalanche area. Students learned to build snow shelters, as well as caves and igloos.

2.4. Measures

2.4.1. Intrinsic outdoor motivation

A Norwegian Translation of the second version of The Behavioral Regulation in Exercise Questionnaire (Markland, 2000) was utilized at the start of the first semester. The scale was, in conjunction with another project, translated into Norwegian by two bilingual persons, using the parallel blind technique (Behling & Law, 2000). For the purpose of the current project, the scale was adjusted by the present authors to better fit the purpose of an outdoor recreation questionnaire. For instance, the first BREQ-2 item originally reads “I exercise because other people say I should”, which we translated into “I do outdoor recreation because other people say I should”. Since the present study represents a panel design, we refer to the first wave of BREQ-2 data (i.e. T1) as a measure of “pre-established motivation”. The BREQ-2 data collected at the end of the second semester is referred to as T2. Although the utilization of the whole scale could shed light over the importance of emotions in the motivational process from extrinsic to intrinsic motivation regulation, this study aimed to explore the fine difference between intrinsic motivation and positive emotions for the outdoor domain. 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 $\alpha = 0.84$ for T1 and $\alpha = 0.92$ for T2. Responses were given on a Likert scale from 1 (not agree) to 5 (agree). In addition, students also reported on the original scale for the sport exercise domain. In the T1 condition, intrinsic motivation for both domains correlated $r = 0.30$ ($p = 0.027$). In the T2 condition, the correlation in intrinsic motivation for both domains was $r = 0.22$ ($p = 0.129$).

2.4.2. Positive emotions

The remembered emotions were measured as follows. One week and one month after the trip, we asked the students to recall the trip and report how intensively they remembered the experience for six items of positive feeling states. We collected 224 (87.5%) out of 256 potential reports of remembered positive feelings. The average of the one-week and the one-month scores was included in the study as the positive emotions variable. When recalling the outdoor event in retrospect, the students were requested to report how intensively they had experienced the event. For this retrospective measure, we adapted the Basic Emotions State Test (Vittersø, Dyrdal, & Røysamb, 2005) and related the memory of the event to the measure of distinct positive emotions: hedonic emotions (measured with three items: pleasure, satisfaction, and happiness), and eudaimonic emotions (measured with three items: interest, engagement, and enthusiasm). Responses were given on a scale of 1 (*no, not at all*) to 7 (*yes, very much*). For analysis, a sum score of six for the remembered positive emotions items was computed and

averaged after the two events. For this index, Cronbach's alpha was $\alpha = 0.94$ after the first event (positive emotions 1) and $\alpha = 0.97$ after the second event (positive emotions 2).

2.4.3. Educational choices

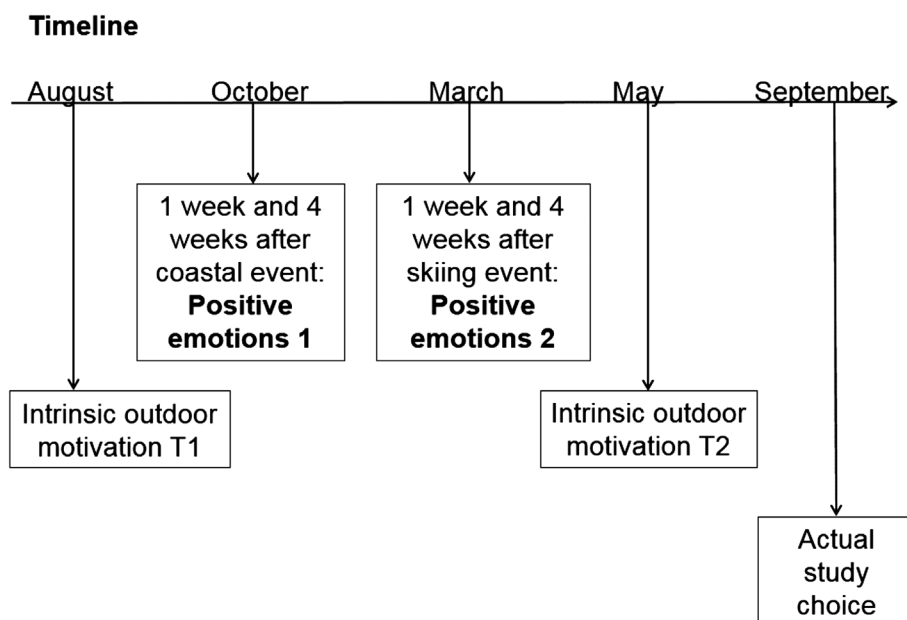
The following autumn, 3 months after the students had completed their first-year study, they reported on their choice of major. They responded by choosing one of the following three categories: (a) major in outdoor education, (b) major in sport education, and (c) other choices. Those who reported "other choices" either finished their education or continued with other study topics. Some of these students had already finished their teacher education and selected the first year of sport education as a specialization of becoming a sport teacher. We computed these choices in three single dummy variables: sport choice, outdoor choice, and other choice.

2.5. Procedure

At the start of the first semester (T1) and the end of the second semester (T2), we collected data on intrinsic outdoor motivation during regular classes. During the data collection period, 57 students reported at T1 and 53 students reported at T2, giving a mean of 86% participation. The students participated in two three-day courses. One course concentrated on coastal activities, including the use of canoes and traditional wooden boats. The students lived in tents and cooked seafood they caught over a campfire. Many students had their first experience with simple camping in the outdoors. The other course focused on safety in potential snow avalanche areas and the use of snow as a building material for caves and igloos. Although some students had experienced mountain skiing before, many students had their first experience with off-piste uphill and downhill skiing. During both courses, the students completed a day reconstruction questionnaire (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004).

Three months after the second semester ended, we asked a person not otherwise involved in the study to make a phone call to every participant and ask for the students' choices regarding their coursework for the beginning of the coming academic year. Fifty-one students responded (80%). The various sequences of data collection ranged from August to September of the following year (see Figure 1). Between August and May, every participant reported four episodes of positive emotions based on their outdoor experiences.

Figure 1. Timeline of data collection (13 months).



2.6. Missing data

For analysis of the continuous variables, the group mean replaced the missing data of positive emotions and intrinsic outdoor motivation. In the model that included categorical variables, missing data were deleted list wise. Data for the four reports from remembered positive feelings were collected during class sessions. Absence from these classes was not restricted to unwillingness to participate in the survey. The students did not know about the timing of the questionnaires before the class met.

2.7. Data analysis

2.7.1. Descriptives and correlations

General descriptives of the data were performed in SPSS (IBM version 21). The significance of the mean differences was tested with paired-samples *t*-tests. Correlation analysis with all study variables included all the dummy variables for the choices and the continuous variables for intrinsic outdoor motivation and positive emotions. To test if the correlations differed significantly, we used Fisher's transformation of *r* to *z* (Lowry, 2001–2014).

2.7.2. Ordinary least square regression analysis

The following regression analysis was performed in SPSS (IBM version 21). The dependent variable in the regression model is intrinsic outdoor motivation at T2. Independent variables are intrinsic outdoor motivation at T1 and positive emotions after events. First, the intrinsic outdoor motivation at T2 was regressed on intrinsic outdoor motivation at T1. Second, alternative regression models with the facilitation of positive emotions from the first and second events were tested to isolate the role of new experiences in intrinsic outdoor motivation at T2. All variables were continuous and normally distributed, indicated by tests of skewness and kurtosis (see Table 1).

2.7.3. Logistic regression analysis

The next regression analysis included the choice of actual majors. For this analysis, positive emotions from the two events were averaged into the positive emotions variable. Intrinsic outdoor motivation was the T2 measure. These were the independent variables. The educational choices were the dependent variables. Two series of logistic regression analyses were carried out to test the effect of intrinsic outdoor motivation and positive emotions on behavioral choices. The first series comprised six separate bivariate regression models. The first three analyses estimated the effect of

Table 1. Correlations and basic statistics for the study variables

	1	2	3	4	5	6	7
1. Int. outdoor motivation T1							
2. Int. outdoor motivation T2	0.72***						
3. Positive emotions 1	0.50***	0.55***					
4. Positive emotions 2	0.57***	0.71***	0.69**				
5. Outdoor choice	0.39**	0.40**	0.22	0.33*			
6. Sport choice	-0.24**	-0.26*	0.21	0.00	-0.31*		
7. Other choice	-0.08	-0.06	-0.36**	-0.26	-0.44**	-0.72***	
Mean	4.20	4.07	5.42	5.09			
SD	0.80	0.95	0.90	1.21			
Skewness	-0.96	-0.79	-0.48	-0.84			
Kurtosis	0.86	-0.20	-0.19	0.96			

**p* < 0.05.

***p* < 0.01.

****p* < 0.001.

positive emotions on each of the three dummy coded educational choice variables. The last three analyses estimated the effect of intrinsic outdoor motivation on the same choice variables. In the next series of analyses, multivariate logistic regressions were conducted with the outdoor, sport, and other choice variables as three dependent variables, respectively. For each analysis, both positive emotions and intrinsic outdoor motivation were entered as independent variables.

3. Results

3.1. Positive emotions, intrinsic outdoor motivation, and educational choice

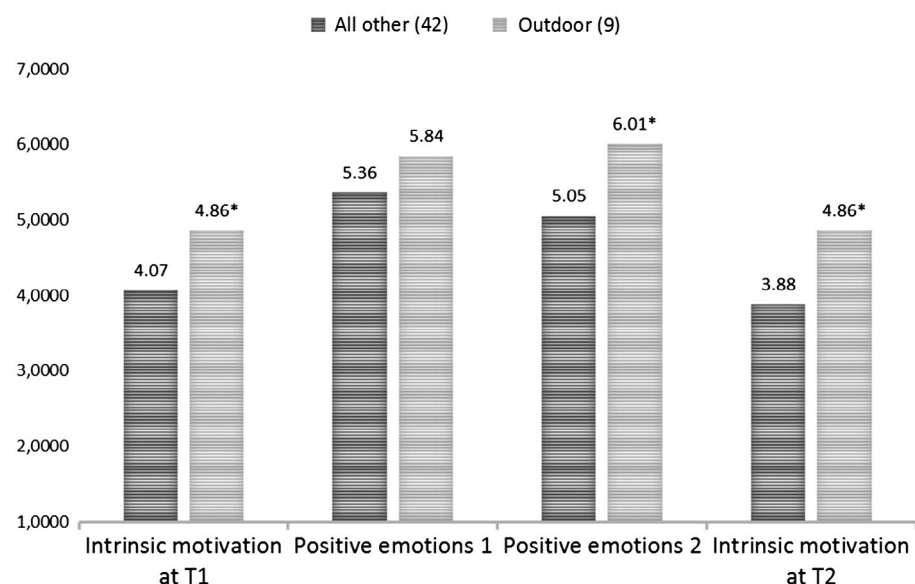
3.1.1. Correlations

As shown in Table 1, positive emotions after the second event correlated with outdoor choice, $r = 0.34, p = 0.017$, while positive emotions after the first event did not significantly correlate with outdoor choice, $r = 0.22, p = 0.134$. The correlations between positive emotions and sport choice were not significant ($r = 0.21, p = 0.149$ after the first event and $r = 0.00, p = 1.000$ after the second event). There was a negative correlation between choosing otherwise and positive emotions ($r = -0.36, p = 0.010$ after the first event and $r = -0.26, p = 0.071$ after the second event). Positive emotions correlated highly with intrinsic outdoor motivation at T1, $r = 0.50, p < 0.001$ (by the first event) and $r = 0.57, p < 0.001$ (by the second event) and at T2 $r = 0.55, p < 0.001$ (by the first event) and $r = 0.71, p < 0.001$ (by the second event). The difference from the first to the second event was not significant ($z = 1.46, p = 0.144$). Intrinsic outdoor motivation was correlated with outdoor choice ($r = 0.39, p = 0.009$ for T1 and $r = 0.40, p = 0.004$ for T2) but correlations with sport and other choices were not significant (for T1, $r = -0.24, p = 0.113$ for sport choice and $r = -0.08, p = 0.586$ for other choice. For T2, $r = -0.26, p = 0.068$ for sport choice and $r = -0.06, p = 0.677$ for other choice.) See Table 1 for further details.

The students who eventually chose an outdoor major had previously reported higher intrinsic outdoor motivation than the other students. Intrinsic outdoor motivation was higher at both T1 ($M_{\text{outdoor}} = 4.86, M_{\text{allother}} = 4.07, F[1, 43] = 8.20, p = .006$) and T2 ($M_{\text{outdoor}} = 4.86, M_{\text{allother}} = 3.88, F[1, 48] = 10.58, p = 0.002$). Students who chose outdoor major 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 ($M_{\text{posem1.outdoor}} = 5.84, M_{\text{posem1.allother}} = 5.36, F[1, 48] = 0.37, p = 0.849$). Figure 2 provides a graphical illustration of these results.

Figure 2. Group differences in intrinsic outdoor motivation at T1 and T2 and positive emotions categorized by actual choices.

*The differences between groups are significant ($p < 0.05$).



3.2. OLS regression model of intrinsic outdoor motivation

Pre-established intrinsic outdoor motivation was a strong predictor of intrinsic outdoor motivation in the end of the study year, $\beta = 0.72, p < 0.001$ (Table 2). This variable accounted for 52% of the variance in the T2 intrinsic outdoor motivation variable. The positive emotions from the first event were not a significant predictor of intrinsic outdoor motivation at T2, $\beta = 0.16, p = 0.172$. When the positive emotions variable from the second event entered the model, explained variance increased to 64% and the unique contribution from the second positive emotions variable was significant, $\beta = 0.43, p = 0.001$. Thus, positive emotions from events built the level of intrinsic outdoor motivation.

3.3. Logistic regression model of educational choice

As seen in the Model 1 column of Table 3, both positive emotions and intrinsic outdoor motivations were significantly predicting choice of an outdoor major, when entered separately in a series of

Table 2. Multiple regression model of intrinsic outdoor motivation at T2

	B	SE B	β
Step 1			
Constant	0.81	0.49	
Intrinsic outdoor motivation (T1)	0.79	0.11	0.72***
Step 2			
Constant	0.19	0.66	
Intrinsic outdoor motivation (T1)	0.70	0.13	0.64**
Positive emotion 1	0.18	0.13	0.16
Step 3			
Constant	0.22	0.59	
Intrinsic outdoor motivation (T1)	0.54	0.12	0.50***
Positive emotion 1	-0.04	0.13	-0.04
Positive emotion 2	0.36	0.11	0.43**

Notes: $R^2 = 0.52$ for step 1, $\Delta R^2 = 0.02$ for step 2 and $\Delta R^2 = 0.12$ for step 3.

** $p < 0.01$.

*** $p < 0.001$.

Table 3. Unstandardized logistic regression coefficients (B), standard errors (SE), and odds ratios (OR) for positive emotions and intrinsic outdoor motivation (T2) as predictors of choosing a college major

	Model 1			Model 2		
	B	SE	OR	B	SE	OR
<i>Outdoor choice (N = 9)</i>						
Positive emotions	1.21**	0.57	3.36**	-0.14	0.82	0.87
Intrinsic motivation	2.53**	1.16	12.63**	2.67*	1.40	14.41*
<i>Sport choice (N = 19)</i>						
Positive emotions	0.26	0.34	1.30	2.20***	0.83	8.99***
Intrinsic motivation	-0.60*	0.33	0.56†	-2.21***	0.75	0.11***
<i>Other choice (N = 29)</i>						
Positive emotions	-0.88**	0.38	0.42**	-1.88***	0.70	0.15***
Intrinsic motivation	-0.13	0.18	0.88	1.14*	0.59	3.13*

Notes: Model 1 regressions are bivariate, with positive emotions and intrinsic outdoor motivation as unique predictors of choosing a college major. Model 2 regressions are multivariate, with positive emotions and intrinsic outdoor motivation included in the equation simultaneously as predictors of choosing a college major.

* $p < 0.10$.

** $p < 0.05$.

*** $p < 0.01$.

bivariate logistic regression analyses. Unstandardized regression coefficient (B) = 1.21, and Odds Ratio (OR) = 3.36, $p = 0.034$ for positive emotions, and $B = 2.53$, $OR = 12.63$, $p = 0.028$ for intrinsic outdoor motivation. In other words, one step increase in intrinsic outdoor motivation implied nearly 13 times higher odds for actually choosing outdoor studies. However, when both positive emotions and intrinsic outdoor motivation were entered as predictors simultaneously (cf. the Model 2 column), neither reached the conventional level of significance (for positive emotions $p = 0.865$ and for intrinsic outdoor motivation $p = 0.057$). The standard errors reported for intrinsic outdoor motivation are somewhat high. Although the multicollinearities were tolerable (VIF 's = 2.00, for both positive emotions and intrinsic outdoor motivation), the high SEs suggest that the estimates are not very stable. As a remedy, a new multivariate regression analysis was conducted as follows. The positive emotions and intrinsic outdoor motivation variables were dichotomized with the high-level groups defined as participants with scores higher than one standard deviation above the mean. When the dichotomized variables were entered into the new analysis, intrinsic outdoor motivation was a significant predictor for choosing outdoor recreation as a major, with $B = 2.05$, $OR = 7.79$, $p = 0.019$. The coefficients for positive emotions were not significant ($p = 0.730$).

For the two other choices, positive emotions turned out to be the most important predictors of choosing either sport choice or other choices. This pattern appeared most clearly in Model 2. Positive emotions was a strong predictor of sport choice, $B = 2.20$, $OR = 8.99$, $p = 0.008$, while intrinsic outdoor motivation was less strong, $B = -2.21$, $OR = 0.11$, $p = 0.003$. For other choices, positive emotions predicted this choice, $B = -1.88$, $OR = 0.15$, $p = 0.007$, but intrinsic outdoor motivation was also par-significantly positive, $B = 1.14$, $OR = 3.13$, $p = 0.053$.

4. Discussion

This study set out to explore the relationship between positive emotions and intrinsic outdoor motivation in the motivational process leading to the choice of education. The findings shed light on positive emotions and intrinsic outdoor motivation as different but related phenomena. The differences are, however, somewhat complex. Typically, positive emotions were associated with outdoor education while lower intensity of positive emotions was associated with not continuing with sports or outdoor education. Those who later majored in outdoor education also reported higher levels of intrinsic outdoor motivation. There was support for the internalization model of SDT (Ryan & Deci, 2012) suggesting a relationship between intrinsic outdoor motivation, positive emotion, and behavioral choice. Hypothesis 1 was generally supported, but for positive emotions, the findings were only significant from the second event.

Many factors can cause a positive emotional experience. Although some factors could be stable, other factors could differ from one event to another. The students generally felt more positive about the first event. One explanation could be that this event occurred during the summer with warm temperatures and daylight until late evening. This trip was also in the beginning of the semester, where socializing with new friends also could be an important factor. Except for the canoe rescuing exercise in cold water, the event was not very physically demanding. For the second event, emotions varied between groups. The students who majored in outdoor education reported more intense positive emotions than all the others did. This event included coping with skiing skills and cold temperatures. The different emotions in response to the events could be a result of situational conditions as well as the time factor. It is also possible that different leaders by their specific interest to the topic appealed differently between students, for example by their interest of snow avalanche theory.

4.1. Positive emotions facilitate intrinsic outdoor motivation

Pre-established intrinsic outdoor motivation for outdoor activities associates with positive emotions after events. The finding is a replication of SDT, applied to the outdoor context. SDT explains this process in that positive emotions are a consequence of satisfying basic psychological needs. When a person is intrinsically motivated and the particular activity satisfies his or her needs, positive emotions will follow (Ryan, 2007). The finding that positive emotions from events further facilitate intrinsic outdoor motivation indicates that there is more to the motivational process than the supporting

dynamics of pre-established intrinsic outdoor motivation. When controlled for this effect, positive emotions have a separate building effect on intrinsic outdoor motivation in terms of higher explained variance. The findings provide evidence for the idea that positive emotions facilitate intrinsic outdoor motivation. However, the interaction effect between positive emotions and intrinsic outdoor motivation is not tested for. It is possible that intrinsic outdoor motivation also increases in relation to specific events, as suggested by Sproule et al. (2013). Most importantly, the finding that there is a change in intrinsic outdoor motivation provided by positive emotions supports the idea that motivation is a dynamic process where experiences of single events matter. Thus, positive emotions may have an additional role in understanding the dynamics of intrinsic motivation, which is not yet incorporated in the SDT, suggested by Isen and Reeve (2005).

The findings underscore the important dynamics in the practical work of sports and outdoor leadership. Emotional experience is important to take into account in the aim of physical engagement as well as understanding educational choices. People are often less aware of positive emotions than negative emotions due to the weaker conscious adaptive value of positive emotions compared to negative emotions (Fredrickson, 1998). Moreover, positive emotions are partly under influence of the outdoor leader since positive emotions are closely related to events (Oatley, 1992). Thus, knowledge of emotional dynamics can improve a leader's strategies for engagement with the outdoors.

Support for the importance of positive emotions can be obtained with the broaden-and-build theory, which explains an expanded thought-action repertoire as a consequence of positive emotions (Fredrickson, 2004). Positive emotions imply having an open mind-set, which leads to readiness for new activities. Another explanation could be that a new experience lifts the person to a higher goal than is in the hierarchy of the person's self-defining goals (Carver & Scheier, 2012). While the person already liked hiking in the first place, new experiences could contribute to deepening the person's values and give rise to new, richer social relationships or a drive to try new activities. The result would be that the person's intrinsic outdoor motivation could be lifted. Hypothesis 2 was supported.

4.2. The power of positive emotions in the motivational process

Different attributes of positive emotions and intrinsic outdoor motivation appeared in the analysis including educational choice. Typically, outdoor students are more intrinsically motivated for outdoor activities and they evaluated their second event more intense. While positive emotions are held to be important in future choices (Ariely & Carmon, 2003) and educational preferences (Pekrun, 2007), these could not forecast the choice of major when including intrinsic outdoor motivation in the analysis. Hypothesis 3 was not supported. Rather, it was more likely to choose outdoor major when intrinsic outdoor motivation was high.

Interestingly, there was a difference between those who chose sport major and the other group. Positive emotions were important in the choice of majoring in sports. On the other hand, positive emotions were not important for the other group, indicating motivational differences between these groups based on their experiences from events. Hence, factors as being in good company, liking the dimension of physical exhaustion, could be factors that lift the emotional experience and facilitate the motivational process of choosing a sport major. Intrinsic outdoor motivation was the most important predictor of understanding the differences between those who chose outdoor major and those who chose sport major. The importance of intrinsic outdoor motivation has been argued in the context of education and learning in general (Deci, Vallerand, Pelletier, & Ryan, 1991). In a study of the predictive role of emotions in cognition, judgment, experience, behavior, and physiology, the findings offered mixed support for the role of emotions (Lench, Flores, & Bench, 2011), indicating that positive emotions have a complex relation to behavior. For example, positive affect increase people's interest in a task with potential for interest and enjoyment (Isen & Reeve, 2005). Without finding a potential for interest and enjoyment for the task, positive affect might have other implications than the facilitation of intrinsic motivation. The findings indicate some differences between positive emotions and intrinsic outdoor motivation. Positive emotions seemed to operate more

generally, while intrinsic outdoor motivation seemed to operate more specifically. While positive emotions are important in building intrinsic outdoor motivation, it was only through intrinsic outdoor motivation that the participants were more likely to choose outdoor education than sport education.

Our remembered experiences are not set in the consciousness but influenced by patterns of neglect and selective memory. For example, the emotional intensity of peak episodes together with the ending of an experience is an important factor in the overall evaluation of experience (Fredrickson, 2000). Remembered experiences are changeable and susceptible to reconstruction (Kemp, Burt, & Furneaux, 2008). Thus, how the experience is reflected upon later is very important in determining whether there is identification between positive emotions and personal values or conflict. Positive emotions congruent with personal values remain longer in one's memory than incongruent events (Oishi et al., 2007). There is a huge potential for the outdoor leader to lift the emotional element in the experience by paying attention to positive emotions at the end of the day or the end of an event. Experiences matter, as they relate to motivations and choices.

4.3. Limitations

The results for 64 participants in one particular university college revealed important differences between positive emotions and intrinsic outdoor motivation. However, the small number of participants is clearly one of the study's limitations. For example, the use of regression analysis related to sample size can be discussed. For the group choosing outdoor major, the standard errors appeared to be large, indicating that there is a lot of variability of the means. Thus, the sample may not be representative of the population. More research is needed to test if these hypotheses stand in other contexts and activities.

Only positive emotions related to *outdoor activities* were reported in this study. Positive emotions from typical sport activities in built environments could expand the understanding of positive emotions for educational choice. Moreover, the measures of positive emotions were self-reports. It is possible that this kind of approach could influence the results in that intrinsically outdoor motivated students reported higher intensity of positive emotions because their interest to the outdoor domain was already well internalized and integrated. Alternative measures of emotional experiences, as for example biological measures, could overcome this problem.

In this study, we selected the perspective of intrinsic outdoor motivation and positive emotions in the prediction of educational choices. Confounding variables not included in the study might exist, such as personality traits. Future research should include factors that might influence the starting point of *who* is intrinsically motivated at T1.

4.4. Conclusions

Emotional experiences facilitated intrinsic outdoor motivation and educational choice. Even if pre-established intrinsic outdoor motivation supported positive emotions from the outdoor activities, positive emotions also had a unique building effect on intrinsic outdoor motivation. Both positive emotions and intrinsic outdoor motivation were important predictors of educational choice, although in different ways. High levels of positive emotions were associated with choices of outdoor education. Positive emotions from the second hike correlated with the decision to major in outdoor recreation. However, when intrinsic outdoor motivation was included in a regression model, the effect from emotions disappeared. High intrinsic outdoor motivation triggered students to major in outdoor recreation, whereas low levels of intrinsic outdoor motivation stimulated students to major in sport or to do something else. For these students, the building effect of positive emotions did not fully compensate for lower levels of intrinsic outdoor motivation. However, in producing intrinsic outdoor motivation, positive emotions have a separate building effect.

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