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Engaging in autonomous learning in the outdoors: Final expedition and youth autonomy

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Abstract

Autonomy has been an important trait that marks the transition from childhood to adolescence. This study examines the effectiveness of the use of an autonomous learning component in outdoor programs, the final expedition, in enhancing youth autonomy in outdoor programs. This study used a mixed-method quantitative and qualitative research design to explain and interpret the effect of autonomous learning component in an outdoor context on youth autonomy. This study recruited participants from two outdoor organizations with a total of 72 subjects. Participants' reported their youth autonomy level at three time points, including the first day of the course, and before and after the final expedition. The results provide evidence that long-term outdoor programs with a final expedition component can be effective in developing participants' autonomy. Specifically, female students' autonomy level increased significantly during the final expedition period, and students who played follower roles during the final expedition gained higher levels of autonomy than those who played leader roles. Qualitative findings of this study suggest that the final expedition might afford opportunities for exploring group relationships, demonstrating leadership, and developing a sense of achievement and independence. The relationship between the final expedition, sense of responsibility, independence, and maturity warrants further investigation.

Keywords Youth autonomy · Final expedition · Outdoor program · Autonomous student experiences

Introduction

The benefits of engaging youths and children in the outdoors have been well documented (Bento and Dias 2017; Bialeschki et al. 2007; Cheng and Monroe 2012; Dopko et al. 2019). Through engaging in the outdoors, children are exposed to

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a freer and less-controlled changing environment, compared to a more constant indoor environment for children. According to Stephenson's study (2002), children who played outside were more capable of being involved in longer-term projects, where playing outside meant less structure with unknown outcomes and acceptance of the open-ended nature of play. However, Bilton (2010) found that due to the fear of injury, the addictive nature of technologies and social media activities, and increased participation in organized sports, children are inclining to spend less time outdoors than they used to. Due to overprotective parenthood, many adolescents are faced with an increasing lack of opportunities to get outside and connect to nature (Garst 2018; Little 2015). This parenting style also results in limits on children's leisure experiences (Gagnon and Garst 2019; Thompson et al. 2005). An important trait for adolescent development, autonomy, can be endangered by the lack of opportunity and increasing parental control.

Autonomy has long been recognized as a critical construct for adolescent development (Inguglia et al. 2015; Soenens et al. 2017). Throughout a person's entire lifespan, the period of adolescence is when autonomy from parents and other authority figures is being established. It is evident that autonomy development has positive influences on many aspects of adolescent functioning, such as psychological well-being and cognitive growth (Charry et al. 2020; Cook et al. 2018; Helgeson 1994; Sessa and Steinberg 1991). Inguglia et al.'s study (2015) found that the development of autonomy during adolescence and emerging adulthood can protect individuals from depression and feelings of loneliness. Noom et al. (1999) found that adolescents with high functional autonomy tend to be socially competent, and those with a high attitudinal autonomy appear to be more academically competent. The literature associated with adolescent development indicates that autonomy development at this age is crucial, where impediments to this development due to a lack of opportunity may have a negative impact on adolescents' successful transition to adulthood.

The main purpose of this study is to examine the use of an autonomous learning component, the final expedition, and its effectiveness in enhancing youth autonomy in the context of an outdoor adventure education program. The final expedition is usually carried out as a culminating experience that happens during the later portion of an outdoor program, where participants have been equipped with necessary outdoor living skills and carefully assessed to proceed with this autonomous outdoor learning component (Bobilya et al. 2014; Gassner and Russell 2008). Though it may be referred to by many different names (e.g., final expedition, independent student group expedition), this type of autonomous learning experience is designed to provide students with "authentic and meaningful opportunities to experience autonomy during adventure education programs" (Sibthorp et al. 2008, p. 136). Many researchers and practitioners have advocated the value of incorporating the final expedition to enhance student learning and developmental outcomes (Daniel et al. 2014; Sibthorp et al. 2008). However, the mechanism underlying this autonomous learning component and program outcomes warrants more investigation.

In an attempt to fill the gap in the literature, the research questions of this study were:

a) What is the effect of the final expedition on youth autonomy?
b) What is the effect of certain characteristics (i.e., participants' gender and roles in the final expedition) on youth autonomy?
c) Does the final expedition contribute to adolescents' growth in youth autonomy?
d) How do adolescents value the final expedition in their overall experience?

Autonomy and youth development

Achieving autonomy has long been recognized as a key psychosocial developmental task for adolescents (Steinberg and Silverberg 1986; Zimmer-Gembeck and Collins 2003). Autonomy is also an important developmental milestone that marks the transition from childhood to adolescence (Erickson 1950; McElhaney et al. 2009). It is a phase of life where young people search and form a self-identity, develop capacity for close relationship, and separate from their parents. Many theories and concepts have shaped the current understanding of adolescent autonomy. When viewing autonomy as an individual quality, it is perceived as a person's ability to regulate their behavior (Ryan et al. 1995). When viewing autonomy as an adolescent's relationship with others or a response to others, autonomy is defined as a growing sense of detachment from parents (Small et al. 1988). Autonomy can also be viewed as freedom from constraints and freedom to make choices (Collins et al. 1997; Holmbeck and Hill 1986). Although these diverse conceptualizations of adolescent autonomy make it impossible to specify a single definition of this term, autonomy is commonly identified as a multidimensional construct. Noom (1999) examined different theoretical perspectives on adolescent autonomy and identified three basic dimensions: attitudinal, emotional, and functional autonomy.

Attitudinal autonomy, defined as "the ability to specify several options, to make a decision, and to define a goal" (Noom et al. 2001, p. 578), involves an individual's cognitive process of choosing and defining a goal that is closely related to concepts such as self-efficacy, attitudinal independence, goal setting, decision making, and personal aspirations. The concept of attitudinal autonomy is similar to Zimmer-Gembeck and Collins' (2003) cognitive autonomy, defined as the belief in one's capability to control one's own life and to succeed at or achieve a task. Emotional autonomy, defined as "a feeling of confidence in one's own choices and goals" (Noom et al. 2001, p.581), addresses adolescents' perception of emotional independence from both parents and peers, which can include detachment from parents and resistance to peer pressure (Zimmer-Gembeck and Collins 2003). Blos (1967) suggested that emotional autonomy involves more of a process of parental de-idealization. Creating some emotional distance from parents and gaining a sense of self-control and agency is expected to contribute to the development of emotional autonomy (Silverberg and Gondoli 1996). The fact that youth become more emotionally autonomous from their parents during adolescence is reflected in their "adopting less idealized images of their parents," where they "relinquish some of their childish

dependencies on them, and form a more individuated sense of self" (Steinberg and Silverberg 1986, p. 848). Functional autonomy, defined as "the ability to develop a strategy to achieve one's goal" (Noom et al. 2001, p. 581), involves one's capability to access different strategies, and choose one strategy to achieve one's goal. The concept of functional autonomy is similar to Zimmer-Gembeck and Collins' (2003) behavioral autonomy, which refers to one's ability to engage active, independent decision making and carry through with decisions, as well as develop a strategy to achieve one's goals. Functional autonomy has usually been studied through parent-adolescent relationships and in the context of school or family (Dowdy and Kliewer 1998; Fuligni 1998; Smetana et al. 2004).

The development of the three components of attitudinal, emotional, and functional autonomy is important for adolescence, when rapid physical and cognitive changes are experienced, and when youth seek greater independence from parental control while receiving more opportunities to govern their behavior. Noom et al.'s study (1999) linked adolescent autonomy with the development of social competence, academic competence, self-esteem, and lower levels of problem behavior and depressive moods. Deci and Ryan (2008) also confirmed that autonomy has consistently been positively related to psychological health and effective behavioral outcomes.

Self-determination theory as mechanisms for positive outcomes in autonomous learning

The self-determination theory (SDT), as described by Deci and Ryan (2008), has been extensively used to advance our understanding of positive outcomes of autonomy. The SDT is a macro-theory of human motivation and personality that addresses inherent human growth tendencies and innate psychological needs. It is used to identify the relationships between motivation, development, and wellness and choices people make without external influence (Deci and Ryan 2008). The theory emphasizes distinguishing motivations that are autonomous from those that are highly controlled. Extensive research has confirmed that if an individual's behavior originates from volition or choice, compared to control or pressure, there is a greater chance for this individual to continue with this behavior (Williams et al. 1998). This central distinction in SDT, autonomous motivation and controlled motivation, helps explain why some of these behaviors last while others do not (Deci and Ryan 2008).

One of the mini-theories of SDT, the basic psychological needs theory, posits that humans possess basic psychological needs that drive optimal functioning, which in turn leads to human growth and integration, as well as constructive social development and personal well-being. Ryan and Deci (2000) further described SDT as an approach to understand "people's inherent growth tendencies and innate psychological needs" which are "the basis for their self-motivation and personality integration, as well as for the conditions that foster those positive processes" (p. 68). These basic psychological needs, identified as essential to fostering positive functioning, include the need for competence, relatedness, and autonomy (Ryan and Deci 2000). When these basic psychological

needs are satisfied, effective functioning and psychological health are enhanced. The need for competence is described as the capacity to interact effectively with the environment. Autonomy is indicated as having choices, acknowledgement of feelings, and opportunities for self-direction. Relatedness is a sense of relational support. Extensive research has confirmed that "satisfaction of the needs for competence, autonomy, and relatedness does indeed predict psychological well-being in all cultures" (Ryan and Deci 2000, p. 183).

Social-contextual factors have also been considered critical in influencing the extent to which individuals perceive relatively autonomous or controlled approaches in performing certain behaviors. An autonomy-supportive environment affords opportunities for participants to perceive freedom of choice, make decisions, facilitate motivation, and inevitably leads to an increased sense of self-determination (Ramsing and Sibthorp 2008). There is evidence that greater internalization and integration occurs when the environmental contexts are supportive of autonomy, competence, and relatedness than when contexts thwart the satisfaction of these needs (Ryan and Deci 2000).

Although SDT has been widely applied to study sport-based youth programs (Dawes and Larson 2011; Inoue et al. 2015; Ward and Parker 2013; Whitley et al. 2019), only limited research on SDT has been conducted in the context of outdoor learning. In a summer camp setting, Ramsing and Sibthorp (2008) studied the role that summer camp programs play in an autonomy support context. The findings indicated that instructional styles, activity types, and biological sex all play a role in participants' perception of autonomy support. Also, camper-centered formats and non-competitive activities may increase participants' perceptions of autonomy, where female participants experienced increased autonomy support more than males in non-competitive activities due to the cooperative nature of learning and opportunities for social interaction in camps. Autonomy support in summer camp programs is thus found to contribute to the development of productive behaviors in youth, where there is a potential for applying SDT in recreation programs targeting behavioral changes (Ramsing and Sibthorp 2008).

The self-determination theory has thus been recognized as a sound theoretical foundation that advances the current understanding of motivation and autonomy support as an essential element for satisfying basic psychological needs, which in turn leads to psychological well-being. A line of research shows that the satisfaction of competence, autonomy, and relatedness does predict important youth developmental outcomes such as psychological health and wellbeing, self-efficacy, and social development (Chapman et al. 2017; Hui and Tsang 2012; Iachini et al. 2017; Inguglia et al. 2015; Inoue et al. 2015). Creating an autonomy-supportive environment to satisfy these three basic needs may, therefore, contribute to youth development and prevent youth from problematic behaviors and issues.

Final expedition in outdoor programs

The final expedition is a critical feature that receives attention in the literature relevant to autonomous learning in the outdoors. Designed to give participants a greater

measure of choice and control over their learning outcomes, a final expedition is defined as "a wilderness journey where the group traveled alone over a given distance without their instructors present" (Bobilya et al. 2014, p. 399). The Outward Bound School uses the term "final expedition" to describe this activity that happens near the end of the course, when the student group has demonstrated their competency to travel without instructors' immediate presence (Course Information n.d.). The National Outdoor Leadership School (NOLS) uses the term "Independent Student Group Expedition" in their course itinerary to describe this culminating experience, presented as an opportunity for students to examine the skills they've learned and to appreciate the relationships they've built with their expedition mates. The format and names for the final expedition may be slightly different across different institutions, but mainly represent a student-led wilderness expedition (Bobilya et al. 2014; Sibthorp et al. 2008). The most common way to facilitate the final expedition in outdoor programs is to task a student group with navigating from one point to another over a single-day or multiple-day period with limited instructors' presence and assistance (Bobilya et al. 2014; Davidson 2004).

The final expedition has been considered as an important course component in the literature, as it has a lasting effect on participants. In Gassner and Russell's study (2008) on the long-term impact of course components at Outward Bound Singapore, they found that the final expedition was perceived as the most meaningful course activity for both the personal and professional life of participants. Among the 318 participants who took part in the classic 21-day Outward Bound Singapore challenge course, the final expedition was found to be an important contributor to these long-term impacts. Paisley et al. (2008) conducted a case study on NOLS courses to better understand how specific learning outcomes occurred. The results showed that the Independent Student Group Travel, where students travel without instructors, provided opportunities for leadership learning on NOLS courses. Their study also suggested that student-led, autonomous student action is a fundamental part of learning in outdoor education.

In 2008, Sibthorp and colleagues conducted an empirical study to examine the pedagogic value of student autonomy in the field of adventure education. This study synthesized the literature associated with student autonomy and discussed its critical role in outdoor programs. They examined 1229 youth participants' perceptions of learning from 130 expeditionary courses run by NOLS. Results showed that higher levels of reported personal empowerment and more days of student-led expeditions significantly predicted greater development in youth participants' leadership and outdoor skills. Furthermore, the injury rate of unaccompanied student expeditions was also found to be no different than the accompanied portions of NOLS courses. Building on this line of research, Bobilya et al. (2014) investigated participants' perceptions of their final expedition experience among 331 North Carolina Outward Bound School (NCOBS) participants. A mixed-method survey design was conducted with themes based on characteristics of the final expedition. Results found that the most enjoyable characteristics of the final expedition were autonomy, described by students as enjoying freedom, independence, and responsibility. When asked what contributed to their personal growth and group development, students identified five

themes, including group reliance and responsibility, group cohesion, self-awareness, self-reliance, and leadership development.

From examining the SDT theoretical framework and empirical research on autonomous learning in the outdoors, it is suggested that autonomy support context in outdoor programs may afford opportunities for growths in youth developmental outcomes (Sibthorp et al. 2008; Daniel et al. 2014). This current study focuses on the final expedition, where youth participants were provided with authentic and meaningful opportunities to experience autonomy during outdoor programs.

Methods

Subjects and selected outdoor programs

A total of 72 participants in this study, aged 16 to 21, were self-selected and enrolled in backpacking, kayaking, or mountaineering courses during 2016 and 2017 summer provided by two outdoor institutions in the U.S. All of the selected courses are of 22 to 33 days in length, and with the autonomous learning component, referred to as the final expedition in this study. The list of selected courses were determined with the help of the course directors from the two outdoor institutions. They helped the researcher identify the most prominent courses that suited the purpose of this study and approved the data collection among those selected courses. While the 10 courses selected for this study involved different types of outdoor activities (e.g., kayaking, backpacking, and mountaineering), most of the skills needed during the final expeditions were mainly the same, such as navigation, outdoor living skills, and team work.

Each course used in this study was led by two or three instructors who were requested to fill out instructor notes to provide a list of basic information pertaining to the final expedition in their course. Information included the length of the final expedition, level of instructors' supervision during the final expedition (i.e., unaccompanied, shadow within sight or sound, and travel with the group), major activity during the final expedition (i.e., backpacking or kayaking), and major outdoor skills that students practiced during their final expedition (e.g., navigation and campcraft). According to the instructor notes provided for the courses used in this study, the major activity participants experienced during the final expeditions were backpacking, ranging from one to two days, where students traveled as a group with limited instructor supervision (instructors shadowed within sight and/or sound). The major outdoor skills that these students practiced during their final expedition are related to backpacking, such as navigation, campcraft, cooking, and group management.

Data collection and analysis

This study used a mixed-method quantitative and qualitative research design to explain and interpret the effect of unaccompanied activity in outdoor learning on

youth autonomy. The first part of the study involved the use of Noom's (1999) adolescent autonomy questionnaire, used to measure participants' changes in youth autonomy levels. The adolescent autonomy questionnaire is a 15-item questionnaire composed of three subscales of attitudinal, emotional, and functional autonomy with five items each. Items are represented as statements, such as "I can make a choice easily," "I often change my mind after listening to others." and "I can easily begin with new undertakings on my own." Subjects were instructed to indicate their degree of agreement with each statement on a five-point Likert scale, ranging from strongly disagree to strongly agree. Noom's adolescent autonomy questionnaire has been reported with good internal consistency with the Cronbach's α ranged between 0.60 to 0.71 (Noom et al. 1999). This questionnaire was administered three times throughout the courses used in this study in order to capture the influence of the final expedition on youth autonomy levels. Time 1 was collected at the first day of the course, Time 2 was collected the day before the final expedition, and Time 3 was collected after participants finished the final expedition. The researcher used the participants' gender and birth date to match their responses across three time points. This study included a one-way repeated measures analysis of variance (ANOVA) to examine participants' levels of youth autonomy in the three different times. A two-way mixed ANOVA was adopted to detect the impact of gender (male and female) and leadership role (leader and follower) on participants' youth autonomy level. A post-hoc Bonferroni adjustment was performed to limit the Type 1 error rates, thus lowering the possibility of getting a statistically significant results due to multiple comparisons.

The second part of the study included semi-structured interviews with participants who were willing to be interviewed by phone after finishing the courses. A semi-structured interview guide was developed with questions designed to identify how final expedition contributed to their growths in autonomy, and how participants valued the final expedition component within their overall outdoor learning experience. These interview questions included, "How would you describe your group during the final expedition?" "What changed you and the group most during the final expedition?" "If this course component (final expedition) was to be removed from this course, what impact do you think it would have had on you and the group?" and "Compared to the overall course, what is the value of the final expedition in facilitating your learning?" In approximately two to three months after participants completed their courses in the summer, they received a call from the researcher, asking about their willingness to participate in the phone interview.

In total, there were seven participants interviewed for this study. All interviews were recorded and transcribed verbatim. This study used the qualitative data analysis software, Dedoose, to perform coding and categorization of themes. Data were then analyzed using thematic analysis (Braun and Clarke 2012). Based on the theoretical framework of youth autonomy, this study first utilized a deductive approach, which used existing themes of youth autonomy (i.e., attitudinal, functional, and emotional autonomy) to advance our understanding of how the final expedition facilitated youth autonomy. Secondly, an inductive approach was used to examine how participants valued the final expedition in their course. The

inductive approach of thematic analysis allows I to develop themes that emerged from the data.

Results

Demographics

This study consists of 72 subjects from ten outdoor programs offered by two outdoor institutions. As shown in Table 1, the mean age is 17.6 years old and ranges from 16 to 21 years old. Subjects include 23 females and 49 males. In addition, participants were asked to indicate whether they had prior experience of participating in programs away from home or outdoor programs longer than ten days. Of the 72 students, 58 (80.6%) of them had prior experiences in participating for over one week in programs away from home without parents' presence, and 19 (26.4%) had prior experiences in participating in similar outdoor programs lasting longer than ten days.

Quantitative findings of the effect of final expedition on youth autonomy levels

The first aim of this study was to examine if the final expedition affected youth autonomy levels. A one-way repeated measures ANOVA was conducted to determine whether there were significant differences in youths' autonomy levels over the program. The result shows that participants' youth autonomy levels were significantly different at three different time points, with a large effect size ($F(1.827, 129.737) = 20.060$, $p < .05$, partial $\eta^2 = .220$) (Table 1). The post hoc analysis with a Bonferroni adjustment reveals that participants' youth autonomy levels significantly increased during the first part of the course (from Time 1 to Time 2) and during the final expedition (from Time 2 to Time 3). Changes in youth autonomy levels over time are presented in Fig. 1. This result shows that participants' gains in youth autonomy levels reached statistical significance across three time points.

Table 1 Summary of one-way repeated measures ANOVA of youth autonomy levels

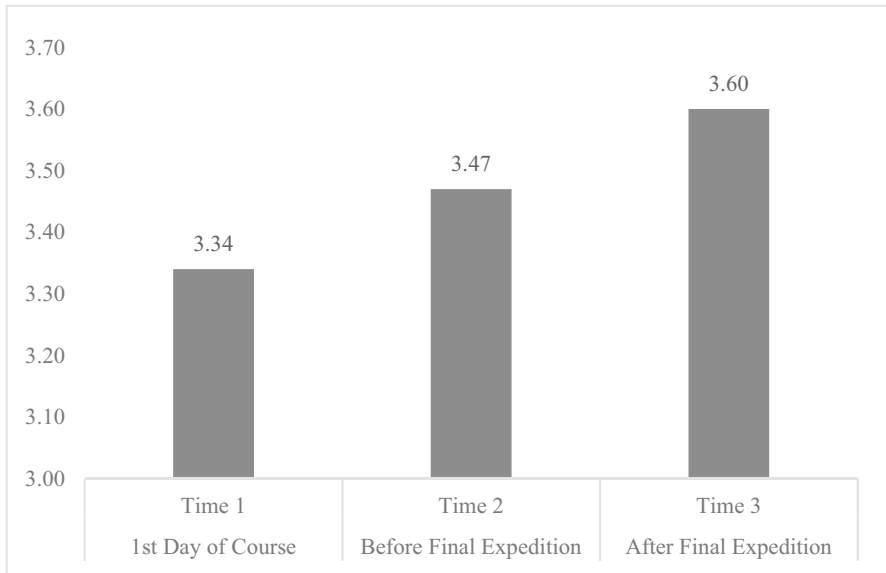| Source	SS	df	MS	F	P
Between groups	2.561	1.827	1.401	20.060	.000*
Within groups					
Between Subjects	53.568	71	.754		
Error	9.063	129.737	.070		
Total	65.192	202.564			

Fig. 1 Changes of youth autonomy levels over time

Quantitative findings of the effects of gender on youth autonomy levels

The second aim of this study was to examine whether different factors (i.e., gender and leadership role taken in the final expedition) affect youth autonomy levels. The two-way mixed ANOVA was adopted to determine whether participants' youth autonomy level changed differently over time depending on their gender and leadership role respectively. This test involves a between-subjects factor and a within-subjects factor. In this case, gender is considered as the between-subjects factor and time is considered as within-subjects factor. Results of the two-way mixed ANOVA show that there was a statistically significant interaction between gender and time ($F(2, 140) = 3.965$, $p < .05$, partial $\eta^2 = .054$). As shown in Table 2, the simple main effect of gender indicates that there was a statistically significant difference in youth autonomy levels between male and female at the Time 1 ($F(1, 70) = 5.462$, $p = .022$, partial $\eta^2 = .072$), but not at Time 2 and Time 3. This indicated that female students' level of autonomy ($M = 3.13$, $SE = .106$) was statistically lower than male's level of autonomy ($M = 3.43$, $SE = .073$) at the beginning of the course (Time 1) ($p < .05$), but not at Time 2 and Time 3. Changes of youth autonomy levels over time by gender is presented in Fig. 2.

Quantitative findings of the effects of leadership role on youth autonomy levels

To determine whether participants' role during the final expedition impacted their youth autonomy level, a questionnaire was used at Time 3 that asked the

Table 2 Summary of two-way mixed ANOVA of youth autonomy levels and interaction between gender and time

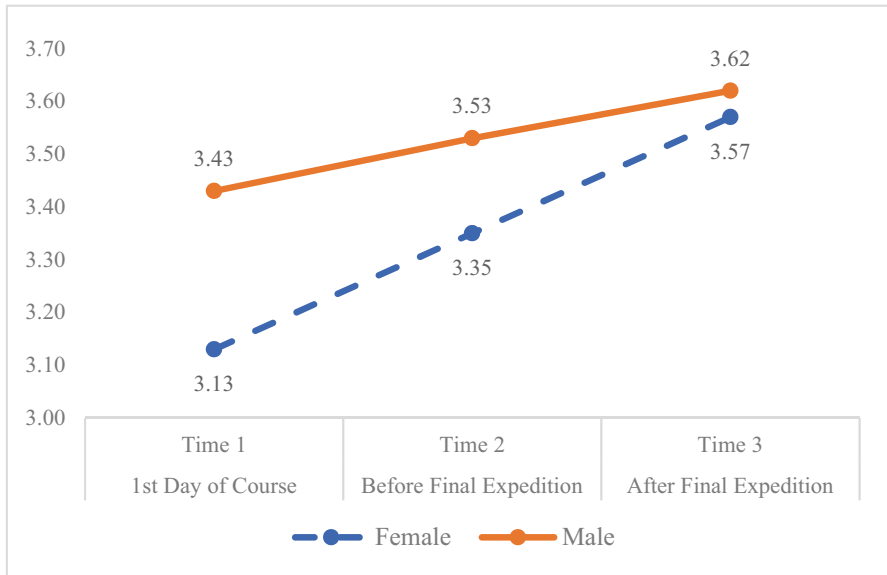| Factors	Groups (Sample Sizes)	Time 1		Time 2		Time 3		Simple main effect for Times (F, df_1, df_2, p)
		Mean	SD	Mean	SD	Mean	SD	
Gender								
	Female ($n=23$)	3.13	.52	3.35	.58	3.57	.57	17.026, 2, 44 .000*
	Male ($n=49$)	3.43	.51	3.53	.55	3.62	.54	7.162, 2, 96 .001*
	Simple main effect for Gender (F, df_1, df_2, p)	5.462, 1, 70, .022*		1.548, 1, 70, .218		.142, 1, 70 .707		

Fig. 2 Changes of youth autonomy levels by gender over time

participants to identify whether they played a leader's role or follower's role during the final expedition. Note that when asked to identify roles during the final expedition, some students checked both leader's and follower's roles. This might be due to the fact that students were encouraged to rotate different roles during their course, such as leader of the day, navigator, and cook. The researcher recoded students who have experiences in both roles into the leader's category, representing students having leadership experiences during the final expedition. Mauchly's test of sphericity indicated that the assumption of sphericity was violated for the two-way interaction ($\chi^2(2) = 8.576$, $p < .05$). After adjustment by the Greenhouse-Geisser correction, there was a statistically significant interaction between leadership role and time ($F(1.791, 125.350) = 3.719$, $p < .05$, partial η^2 = .050). When examining the simple main effect of time, there was a statistically significant effect of time on youth autonomy levels for students who played the follower's role ($F(2, 30) = 10.424$, $p < .001$, partial η^2 = .410.), as well as for students who played the leader's role ($F(2,110) = 11.996$, $p < .05$, partial η^2 = .179) (Table 3). The autonomy level for students who acted as followers throughout the course was significantly higher at Time 3 ($M = 3.77$, $SE = .114$), compared to Time 1 ($M = 3.33$, $SE = .129$) and Time 2($M = 3.45$, $SE = .149$). This result also showed that students who played follower's roles experienced significant gains in youth autonomy during their final expedition (from Time 2 to Time 3). For students who played leader's roles, their autonomy level significantly increased from Time 1 ($M = 3.34$, $SE = .071$) to Time 2 ($M = 3.48$, $SE = .074$), and from Time 1 to Time 3 ($M = 3.55$, $SE = .075$), but not from Time 2 to Time 3. This might indicate that the autonomous learning component made more significant impacts on students who played follower's role than those who played leader's role. More

Table 3 Summary of two-way mixed ANOVA of youth autonomy levels and interaction between role and time

Factors	Groups (Sample Sizes)	Time 1		Time 2		Time 3		Simple main effect for Times (F, df_1, df_2, p)
		Mean	SD	Mean	SD	Mean	SD	
Role in Final Expedition								
	Follower ($n=16$)	3.33	.52	3.45	.60	3.77	.46	10.424, 2, 30, .000*
	Leader ($n=56$)	3.34	.53	3.47	.55	3.55	.56	11.996, 2, 110, .000*
	Simple main effect for Role (F, df_1, df_2, p)	.003, 1, 70, .957		.028, 1, 70, .868		2.021, 1, 70, .160		

details about this result are presented in the discussion section. Changes of youth autonomy levels over time by leadership role is presented in Fig. 3.

Qualitative findings of the relationship between final expedition and youth autonomy

The third aim of this study was to understand the mechanism underlying final expedition and youth autonomy. The semi-structured phone interviews were conducted two to three weeks after participants completed their courses. The response rate for phone interviews in this study was 9.7%. Each of the phone interviews lasted for 20 to 30 minutes. Each participant's pseudonym follows the reporting of direct quotes. This study adopted a deductive approach of thematic analysis, where youth autonomy was conceptualized by three dimensions: attitudinal, emotional, and functional autonomy. Findings relating to the three dimensions of youth autonomy are presented.

Attitudinal autonomy For this study, attitudinal autonomy is described as an individual's cognitive process of choosing and defining a goal. In the final expedition (also referred to by participants as "finals"), students showed their capability in identifying challenges or problems in the group and developing strategies to address these issues. One participant described how his group experienced early on the challenge of the instructors' absence during the final expedition:
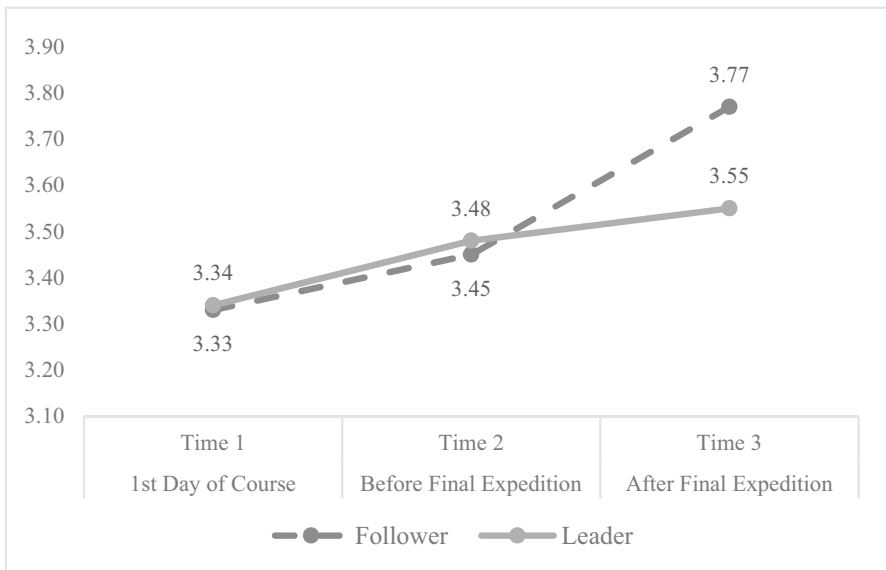

Fig. 3 Changes of youth autonomy levels by leadership role over time

After the first day, we all came to agree this fact that we needed to assign certain roles [to] individuals, such as who's gonna be the cook, and who's gonna be the navigators. And that's the system my group came up with was a designated cook, and then a designated navigator or navigators, about two or three of us. (Michael)

Attitudinal autonomy also relates to the concept of goal setting and decision-making. One participant explained how his group made plans for the day:

We were very specific and clear on our time and how many miles we wanted to walk each day and we were like, "Okay, we are going to need to wake up at 8am" (laughs), um, it was not 8am, we need to wake up at like 6am, get breakfast and everything packed by 8am and leave. We will have a break here, here, and here, and lunch there." Our days were organized. (Clark)

When encountering the need to make a decision, one participant noted how students were able to lay out different options for a vote and came to an agreement:

So we were like, "Okay. Do we want to work a bit more because of the better of the group and the task you know, getting some more miles in? Or do we want to stop and eat lunch, because two or three people out of the group are hungry?" And overall we decided to keep walking because it was better for the group as a whole to arrive at the destination on time. (Clark)

Functional autonomy Functional autonomy is defined in this study as the ability to achieve one's goal by accessing different strategies. During the final expedition, students' functional autonomy was shown in being able to awake and leave on time, perform their roles as needed, and accomplish tasks. When asked what happened on the final expedition, participants mentioned the skills learned, division of jobs, and the process of making group decisions:

Everyone was a lot more on their game at the end because everybody knew what was going on at that point. Um, just like everybody knew the jobs. Everybody knew like, "Oh! Okay, I'm the cook, I need to make sure I have the meal plan so we don't go hungry." Things like that are basic outside but like are actually important to group success. And during the beginning, there was definitely a lot of instructor handholding. (Richard)
We would do polls like, "How's everybody feeling? Does anybody like need anything?" And then we would kind of decide as a group with everybody voiced their opinions and then ultimately decide on what the course of action should be. (Clark)

Without the presence of instructors, students were more relaxed during their down time. But when involved with tasks, they were able to perform what needed to be done, as one participant described:

On the job level, [we would] draw the line between social and job... And we were like "Hey! Guys, you have to do this, we got to it, we got it done, we were good." So I would say we were very effective on both levels. (Brandon)

Emotional autonomy In this study, emotional autonomy refers to a feeling of confidence in making one's own choices and setting goals. In outdoor adventure education programs, goals are usually set for one's group and choices are usually made by the group. The emergence of emotional autonomy in outdoor adventure education can be observed through situations where each and everyone's opinion is addressed and decisions made are based on different opinions and common needs. One participant in a leadership role noted how his teammates expressed their needs and made a final decision:

I'm thinking about this one instance where we were deciding whether we should have lunch, because we had started later in the day. So people were getting a bit hungry…So we were like, "Okay. Do we want to walk a bit more because of the better of the group and the task you know, getting some more miles in? Or do we want to stop and eat lunch, because two or three people out of the group are hungry?" And overall we decided to keep walking because it was better for the group as a whole to arrive at the destination on time. (Clark)

When asked how the absence of instructors made an impact on the group's decision-making process, one participant described a conflict that arose between two of his teammates and how the instructor's presence may have changed the way of resolving this conflict. This ultimately led to his conclusion that people's expression of opinions mattered more when they decided as a group without the instructor's intervention:

When your instructors are not present there is much more freedom and everything relies on you, the group's decisions, the group's opinions, your opinions matter much more, everyone's opinions matter much more. So there is much more freedom and we were very open. The group as a whole was very open to getting everyone's opinion even if that countered other people's, um, so there was like a big openness to expressing yourself to what you want. But with instructors perhaps not so much, reserving that desire to express one's opinion. (Clark)

Qualitative findings of the value of final expedition

The fourth aim of this study is to find out how participants valued the final expedition in their overall outdoor program. As revealed from the qualitative data analysis, participants identified the value of final expedition to their overall learning

experience, including exploring group relationships, levels of achievement, leadership, and independence gained.

Exploring group relationships Three participants talked about being able to explore more about themselves and others on the final expedition, how they learned from it, and how the instructors' goal to have them better communicate with each other was achieved:

Final expedition was pretty nice and better, because it was beneficial to us, and for us to work as a team. I think it was beneficial because, when we were just a team, we were all communicating with one another, and we had navigators and we had a leader of the day [to make sure] that we are applying on sunscreen. We're all making sure everyone is taking care of each other and making sure we were all okay. We do communicate more. And that's the main part of it, they wanted us to communicate to each other, to figure out where we need to go. And without that, we just don't communicate as a group when it comes to taking on these roles, we wouldn't have been able to say we needed to go this way and it just…worked out. (Stephen)

I think without having the final expedition, we would definitely not have come out as like rounded from the experience … we wouldn't have learned about ourselves and everybody around us and just in general would not have if we had, hadn't had that final expedition time. (Richard)

Without finals, I think the group as a whole wouldn't have been one entity and more as a bunch of people brought together. Obviously, we would still be very close, but not as close as surviving three days with no instructor. (Clark)

Achievement Some of the participants saw the final expedition as a final exam to reveal how much they've achieved so far. They paralleled this as passing a quiz or test in an educational setting and also an opportunity to prove to themselves what they are capable of achieving. Participants also discussed the potential losses that could occur by removing the final expedition from the course, such as losing a sense of achievement:

I think final expedition is definitely an opportunity to prove to yourself, figure out all of the stuff, we have learned all the skills…and proved that we knew them. (Richard)

Final expedition is like it's called the outward bound school, [it] is like you study something, you graduate a quiz on it, and then eventually you have a final exam. Final expedition is basically the final exam, basically a, I mean [it] is not like you are giving a grade on it, but you see your…to utilize things that you've been taught ...even learning and now you apply it. (Brandon)

I feel like it was a nice way to prove to myself that, yes, everything that I learned in terms of leadership, in terms of confidence, in terms of um, for like cooking, putting up tarps, like packing bags, everything all put together, like,

"Yes, we can go on an expedition." Or "I can go on this expedition by myself."
I think finals, that sort of the self-esteem that you might not get if you didn't
pass finals. Um, sort of again, I mean it's again just bringing the group together
and just adding another layer of stuff you've done with that group and just an
extra sense of achievement. (Clark)

Leadership While there was no control group in this study, participants who played
leadership roles perceived that they would not have achieved so much from being
a leader without the final expedition. From a follower's perspective, students who
played leadership roles might experience more pressure but would possibly take
more out of this experience:

I definitely would have not been able to do as much as leadership roles. And I
wouldn't have become the leader as well as I am. I definitely apply leadership
to school. Because I learned that I need to talk at some of the class or any-
thing, being the first one is not the worst thing (Stephen).
I would say like final expedition made me more confident and like how
I've applied it is like, I'm more confident in making decisions for groups
of people. So I'd say that's something I've utilized is my confidence to
make decisions if I guess, I'm making them for more than one person.
(Brandon)
I'm sure if you were a leader, I wasn't a leader, but if you were a leader, that
would be more stressful or like you would get more out of it because, you are
in control of the group because instructor's absence. (Andrew)

Maturity and independence Participants described the change of maturity level
they observed in themselves and their peers during the final expedition. Their sense
of independence was mentioned by one participant as a value of the final expedition,
using the example of transitioning from high school to college:

I think everyone was more mature during finals, um, more determined to get
stuff done on time. Um, more determined to wake up at 6 am and not 6:15
am, things like that….I think I was more, again, like more mature in a way,
um, more driven to get the group, to help the group as a whole, and more
driven to get to our objectives, do our tasks to get everything done on time.
(Clark)
I think the value of final expedition is just kind of that it's a transition within
the course where you just more independent, so you just get to show all your
skills. It's kind of like you can say comparing to going from high school to col-
lege, your parents were the instructors in high school, then you go to college
and now you got to test all these things out you learned. It's like similar to that,
I guess. So, just a transition to be more independent as a group. (Andrew)

Discussion and implications

In this study, participants experienced statistically significant increases in youth autonomy level throughout the course. This result confirms Sibthorp et al.'s (2008) idea that "the inclusion of autonomy in adventure programs can be developmentally beneficial to participants" (Sibthorp et al. 2008, p. 145). Note that participants' youth autonomy level increased consistently during the first part of the course as well as during the final expedition. A possible explanation of this continuing growth in youths' autonomy levels may be that final expedition in outdoor program helps to cultivate an autonomy-support environment through establishing a sense of 'perceived necessity' for learning to happen early on in a course (Sibthorp et al. 2008). In addition, the qualitative findings of this current study confirm research positing that incorporating autonomous learning component in outdoor program may help participants develop stronger beliefs in their competence and foster autonomy (Wurdinger and Paxton 2003; Zimmer 2010). It is evident that including final expedition in long-term outdoor adventure programs can be beneficial to adolescents' developmental outcomes.

The findings of this study indicate that participants' gender and participants' roles in final expedition both had impacts on youth autonomy. Female students in this study had comparatively lower levels of autonomy than male students at the very beginning of the course. However, after participating in the course, female students' autonomy levels increased significantly and showed no difference with male's autonomy levels. With more and more females getting involved in outdoor adventure programs nowadays, practitioners must not neglect the inherent gender differences between male and female's development, but also to realize that outdoor programs may be more effective in facilitating female's development in autonomy than male's.

In addition, the results in this study show that higher levels of youth autonomy are associated more with those playing follower roles in the final expedition compared to leadership roles. While this may sound surprising, in that leaders are generally thought to display more autonomy due to their unique decision-making opportunity and group management responsibilities (e.g., deciding on departure time, direction, or camp site selection), the fact that everyone's opinion and needs must be taken into account might make leaders feel less autonomous. Also, the pressures involved in leadership roles may seem more challenging for them than followers. Thus, as practitioners seek to provide autonomous outdoor learning component and prepare participants to perform peer leadership, debriefing leader's perceptions and leadership experiences as a group following their autonomous learning component can be crucial to combat the pressure and negative perceptions faced by student leaders acting without instructor presence during the last part of expedition.

Researchers and outdoor practitioners have recognized the relationship between youth autonomy, independence, and human maturity (Gambone et al. 2002; Witt and Caldwell 2005). The result of qualitative analysis shows that adolescents take more responsibility and become more independent and mature during final expedition. This result is aligned with the findings reported by Bobilya et al. (2014), who viewed final expedition as an opportunity to empower participants to take increased

responsibility for themselves and each other, which is key to greater student confidence and maturity.

Deci and Ryan (2013) defined autonomy as the ability to act independently without relying on others. The qualitative findings in this study reveal that most final expedition participants perceive themselves as being more independent as an outcome of this course component. Deci and Ryan, however, noted that the ego-centric type of independent act actually represents a lower level of autonomy, such as when adolescents pressure themselves to act in order to prove their own worth to themselves and to others. To promote autonomy during final expedition, it is important to make sure that students are acting with a sense of willingness, volition, and concurrence. However, it is important to point out that the qualitative data interpreted in this study were based on a small number of subjects. The potential link between the final expedition and increased sense of responsibility, independence, and maturity warrants further investigation.

Conclusions

The aim of this study was to understand the role of an autonomous learning component, final expedition, in promoting youth autonomy within the context of outdoor program. The finding suggests that including final expedition in long-term outdoor programs can be effective in enhancing participants' youth autonomy levels. As significant differences were found in levels of youth autonomy based on gender, the finding that female participants showed significantly lower autonomy levels compared to male participants at the beginning of the course, but after completing the course their sense of independence and autonomy increased significantly (reaching the level of male participants), is important. And as taking different roles in the final expedition did have an effect on youth autonomy (students who played leadership roles had significantly lower improvements in levels of youth autonomy comparing to students who played follower roles), this significant difference in perceptions of roles played in final expedition warrants additional investigation.

Using a mixed-method approach, the qualitative findings in this study provides practitioners with some insights behind incorporating this course component into their programs with conscious and realistic goals, such as allowing time for students to bond and explore relationships as a group, providing opportunities to practice leadership, and experience a sense of independence and achievement. As suggested by Daniel and his colleagues (Daniel et al. 2014), many gaps in understanding remain regarding in this topic, such as the cohesiveness of student relationships, or timing and lengths of this course component in relation to the effectiveness of final expedition. Future studies should include a control group (programs without the final expedition course component) for comparison purposes, which may help to justify the contribution of this course component on youth developmental outcomes. As the outcomes of outdoor adventure education study may be influenced by many organizational and situational factors, such as outdoor setting, length of time, participant demographics, leader training and skills, and organizational philosophy and objectives (Kellert, 1998). Therefore, readers should be cautious when applying

these findings to other outdoor programs and institutions. To improve the power of interpretation, more data should be collected as it would enable future researchers to examine the relative contributions of each predictor through other statistical techniques (e.g., multiple regression or discriminant function analysis). It may also further our knowledge of whether youth autonomy can be predicted based on various situational factors.

Declarations

IRB The data collection procedure was approved by the Indiana University Institutional Review Board (protocol #1606201154) following the guidelines of Human Research Protection Program Policies.

Conflict of interest The author states that there is no conflict of interest to disclose.

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