

Impact of One-Semester Outdoor Education Programs on Adolescent Perceptions of Self-Authorship

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Amanda L. McGowan¹

Abstract

This study investigated one-semester outdoor education program impact on adolescents' perceived self-authorship—the ability to form our identity independently from the expectations of external individuals and the capacity to invent our beliefs, identity, and relationships (Baxter Magolda, 1998; Kegan, 1982)—as measured by the Self-Authorship Questionnaire (SAQ). Participants ($n = 26$) included students from 10th- and 12th-grade one-semester outdoor education programs. Analysis of paired t tests of the intervention phase showed gains in three of four SAQ dimensions (situational coping, interpersonal leadership, and self-efficacy) as well as in overall SAQ scores. There were no observable differences in overall SAQ within grade level based on gender or between grade levels. The instructor and outdoor experiences were perceived to influence self-authorship. These findings contribute to the research examining the benefits of one-semester outdoor education programs and have implications for educators aiming to enhance participants' self-authorship based on desirable outdoor education programming identified by students.

Keywords

self-authorship, outdoor education, adolescents, adventure education, student development

Introduction

Self-authorship is the ability to form our identity independently from the expectations of external individuals, and the capacity to invent our beliefs, identity, and relationships (Baxter Magolda, 1998; Kegan, 1982). Self-authorship encompasses development in

¹Minnesota State University, Mankato, USA

Corresponding Author:

Amanda L. McGowan, Department of Kinesiology, Michigan State University, 38 IM Sports Circle, 308 W Circle Dr., East Lansing, MI 48824, USA.

Email: mcgowa78@msu.edu

three domains: epistemological (viewing knowledge as uncertain and contextual), intrapersonal (developing a cogent sense of self and personal beliefs that guide behaviors), and interpersonal (forming relationships with others while not compromising one's identity) (Baxter Magolda, 1999). The capacity to self-author has been highlighted as necessary for coping with the demands of adulthood (Baxter Magolda, Creamer, & Meszaros, 2010). However, the works of Kegan (1994) and Baxter Magolda (1999, 2004, 2008) have demonstrated that students graduating from higher education are insufficiently prepared for the demands of professional life. Nevertheless, self-authorship development commences during adolescence, and secondary schools are influential in fostering the early stages of self-authorship development (Meszaros & Lane, 2010). Constructive-developmental pedagogy has been shown to encourage self-authorship development in college students because it validates students' contributions to learning, integrates students' experiences into learning, and encourages the active participation of students in the learning process (Baxter Magolda, 1999); likewise, outdoor experiential pedagogy may develop self-authorship in adolescents.

Outdoor education may lend itself to self-authorship development because of its similarities to constructive-developmental pedagogy. Outdoor education encourages students to internalize their locus of control (LOC), to overcome a state of cognitive dissonance, and to integrate their previous experiences. First, outdoor education encourages the development of a more internalized LOC (Cason & Gillis, 1994; Hattie, Marsh, Neill, & Richards, 1997). An internal LOC suggests that individuals believe that their own actions, decisions, or efforts determine the outcomes of those actions; consequently, conscientiousness and skill are thought to result in successful outcomes (Lefcourt, 1982; Rotter, 1966). When faced with challenging situations, Pizzolato (2005) suggested that a more internalized LOC may help individuals self-author and overcome these challenges. Second, outdoor education presents participants with a new, challenging environment, encouraging a state of cognitive dissonance from which personal growth occurs. The theory of cognitive dissonance addresses how individuals manage the inconsistency between their thoughts and their beliefs, actions, and the environment; overcoming cognitive dissonance means individuals have adjusted their cognition and actions to achieve consistency (Festinger, 1957).

Because individuals reconsider their beliefs and self-concept when participating in outdoor education activities that present cognitive or physical challenges (Walsh & Golins, 1976), reconciling the disequilibrium in individuals' ways of constructing knowledge can move individuals toward developing self-authorship (Pizzolato, 2005). Third, outdoor education teaches individuals to integrate previous experiences to achieve mastery and solve problems (Walsh & Golins, 1976). Likewise, self-authorship requires advanced problem-solving skills to achieve mastery over decision making and learning (Hodge, Baxter Magolda, & Haynes, 2009). Together, these features suggest that outdoor education may be useful in developing participants' self-authorship.

One-semester intensive outdoor education programs are an example of outdoor education programs at the secondary school level that may encourage self-authorship development. Recently, research investigating one-semester intensive outdoor education programs in Ontario has proliferated (see Breunig, 2013, 2014; Breunig, Murtell, & Russell, 2015; Breunig, Murtell, Russell, & Howard, 2014; Comishin, Dymont, Potter,

& Russell, 2004; Sharpe & Breunig, 2009). These programs, also known as Integrated Curriculum Programs (ICPs), combine subjects at the secondary school level. Typically, students spend the full day with one group of peers and one or more teachers for an entire semester learning an integrated curriculum of four to five subjects (Russell & Burton, 2000). However, challenges facing ICP teachers include justifying the benefit of these programs for students and articulating participant outcomes. Although teachers have argued for the positive impact these programs have on their students, little empirical data exist to support their claims (Breunig et al., 2014; Horwood, 1995; Russell & Burton, 2000). Therefore, this study set out to assess the impact of one-semester outdoor education programs on adolescents' perceived self-authorship.

In previous research, themes describing participant perceptions of ICPs include personal growth, interpersonal skills development, and a preference for experiential learning (Horwood, 1994; Russell & Burton, 2000). ICPs allow students to make intrapersonal, interpersonal, community, and environmental connections (Breunig, 2013; Breunig et al., 2014) while becoming more comfortable with their identity (Russell & Burton, 2000). Moreover, identity formation is an integral dimension of developing self-authorship, or individuals' intrapersonal, interpersonal, and epistemological development (Baxter Magolda, 2008).

Although some studies have qualitatively examined students' perceptions of ICPs (Breunig, 2013; Breunig et al., 2015; Breunig et al., 2014; Horwood, 1994; Russell & Burton, 2000), self-report inventories have not been used to quantitatively measure the impact of these programs on psychosocial constructs, such as self-authorship. This study investigated changes in students' perceived levels of self-authorship, as measured by the Self-Authorship Questionnaire (SAQ), among 10th- and 12th-grade students at a public school in Ontario, Canada. In addition, this study examined to what degree students perceived the instructor and outdoor experiences (i.e., winter camping, canoeing, solo experiences, and instructing environmental education programs) influenced their self-authorship. Based on the findings from this research, specific implications are highlighted to help current and future outdoor educators structure their programs to foster self-authorship development. This information allows teachers to develop new programs or modify existing programs based on what students identified as desirable outdoor education integrated curriculum programming.

Review of Literature

ICPs

ICPs implement interdisciplinary education using experiential learning; one of the first secondary school ICPs was established in 1981 (Russell & Burton, 2000). Although location, curriculum, and quantity of outdoor experiences may vary, several characteristics remain consistent across these programs:

1. The same group of students spends the full day together with one or more teachers for an entire semester (similar to elementary school; Russell & Burton, 2000);

2. Students receive a package of credits typically consisting of four to five complementary subjects (Sharpe & Breunig, 2009);
3. Students complete co-operative education placements whereby they teach community programs demonstrating the knowledge they gained during the semester, or they may participate in an environmental internship or service-learning (Breunig, 2013);
4. Students spend the majority of their time outdoors whether participating in daily lessons or going on field trips (e.g., winter camping, canoeing, and hiking; Russell & Burton, 2000);
5. Students may also receive a Specialist High Skills Major (SHSM; Breunig, 2013); this ministry initiative gives students training in specific industries (e.g., environment, agriculture, hospitality) by completing a core of courses and obtaining certifications such as Cardiopulmonary Resuscitation (CPR) and First Aid (Ministry of Education, 2015).

Although the structure of these programs lends itself to experiential learning and fostering environmental stewardship (Breunig et al., 2014), ICPs are not without their limitations. Many constraints may prevent ICPs from being extensively adopted in public secondary schools: Many programs favor disciplines that omit the arts, the programs are limited to teachers' expertise, and the programs require a substantial time commitment from both teachers and students (Russell & Burton, 2000). The additional workload placed on teachers to start and maintain these programs (Comishin et al., 2004) is also a constraint to wide implementation of ICPs (Sharpe & Breunig, 2009). Other constraints highlighted by Sharpe and Breunig (2009) include replacing teachers who leave the program or retire, overcoming numerous administrative obstacles (e.g., timetabling), and misunderstanding of the ICP objectives by the larger school community. Furthermore, funding is scarce with students incurring most of the costs and some believe the programs lack academic rigor (Russell & Burton, 2000).

Previous research has been largely qualitative in nature: post-course questionnaires using open-ended questions (Russell & Burton, 2000), case studies based on teacher interviews and student focus groups (Breunig, 2013; Breunig et al., 2015; Breunig et al., 2014), and a combination of parent interviews, participant observation, and the teacher's lesson plans (Horwood, 1994). Although previous studies have examined participants' personal growth in the domains of interpersonal skills (Russell & Burton, 2000) as well as changes in environmental attitudes and behaviors (Breunig, 2013; Breunig et al., 2015; Breunig et al., 2014; Russell & Burton, 2000), the research has not measured students' perceptions of their self-authorship development through their participation in these programs.

Self-Authorship and Constructive Developmental Pedagogy

Kegan (1982) first coined the term "self-authorship," positing that individuals progress through five orders of consciousness from birth to adulthood, whereby each order subsumes the previous order and comprises the organization of individuals' thinking,

feeling, and relating to the self and others. The fourth order is the development of self-authorship, which involves the development of an independent ideology and the insistence of being considered equal by external authority (e.g., older adults; Kegan, 1994). Adolescence and early adulthood share this struggle: Adolescents are uncertain of their identity as they seek to find a place in social relations, whereas freshman students search to find their identity in the college environment (Frauman & Waryold, 2009). Thus, both adolescents and freshmen seek to situate themselves as knowledgeable, self-aware, and autonomous.

Baxter Magolda's works (e.g., 1998, 1999, 2004) build upon the earlier works of Kegan (e.g., 1982, 1994) and focus on the use of constructive-developmental pedagogy to foster the development of self-authorship in college. Constructive-developmental pedagogy "validates students as knowers, situates learning in students' own experience, and defines learning as mutually constructing meaning" (Baxter Magolda, 1999, p. 27). Validating students as knowers includes recognizing their perspectives and current knowledge in a way that helps them articulate these current understandings. Situating learning in students' experiences comprises activating prior knowledge and basing learning on students' current experiences. To define learning as mutually constructing meaning is to encourage the active participation of students in creating the learning experience; consequently, students continuously integrate their lived experience and the meaning they have made of these experiences into instruction.

Baxter Magolda (2004) has outlined four stages through which individuals progress toward self-authorship: (a) following external formulas, (b) the crossroads, (c) becoming the author of one's own life, and (d) internal foundations. First, students follow guidance from external authority to be successful. Second, students become dissatisfied with following external formulas because they have found this strategy unsuccessful. However, during the second stage of the crossroads, students are still unable to act on their desire to be more autonomous. Third, students become the author of their own life by developing a personal belief system upon which they act. Finally, the internal foundations stage comprises becoming grounded in one's identity, constructing social relations, and recognizing that ambiguity and external influences exist. Life decisions are made based on strong internally defined beliefs and a cogent self-concept; progression to this stage does not typically occur until after age 40. However, self-authorship is a unique process for every individual and can develop before college (Pizzolato, 2003) as well as during college or later in life (Baxter Magolda, 2004). Baxter Magolda (2008) has emphasized the cyclical nature of self-authorship because it "is more complex and nuanced than a simple linear trajectory" (p. 281). Instead, she describes it as a cyclical process through which individuals move toward increased self-authorship based on personal characteristics, diverse experiences, and overcoming challenges. Consequently, students may move toward self-authored systems within each dimension (i.e., epistemological, intrapersonal, and interpersonal) at different times in their lives.

Moving through the stages of self-authorship occurs when individuals face and overcome "provocative moments," which may be a series of challenging situations (Pizzolato, 2005, p. 625). Although self-authorship has been largely studied in

college-aged individuals, precollegiate self-authorship has been found in individuals facing marginalization or challenging situations (e.g., racial minorities, homosexual, and at-risk students; Baxter Magolda et al., 2010; Pizzolato, 2003). These students are impelled into self-authorship earlier (e.g., during adolescence) than students not facing marginalization because they overcame provocative moments or states of cognitive dissonance.

Cognitive dissonance is also characteristic of outdoor education activities. Cognitive dissonance is created when the combination of challenge, mastery, and success inherent in outdoor education activities encourages growth in participants. By rising to the challenge and overcoming the stressful situation, individuals experience personal growth. Thus, the provocative experiences students overcome in one-semester outdoor education programs (e.g., winter camping and solo experiences) may provoke precollegiate self-authorship and help students transition from the crossroads to becoming the author of their own lives. Therefore, it follows that self-authorship may be a participant outcome of ICPs, even though few studies have examined self-authorship as an outcome of outdoor education programs (see Ferencevych, 2004; Gass, Garvey, & Sugerman, 2003).

Method

This study investigated changes in perceived self-authorship levels among one-semester outdoor education program participants using a one-group pretest–posttest quasi-experimental design (Baldwin & Berkeljon, 2010). This study used Neill's (2002) recommendations to use pretest/posttest surveys to examine participant self-perceptions before and after participation in outdoor programs by using a self-report measurement tool and follow-up testing. Purposive sampling was used to select two long-standing programs familiar with research and taught by teachers of different genders with a range of years of experience. As one of the few studies examining self-authorship in outdoor education (see Ferencevych, 2004; Gass et al., 2003), the researcher used a self-report measure as a preliminary examination of the potential for ICPs to influence self-authorship development. Although self-report surveys do not offer detailed insight into participants' perceptions, some students provided additional comments to the researcher, expanding on their perceived self-authorship development.

The data source for this study was 26 students from two ICPs at a public school in Ontario, Canada. The SAQ Version 2, developed by Ferencevych (2004) for use in outdoor education contexts, was administered 3 times (pretest, posttest, and 3-month posttest) to measure differences in self-authorship levels (see 'Instrumentation' section).

Ethical Considerations

All students were given the option to voluntarily participate in the study without their participation being made public to the teacher or peers: students returned the consent

Table 1. Gender and Program Characteristics of Survey Participants.

Group	T1 (n = 26)		T2 (n = 19)		T3 (n = 18)	
	Frequency	%	Frequency	%	Frequency	%
Males	6	23.1	5	26.3	4	22.2
Females	20	76.9	14	73.7	14	77.8
10th grade	11	42.3	9	47.4	8	44.4
12th grade	15	57.7	10	52.6	10	55.6
Unmatched responses	0	0	3	11.5	4	15.4
No response	0	0	7	26.9	8	30.8

Note. Unmatched responses did not have an identification code associated with the response.

forms with either a blank or completed survey to the researcher. At any point, students were able to withdraw participation from the study by notifying the researcher by email. Student assent and guardian consent forms were collected by the researcher when the in-person pretest survey was administered. Students' identity remained unknown to the researcher because confidential ID codes were used to match participants' responses. The researcher had no previous relationship with the students or teachers of the two programs. The researcher obtained consent to approach the classes for the study from the ICP teachers, school principal, and school board research liaison committee by following proposal guidelines and protocols outlined by the school board. The study underwent university and school board ethical review.

Participants

Two classes of 24 students each, with an equal distribution of males and females, were selected as the sample to administer the SAQ. Participants in this study were six male and 20 female adolescents ranging in age from 15 to 18 years ($M = 16.46$ years) at pretest, ($M = 16.52$ years) at posttest, and ($M = 16.89$ years) at second posttest. Although participants were disproportionately distributed between genders, they were equally distributed between grade levels across the three test periods (see Table 1). A total of 19 students responded to the posttest (T2), for a response rate of 73%. At the second posttest (T3), a total of 18 students responded, resulting in a 69% response rate. Unmatched surveys were removed from paired *t* tests (i.e., surveys without identification codes or surveys without corresponding matches in T2 or T3) because they did not reflect a pretest/posttest design (see Table 1). All participants participated in a one-semester outdoor education ICP at either the 10th- or 12th-grade level from February to June 2015.

Programs

The 10th- and 12th-grade outdoor education programs selected for this study focus on environmental leadership. The researcher selected these programs because of their longevity (approximately 10 years) and familiarity with participating in research.

Students earned four secondary school credits during the semester: English, physical education, interdisciplinary studies, and geography (Grade 12) or careers/civics (Grade 10). All students participated in a 5-day winter camping trip at the beginning of the course, and the 12th-grade students participated in an additional 5-day canoe trip at the end of the course. While on the canoe trip, students participated in a solo experience in which they spent an evening alone with rationed food and supplies to build a shelter and fire. Solo experiences have been found to encourage intrapersonal insight, leading to individuals recognizing a new purpose, accepting their true selves, and listening to their internal voice (Bodkin & Sartor, 2005). A cornerstone of the programs is that students spend a majority of daily time outdoors, learning experientially. Toward the end of the semester, students demonstrated their knowledge by teaching environmental education programs to elementary students, which has been shown to make learning more practical and meaningful (Breunig et al., 2014; Russell & Burton, 2000).

Data Collection

The pretest measurement was administered in-person using paper copies within the participants' normal classroom setting in March 2015. The researcher visited both classrooms on this date to collect consent forms, administer and collect the pretest survey, and answer any questions participants may have had regarding the study. The researcher visited each class for approximately 15 min to administer and collect the surveys and consent forms. The administration of the pretest measurement was the only contact the researcher had with participants because the remaining measurements were administered online. This date was after the course start date to comply with school board research regulations. Therefore, pretest SAQ levels may be elevated because students had already participated in a winter camping trip. The posttests were administered via email in June and September 2015 using Qualtrics, an online survey software.

Instrumentation. Self-authorship development is often measured in one of three ways: (a) using existing self-report surveys measuring related constructs, (b) designing a survey to measure change in the study's specific setting, or (c) conducting semi-structured interviews with a small group of participants and relying on student narratives (Pizzolato, 2007). The present study used a survey combining the first and second of Pizzolato's (2007) self-authorship assessment methods. The SAQ designed and developed for use in outdoor education programs by Ferencevych (2004) was the self-report measurement tool used in this study. The SAQ has 27 Likert-type scale self-report items that are adapted or used from the Review of Personal Effectiveness and Locus of Control developed by Richards, Ellis, and Neill (2002) and the Empowerment Scale developed by Rogers, Chamberlin, Ellison, and Crean (1997). The items are divided into four sub-scales (situational coping, interpersonal leadership, self-efficacy, and knowledge creation), and pilot testing returned a Cronbach's alpha = .85, indicating high reliability (Ferencevych, 2004). The SAQ was used in this study (after receiving permission from

the author) because it uses language easily understood by adolescents, it returned high reliability, it was developed for use in outdoor education programs, and its Likert-type scale questions allowed for convenient data collection and analysis.

The SAQ assessed participants' perceived changes in self-authorship because of their outdoor education ICP participation. The survey consisted of a one-page double-sided document with instructions and 27 items on a 5-point Likert-type scale (see Appendix A). Participants answered each item by marking the item from 1 (false/completely unlike them) to 5 (true/definitely like them). Additional demographic questions included gender, age, grade, and confidential ID code for matching pretest and posttest responses (consisting of students' middle initial and last four digits of their home phone number). Moreover, a section for students' additional comments was added to the survey so that students could provide qualitative comments to the researcher if they desired. The posttest (T2) included five additional Likert-type scale questions related to student perceptions of the role of the instructor and outdoor education experiences in their self-authorship development (see Appendix B). The format of the second posttest (T3) was identical to the pretest (T1) (see Appendix A).

Data Analysis

Descriptive statistics summarized the characteristics of participants with respect to age, gender, and grade level. Inferential statistics were used to process the quantitative data produced by the SAQ. All *t* tests were two-tailed with a significance level of .05. Paired *t* tests as well as effect sizes (Cohen's *d*) were calculated to examine changes in self-authorship levels before (T1), after (T2), and 3 months following (T3) participation in one-semester outdoor education programs. Independent *t* tests were used to determine differences in overall SAQ scores between 10th- and 12th-grade students as well as between males and females within the grade level. Although no formal qualitative data analysis occurred because it was beyond the scope of the present study, students' additional comments are included to corroborate the results of the paired and independent *t* tests. Moreover, the qualitative comments may be of interest to practitioners because the language is consistent with that used to describe self-authorship.

Results

The scores on each of the four SAQ dimensions and the overall SAQ scores acted as the dependent variables in paired sample *t* tests to determine the impact of outdoor education ICPs on participants' self-authorship, whereas independent variables for independent sample *t* tests included sex and grade. Scores were totaled for each SAQ dimension (situational coping, interpersonal leadership, self-efficacy, and knowledge creation) by adding the ranking (1-5) for the corresponding SAQ items (see Appendix C for SAQ item by subscale). Overall, SAQ scores were found by aggregating all 27 items (for a possible total score of 135).

Table 2. Paired Two-Tailed *t* Tests for SAQ Dimensions and Overall Mean SAQ Scores (*n* = 16).

SAQ dimension	T1		T2		<i>t</i>	Significance
	M1	SD1	M2	SD2		
Situational coping	32.93	3.66	37.43	4.47	4.54*	.000
Interpersonal leadership	30.25	5.36	35.63	3.95	3.92*	.001
Self-efficacy	29.31	3.65	33.06	2.64	4.29*	.001
Knowledge creation	7.94	1.98	8.31	2.50	0.88	.394
Overall SAQ	100.44	10.80	114.44	9.32	5.27*	.000

Note. Likert-type scale values: 1 = false/not like me, 2 = more false than true, 3 = neutral, 4 = more true than false, 5 = true/like me. SAQ = Self-Authorship Questionnaire.

**p* < .05.

Differences in Pretest and Posttest SAQ Scores

Paired *t* tests determined the effects of participation in an ICP on self-authorship by analyzing each SAQ dimension score and the overall SAQ score for pretest and posttest group means at a confidence interval of .05. Analysis of the *t* tests for the treatment phase (T1 to T2) showed significant increases for three of four SAQ dimensions: situational coping, interpersonal leadership, and self-efficacy (see Table 2). In contrast, results indicated no significant difference for knowledge creation. Moreover, the most significant increase from T1 to T2 occurred for overall SAQ scores.

Analysis of the *t* tests for the posttest phase (T2 to T3) showed no significant differences between SAQ dimension and overall SAQ scores (see Table 3), indicating that gains were retained 3 months following participation.

Cohen's *d* assessed to what degree participation in a one-semester outdoor education program affected students' self-authorship levels. Cohen (1988) defined effect sizes as small (*d* = .2), medium (*d* = .5), and large (*d* = .8). Based on Cohen's interpretation, participants received a large positive effect on self-authorship levels from participation in a one-semester outdoor education ICP from the T1 to T3 (see Table 4).

Differences Within Grade Level Based on Gender

Independent *t* tests were performed at a confidence level of .05 within the grade level for overall SAQ scores based on gender for the three test measurements (see Table 5). Students were able to indicate gender on their survey by checking a box: male, female, other (with blank space to fill in gender). Results indicated no significant differences in overall SAQ scores within the grade level based on gender (see Tables 5 and 6). The small sample sizes and unequal distribution across genders may have affected these results.

Differences Between Grade Levels

Independent *t* tests were performed at a confidence level of .05 for overall SAQ scores based on grade level for the three test measurements (see Table 7). Students were able

Table 3. Paired Two-Tailed *t* Tests for SAQ Factors and Overall Mean SAQ Scores (*n* = 14).

SAQ factor	T2		T3		<i>t</i>	Significance
	M1	SD1	M2	SD2		
Situational coping	36.93	4.57	38.79	2.86	1.59	.135
Interpersonal leadership	35.43	4.13	36.64	3.32	1.65	.123
Self-efficacy	32.86	2.77	33.07	1.64	0.289	.777
Knowledge creation	8.50	2.62	9.14	1.88	1.09	.295
Overall SAQ	113.71	9.73	117.64	6.11	1.66	.120

Note. Likert-type scale values: 1 = false/not like me, 2 = more false than true, 3 = neutral, 4 = more true than false, 5 = true/like me. SAQ = Self-Authorship Questionnaire.

**p* < .05.

Table 4. Effect Size Analysis Results for SAQ Dimensions and Overall SAQ Score.

SAQ dimension	T1-T2	T2-T3	T1-T3
	<i>d</i>	<i>d</i>	<i>d</i>
Situational coping	1.10	0.49	1.78
Interpersonal leadership	1.14	0.32	1.43
Self-efficacy	1.18	0.09	1.33
Knowledge creation	0.16	0.28	0.62
Overall SAQ	1.39	0.48	1.96

Note. Effect sizes > .8 are in boldface. Likert-type scale values: 1 = false/not like me, 2 = more false than true, 3 = neutral, 4 = more true than false, 5 = true/like me. SAQ = Self-Authorship Questionnaire.

Table 5. Independent Sample *t* Tests for Overall SAQ Within 12th Grade Based on Gender (*n* = 10).

Time period	Gender	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	Significance
T1: Pretest	Male	2	99.00	0.00	-0.11	.914
	Female	13	99.69	8.65		
T2: Posttest	Male	1	110.00	—	-1.08	.311
	Female	9	115.00	4.39		
T3: Three months posttest	Male	1	110.00	—	-1.52	.167
	Female	9	118.67	5.41		

Note. Likert-type scale values: 1 = false/not like me, 2 = more false than true, 3 = neutral, 4 = more true than false, 5 = true/like me. SAQ = Self-Authorship Questionnaire.

p < .05.

to indicate grade level on their survey by checking a box: 10th grade or 12th grade; students reported no other grade levels. Results indicated no significant differences in overall SAQ scores between grade levels (see Table 7). The small sample sizes and unequal distribution across grade levels may have affected these results.

Table 6. Independent Sample *t* Tests for Overall SAQ Within 10th Grade Based on Gender ($n = 10$).

Time Period	Gender	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	Significance
T1: Pretest	Male	4	93.00	8.98	-1.54	.159
	Female	7	103.14	11.24		
T2: Posttest	Male	4	117.50	4.65	0.21	.463
	Female	5	111.00	16.00		
T3: Three months posttest	Male	3	116.33	1.53	-0.38	.722
	Female	5	118.00	9.62		

Note. Likert-type scale values: 1 = false/not like me, 2 = more false than true, 3 = neutral, 4 = more true than false, 5 = true/like me. SAQ = Self-Authorship Questionnaire.
 $p < .05$.

Table 7. Independent Sample *t* Tests for Overall SAQ Between Grade Level ($n = 10$).

Time period	Grade	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	Significance
T1: Pretest	10	11	99.45	11.24	-0.04	.970
	12	15	99.60	8.02		
T2: Posttest	10	9	113.89	12.16	-0.15	.884
	12	10	114.50	4.42		
T3: Three months posttest	10	8	117.38	7.37	-0.14	.893
	12	10	117.80	5.79		

Note. Likert-type scale values: 1 = false/not like me, 2 = more false than true, 3 = neutral, 4 = more true than false, 5 = true/like me. SAQ = Self-Authorship Questionnaire.
 $p < .05$.

The following results were collected from additional questions asked on the posttest (T2) survey. All participants took part in winter camping ($n = 19$) and instructing environmental education programs to elementary students ($n = 19$), whereas only 12th-grade students took part in canoeing ($n = 10$) and solo experiences ($n = 10$).

Perceived Impact of the Instructor

Item 28 on the SAQ posttest asked students to rate on a Likert-type scale (0 = no opinion, 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree) to what degree they believed the instructor played a role in their self-authorship development. Overall, 95% of students either “agreed” or “strongly agreed” that the teacher played a role in their self-authorship development (see Table 8), indicating students perceived the instructor to be influential in their self-authorship development.

Perceived Impact of Winter Camping

Similarly, 95% of participants perceived the winter camping experience to “definitely” play a role in their self-authorship development (see Table 9), suggesting that students perceived the winter camping experience affected their self-authorship.

Table 8. Frequency of Perceived Role of Instructor.

Frequency	<i>n</i>	%
No opinion	0	0.00
Strongly disagree	0	0.00
Disagree	1	5.26
Agree	7	36.84
Strongly agree	11	57.89

Note. Likert-type scale values: 0 = *no opinion*, 1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, and 4 = *strongly agree*.

Table 9. Frequency of Perceived Role of Outdoor Education Experiences.

Frequency	<i>n</i>	%
Winter camping		
Not applicable	0	0
Not at all	0	0
Very little	1	5
Somewhat	7	37
Definitely	11	58
Instructing elementary students		
Not applicable	0	0
Not at all	0	0
Very little	2	11
Somewhat	4	21
Definitely	13	68
Canoeing		
Not applicable	9	47
Not at all	0	0
Very little	0	0
Somewhat	4	21
Definitely	6	32
Solo experiences		
Not applicable	9	47
Not at all	0	0
Very little	0	0
Somewhat	0	0
Definitely	10	53

Note. Likert-type scale values: 0 = *not applicable*, 1 = *not at all*, 2 = *very little*, 3 = *somewhat*, 4 = *definitely*.

Perceived Impact of Instructing Elementary Students

Participants were asked to what degree they perceived instructing environmental programs to elementary students affected their self-authorship development. Overall, 89% of participants reported the experience “somewhat” or “definitely” played a role

in their self-authorship development (see Table 8), indicating that students perceived the environmental education instructional experience influenced their self-authorship development.

Perceived Impact of Canoeing

In addition, students were asked to rate to what degree canoeing experiences played a role in their self-authorship development. All 12th-grade students ($n = 10$) indicated that their canoeing experiences “somewhat” or “definitely” played a role in their self-authorship development (see Table 9), suggesting that students perceived the canoeing experiences as influential to their self-authorship development.

Perceived Impact of Solo Experiences

Finally, students were asked to rate to what degree solo experience(s) played a role in their self-authorship development. All 12th graders ($n = 10$) indicated that their solo experiences “definitely” played a role in their self-authorship development (see Table 9), suggesting that students perceived solo experiences affected their self-authorship.

Additional Perceptions

Presented in this section are additional comments participants provided to the researcher, which support students’ perceptions of the role of ICP participation in their self-authorship development. Although not prompted by the researcher to write additional comments, students may have done so because of their familiarity with daily journaling and reflective dialogs facilitated by their teachers in class. These results must be interpreted with caution because no formal qualitative data analysis was conducted.

Although eight 12th-grade females indicated they had previously participated in one or more ICPs, no 10th-grade students indicated prior participation. Other comments provided by participants demonstrate intrapersonal and interpersonal insight gained from participating in the ICP (names of the programs have been removed from students’ comments to maintain confidentiality). On the program, one participant wrote, “[It] helped me to see who I am, and develop my best skills and traits to move me forward into the future and become an asset to society” (female, 10th grade). Another participant noted the program “helps you to find out what your strengths and weaknesses are and helps you discover who you are as a person and what you believe/feel about certain things” (female, 10th grade). Another participant insisted, “More of these programs should be available. [The program] has been the most rewarding experience” (female, 10th grade). In considering the interpersonal relationships that influenced his self-authorship development, one participant asserted that

The students I was with everyday played a significant role in my development as a person. I feel that finishing high school with an integrated program . . . gave me a much stronger skillset and a proper “rite of passage” leaving to enter into the actual world.
(Male, 12th grade)

In reflecting on her participation in the program, another participant indicated, "It was an amazing way to get away from the pressures of high school and trying to fit it. It really helped me discover who I am" (female, 12th grade). These results suggest that participants perceived the ICPs influenced their development in the interpersonal and intrapersonal dimensions of self-authorship, and they perceived the experience as important toward preparing them for the demands of life after graduation (e.g., "asset to society" and "rite of passage"). The language students used to describe their perceptions of the impact of the ICP on their self-authorship development are consistent with the language used to describe the interpersonal and intrapersonal dimensions of self-authorship (see Baxter Magolda, 2004, 2008): "discover who I am," "skills and traits," "who you are as a person," "what you believe/feel," and "strengths and weaknesses." These comments demonstrate the opportunity for future research to investigate further the intricacies of students' perceived self-authorship development through ICP participation using students' narratives.

Discussion

The results of this study suggest that the two outdoor education ICPs were appropriate models for enhancing self-authorship in 10th- and 12th-grade students at a public school in Ontario, Canada. Survey data from students demonstrated gains in the situational coping, interpersonal leadership, and self-efficacy dimensions of self-authorship that were retained at 3 months posttest, suggesting these programs may affect students' self-authorship development up to 3 months following participation. This finding supports the results of similar outdoor adventure outcome studies (Cason & Gillis, 1994; Flood, Gardner, & Cooper, 2009; Hattie et al., 1997).

In addition, adventure programs of longer duration (≥ 17 -30 days) are more likely to have lasting impacts on participants (Hattie et al., 1997; Jostad, Paisley, & Gookin, 2012; Paisley, Furman, Sibthorp, & Gookin, 2008); therefore, the gains in self-authorship observed in this study may be attributed to the length of the ICPs (approximately 20 weeks). Moreover, effect size scores from pretest to second posttest show that students received a large, positive effect on self-authorship from participation in ICPs, which is within the range found in previous studies (Cason & Gillis, 1994; Hattie et al., 1997).

There were no differences in overall SAQ scores within the grade level between genders, which may be attributed to the small sample size and unequal distribution between genders. These results do not confirm the differences previously observed in program outcomes between males and females (Flood et al., 2009) and are consistent with the similarly positive outcomes in males and females observed by Hattie et al. (1997).

A plausible explanation for the lack of difference observed in overall SAQ scores between grade levels may be the small sample size, unequal distribution between genders, and complex cyclical nature of self-authorship. Consequently, many students may have simply perceived themselves to be moving toward increased self-authorship to a similar degree. This finding is inconsistent with other studies that have found maturity to play a role in participants' perceived outcomes following participation in

adventure education programs (Flood et al., 2009). However, Baxter Magolda (2008) suggests that self-authorship is different for every individual because of personal characteristics, experiences, and challenges encountered. Overcoming challenging experiences is integral to self-authorship development (Pizzolato, 2003). Thus, it follows that there may only be slight discernable differences in self-authorship development between the grade levels because of the similar challenges and experiences (e.g., winter camping and canoeing) students in these two programs shared.

Outdoor education ICPs were effective for enhancing the situational coping, interpersonal leadership, and self-efficacy dimensions of self-authorship, resulting in gains in overall SAQ scores in these two classes. The observed gains in self-authorship further support the idea that the main outcomes of outdoor education programs relate to leadership, self-concept, and interpersonal skills (Neill, 2002), which all comprise the capacity to self-author. Conversely, ICPs were not effective for enhancing the knowledge creation dimension of self-authorship. This result is consistent with the findings of Hattie et al. (1997) that found academic gains were only observed for adventure programs that explicitly articulated academic knowledge as a program outcome. Therefore, outdoor educators wishing to enhance the epistemological dimension of self-authorship should explicitly state knowledge creation as a program outcome and structure their programs to foster its development.

Almost all of the students perceived the instructor as influential in their self-authorship development, supporting findings in previous research examining the instructor's influence on adventure program outcomes (McKenzie, 2000; Mirkin & Middleton, 2014). Likewise, relationships with educators have proven influential to self-authorship development because educators help students recognize diverse perspectives, knowledge as tentative, and their active participation in learning experiences (Pizzolato & Ozaki, 2007). In outdoor education, trust between the instructor and participants has been found to positively influence outcomes (Shooter, Paisley, & Sibthorp, 2012; Shooter, Sibthorp, & Gookin, 2010). The personal attributes of instructors, including technical ability, sincere investment in each student, interpersonal skills, and integrity, are influential predictors of trust (Shooter et al., 2012) and aid in student learning and personal growth in outdoor education (Shooter et al., 2010). Breunig (2013) suggested that the role of the teacher may be impactful in environmental studies programs because teachers experience their own transformations as they refine their own beliefs and values. Likewise, Baxter Magolda (2008) highlights that self-authorship enhances interpersonal relationships: The perceived importance of the instructor-student relationship and the relationships with other students in the class may have been strengthened by students' perceived gains in self-authorship. Therefore, the data reported in this study support the previous findings that the instructor can influence outdoor education participant outcomes, such as self-authorship.

Providing students with opportunities for winter camping, canoeing, and being alone in the wilderness (solo experiences) appeared to be programmatically important, and students in this study perceived them as influential in their self-authorship development. A possible explanation may be that these physically and emotionally demanding activities emphasize overcoming challenges, thus creating a state of cognitive dissonance. By overcoming this state of cognitive dissonance or "provocative

moments” (Pizzolato, 2005, p. 625; for example, while winter camping, canoeing, or on solo), students are impelled into self-authorship. Furthermore, solo experiences are associated with increased independence, which is integral to self-authorship, because participants have to take care of their basic needs independently (Daniel, Bobilya, Kalisch, & McAvoy, 2014). Likewise, positive outcomes are achieved when overcoming challenges through “perseverant effort” (Bandura, 1997, p. 80)—required of outdoor activities such as winter camping, canoeing, and solo experiences—because students must show mastery of many primitive skills in these contexts. Taken together, these preliminary findings suggest that winter camping, canoeing, and solo experiences may influence participants’ self-authorship development because these activities require a great deal of perseverant effort, encourage mastery, and facilitate overcoming a state of cognitive dissonance. Outdoor educators seeking to foster self-authorship development through their programs may find integrating these outdoor activities into their programming likely to be of benefit to participants’ self-authorship.

Students perceived the experience of instructing environmental education programs to elementary students influenced their self-authorship development. Teaching younger students gives the 10th and 12th graders an opportunity to be a leader and demonstrate the knowledge they gained from their course participation (Russell & Burton, 2000). Consequently, students draw on their strengths in outdoor education to experiment with a new identity while teaching, which has been found to result in personal growth (Passarelli, Hall, & Anderson, 2010). This personal growth may have led to gains in self-authorship. This result confirms that leadership opportunities help participants develop transferable skills as well as experience a sense of accomplishment, supporting previous research examining the impact of leadership opportunities on participants.

The implications of these findings may prove useful to outdoor educators wishing to help participants develop self-authorship for success in adulthood. The potential of one-semester outdoor education programs, such as ICPs, to influence participants’ self-authorship may be an important outcome associated with these programs and a significant area for future research. Many outdoor education programs aim to have a positive influence on participant outcomes related to the interpersonal, intrapersonal, and epistemological dimensions of self-authorship. Outdoor educators can use these findings to support the rationale for selecting winter camping, canoeing, solo experiences, and leadership opportunities to contribute to participants’ self-authorship. Most notably, these findings support the rationale for secondary school one-semester outdoor education experiences.

Although preliminary, these results reveal that winter camping, canoeing, solo experiences, and instructional experiences as part of ICPs may influence participants’ self-authorship development. In addition, the present study supports the influential role outdoor educators have on participant outcomes. Reflective conversations with instructors have been suggested to help students’ develop and listen to their internal voice, supporting their development of self-authorship (Baxter Magolda, 2008), and reflection was emphasized by the ICPs in this study. Outdoor educators may seek to continue integrating the principles of constructive-developmental pedagogy (i.e., validating students as knowers, situating learning in students’ prior experience,

and defining learning as mutually constructing meaning) to foster self-authorship in participants (Baxter Magolda, 1999). For example, the ICPs in this study encouraged students to reflect using journals and dialog; other ICPs have been found to use similar strategies (Breunig, 2013; Breunig et al., 2015). These instructional strategies encourage students to strengthen their internal voice, moving students into building self-authored systems (Baxter Magolda, 2008). The more educators can encourage students to develop and listen to their internal voice without the influence of external social pressures (e.g., peers and family), the more students may move toward self-authorship (Baxter Magolda, 2008). Nevertheless, the small sample size and paucity of research examining self-authorship as an outcome of outdoor education programs warrants further study to understand the association between the type of outdoor activity and its impact on self-authorship as well as the characteristics of instructors that influence students' self-authorship development in ICPs.

Limitations

The small sample size and unequal distribution across gender limit the generalizability and statistical significance of these findings. The differences in curriculum for the two programs also make it difficult to determine whether the program influenced participants' self-authorship development or maturation led to personal growth. In addition, outdoor education participants are susceptible to social desirability, which is the inclination to respond desirably to self-report inventories after participation even though the response may be inaccurate (Ewert & Sibthorp, 2009). Because students apply to participate in the ICPs, students are also more inclined to experience personal growth because of their openness to the program (Hendee & Brown, 1988; Kalisch, Bobilya, & Daniel, 2011). These results therefore need to be interpreted with caution.

Future studies should include more than two ICPs to understand whether the relationship between outdoor education programs and self-authorship development in participants can be generalized across programs. Furthermore, the impact of different types of outdoor activities on self-authorship development requires additional study to examine to what degree each activity influences enhancing self-authorship. The use of a control group to compare self-authorship development in sedentary indoor classes with students enrolled in ICPs will prove useful to examine the potential for ICPs to influence self-authorship compared with sedentary indoor classes. Future research should also use larger samples equally distributed across genders, psychometrically tested measurement tools besides the SAQ, probability sampling techniques, and longitudinal perspectives on student self-authorship transformation (Breunig et al., 2014; Russell & Burton, 2000).

Effectively implementing ICPs can prove challenging because of financial and time constraints as well as lack of research examining the outcomes of these programs (Breunig et al., 2014; Russell & Burton, 2000). Moreover, ICPs do not uphold the reputation of academically rigorous, resulting in resistance from some parents, administrators, and teachers (Breunig et al., 2014; Russell & Burton, 2000). For these reasons, empirical research examining the longitudinal outcomes of these programs is particularly valuable to practitioners (Breunig et al., 2015; Horwood, 1995; Russell &

Burton, 2000). The two programs in this study provided an integrated curriculum programming structure that could be adapted to fit a range of outdoor education settings and could possibly be applied to other ICPs. When outdoor education ICPs are intentionally designed to meet specific outcomes (i.e., self-authorship) and are integrated with academic curricula, ICPs not only make short-term impacts on adolescent developmental outcomes but are also transformative experiences with the potential for lasting impacts (Baxter Magolda, 1999; Breunig, 2013; Hattie et al., 1997).

Appendix A

Self-Authorship Questionnaire (Pretest and Second Posttest)

SAQ v.2
PLEASE DO NOT TURN OVER YET
READ THESE INSTRUCTIONS

This is a chance for you to consider how you think, feel, and make decisions. This is not a test—there are no right or wrong answers, and everyone will have different responses. It is important that you give your own views about yourself without talking to others and are honest in your responses. Your answers will be used for research purposes only and will in no way be used to refer to you as an individual at any time.

Please use the five point scale to indicate how true (like you) or how false (unlike you), each statement on the next page is as a description of you. Answer the statements about how you feel now, (not how you felt at another time in your life, or how you might feel tomorrow).

Please do not leave any statements blank.

False Not Like Me					True Like Me
1	2	3	4	5	
This statement doesn't describe me at all; it isn't like me at all.	More false than true	Neutral	More true than false	This statement describes me very well; it is very much like me.	

SOME EXAMPLES

1. I am a creative person.	1	2	3	4	5
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(The 4 has been circled because the person answering believes the statement "I am a creative person" is more true than false.)

2. I am good at writing poetry.	1	2	3	4	5
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(The 2 has been circled because the person answering believes that the statement is more false than true as far as he/she is concerned.)

3. I am given opportunities to make a difference.	1	2	3	4	5
---------------------------------------------------	---	---	--------------	---	---

(The 3 has been circled because at first the person thought that the statement was neutral but then the person corrected it to 4 to show that the statement was more true than false about him/her.)

If still unsure about what to do, ASK FOR HELP.

MIDDLE INITIAL: _____	LAST FOUR DIGITS OF HOME PHONE NUMBER: _____
AGE: _____ (years)	GRADE: _____
(Check one) <input type="checkbox"/> MALE <input type="checkbox"/> FEMALE <input type="checkbox"/> _____	
PROGRAM: (Check one) <input type="checkbox"/> CELP <input type="checkbox"/> Headwaters	

STATEMENT	FALSE Not like me	NEUTRAL	TRUE Like me
01. No matter what happens I can handle it.	1	2	3
02. No matter what the situation I can handle it.	1	2	3
03. Whatever situation arises I can come up with a solution.	1	2	3
04. I cope well with changing situations.	1	2	3
05. I enjoy coming up with solutions to my problems.	1	2	3
06. I am willing to make difficult decisions.	1	2	3
07. I am calm in stressful situations.	1	2	3
08. I can research a topic and form my own opinion effectively.	1	2	3
09. I am efficient and do not waste time.	1	2	3
10. I am a capable leader.	1	2	3
11. I am able to handle positions of authority.	1	2	3
12. I am a good leader when things need to get done.	1	2	3
13. I feel comfortable speaking in front of a group.	1	2	3
14. I communicate effectively with other people.	1	2	3
15. I am given opportunities to make a difference.	1	2	3
16. I am given real responsibility in my life.	1	2	3
17. I am effective in social situations.	1	2	3
18. I show good judgment in most situations.	1	2	3
19. I see myself as a capable person.	1	2	3
20. I make the right decision a majority of the time.	1	2	3
21. I know I have the ability to do anything I want to do.	1	2	3
22. I am able to do things as well as most other people.	1	2	3
23. I am good at deciding whether a risk is worth taking.	1	2	3
24. I am capable of regulating my own actions.	1	2	3
25. I never question the opinion of my superiors.	1	2	3
26. I believe experts are in the best position to decide what people should learn.	1	2	3
27. I always look to my teacher/boss for direction.	1	2	3

Appendix B

Self-Authorship Questionnaire (Initial Posttest)

The teacher played a role in the development of my ability to independently think, feel, make decisions, and grow as a person. (Select one)

- Strongly disagree
- Disagree
- Agree

- Strongly agree
- No opinion

What experiences did you take part in this semester (February-June 2015)? (Check all that apply)

- Winter camping
- Canoeing
- Solo experience(s)
- Instructing elementary students environmental programs

To what degree did each experience play a role in the development of your ability to independently think, feel, make decisions, and grow as a person? (Circle one for each experience)

	Not at all	Very little	Somewhat	Definitely	Not Applicable (N/A)
Winter camping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Canoeing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Solo experience(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instructing elementary students environmental programs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

An integrated curriculum program is defined as an education program taught at the secondary school level in which students spend a full day with one group of peers and one or more teachers for a semester to earn a package of credits (which may include 4-5 subjects grouped together). Programs include a significant amount of outdoor experience (e.g., camping trips, daily lessons outdoors, instruction in outdoor skills such as canoeing, backpacking, winter camping, etc.). Based on this description, have you previously participated in outdoor education integrated curriculum programs?

- Yes
- No

Answer if “yes” is selected

Have you previously participated in outdoor education integrated curriculum programs before this semester?

How many semesters (including the present semester) have you participated in an outdoor education integrated curriculum program? (This number may include the same program in different semesters). (Select one)

- 1 semester
- 2 semesters
- 3 semesters
- 4 semesters
- 5 semesters
- 6 semesters
- 7 semesters
- 8 semesters
- More than eight semesters

Appendix C

Self-Authorship Questionnaire Items Identified by Subscale.

Factor 1: Situational coping	01. No matter what happens I can handle it. 02. No matter what the situation I can handle it. 03. Whatever situation arises I can come up with a solution. 04. I cope well with changing situations. 05. I enjoy coming up with solutions to my problems. 06. I am willing to make difficult decisions. 07. I am calm in stressful situations. 08. I can research a topic and form my own opinion effectively. 09. I am efficient and do not waste time.
Factor 2: Interpersonal leadership	10. I am a capable leader. 11. I am able to handle positions of authority. 12. I am a good leader when things need to get done. 13. I feel comfortable speaking in front of a group. 14. I communicate effectively with other people. 15. I am given opportunities to make a difference. 16. I am given real responsibility in my life. 17. I am effective in social situations.
Factor 3: Self-efficacy	18. I show good judgment in most situations. 19. I see myself as a capable person. 20. I make the right decision a majority of the time. 21. I know I have the ability to do anything I want to do. 22. I am able to do things as well as most other people. 23. I am good at deciding whether a risk is worth taking. 24. I am capable of regulating my own actions.
Factor 4: Knowledge creation	25. I never question the opinion of my superiors. 26. I believe experts are in the best position to decide what people should learn. 27. I always look to my teacher/boss for direction.

Author's Note

Amanda McGowan is now at, Michigan State University.

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Author Biography

Amanda L. McGowan has more than 10 years of experience working in outdoor education, environmental education, and camp programming. She has served as a high school teacher, student affairs professional, writing instructor, and researcher. Currently, she is a PhD student at Michigan State University where she is investigating the relationship between physical activity and cognition in preadolescents, with particular interest in applying this knowledge to improve mental health, academic achievement, and overall positive youth development.