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The North Carolina Outward Bound School Course Impression Survey

A Psychometric Investigation

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Alan W. Ewert

Abstract

This study investigated the development and psychometric properties of the North Carolina Outward Bound School Course Impression Survey (NCOBSCIS). The NCOBSCIS measures character development, leadership, and environmental service, and was adapted from the previously established Outward Bound Outcomes Instrument (OBOI). The purpose of this study was to both conduct a psychometric evaluation of the NCOBSCIS and to also describe the processes that were used to develop and validate a series of outcome measures. These processes are applicable to other programs interested in measuring participant outcomes.

Keywords: Outward Bound, wilderness experience program, wilderness program outcomes, program assessment

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Increased attention has been focused on the need for robust, evidence-based research and evaluation in outdoor and adventure education programs (Sibthorp, 2009) and the difficulties that often accompany this type of investigation (Bialeschki, Henderson, Hickerson, & Browne, 2012). Furthermore, many programs must continue to develop their own evaluation instruments, utilize existing tools or partner with researchers in order to demonstrate the efficacy of their programs (Bobilya, Holman, Lindley, & McAvoy, 2010). Various outdoor and adventure programs have recently undertaken this work including the National Outdoor Leadership School who has investigated various outcomes of program participation and curriculum design including long-term impacts (Sibthorp, Paisley, Furman, & Gookin, 2008), the impact of the instructor on participant outcomes (Schuman, Paisley, Sibthorp, & Gookin, 2009) and other mechanisms that affect the transfer of learning post course (Sibthorp, Furman, Paisley, Gookin & Shumann, 2011). Another major outdoor adventure program is Outward Bound (OB) whose wilderness programs in the United States recently experienced a major shift when they were decentralized, returned to their original regional school model (Guerlin, 2013) and each school was tasked with designing its own outcomes instrument or adapting an existing measure linked to its educational framework.

Outward Bound and Positive Youth Development

OB has intentionally focused much of its programming efforts over the years toward youth, beginning with Kurt Hahn's early involvement in the Salem and Gordonstoun Schools and other youth-focused programming (Veevers & Allison, 2011). Hahn noticed declines in the youth during the 1920's–40's in Europe that are still present in many of today's youth (e.g., declines in initiative, enterprise and compassion; Veevers & Allison, 2011). Because of this concern, Hahn's educational philosophy and methodologies focused on providing young people an environment where they could more successfully reduce these declines and develop the capacity to contribute positively to society. These values became the focus of OB courses and were those that Hahn hoped to see young people integrate in their home life. More recently, *positive youth development* has emerged as one framework to describe the characteristics of youth that contribute to positive civic engagement (Lerner, Lerner, & Benson, 2011). These characteristics—competence, confidence, character, connection and caring (Lerner et al., 2011) are similar to the desired outcomes of OB programming. OB offers adolescent and adult participants experiences that they perceive as mean-

ingful and which often empower them to engage more fully in the program, and in many cases, transfer this increased engagement to their life at home. The relationship between empowerment and engagement is similar to the developmental assets also identified for children (Leffert, Benson, & Roehlkepartain, 1997). Such experiences include those in which students or participants have some control over what to do, when to do it, and for what purpose. In addition, outdoor adventure programs like OB often offer increased opportunities for participant autonomy that are necessary in today's culture (Sibthorp et al., 2008).

Outward Bound Outcomes

Almost since its' inception in the United States in the early 1960s, Outward Bound has been the subject of a substantial number of research reports, Master's and Ph.D. theses, journal articles, and numerous other outlets. Literally thousands of participants of Outward Bound programs have been studied using a broad range of research approaches including quasi-experiments, statistical and theoretical studies, administrative reports, matched-group designs, participant-observation studies, self-reports, and behaviors. What consistently emerges from this body of work is the efficacy of the Outward Bound experience in creating a variety of positive outcomes. A sample of these outcomes include self-concept, communication skills, levels of trust, positive behavioral changes and beneficial changes in a variety of areas including academic and social performance.

Beginning with Shore's (1977) compilation of the effects of participation in Outward Bound and similar programs, there has been a need to develop both consistency and comprehensiveness in these many research efforts. Toward this end, in 2007, Outward Bound committed to a long-term process of research and assessment. This effort was funded through a variety of sources including the Arthur M. Blank Family Foundation, Lee Klingenstein, and the Blank-Read Training Institute. Under the guidance of Outward Bound's Research and Development Manager, Jon Frankel, in addition to the Outward Bound Research Advisory Committee (OBRAC), the group was charged by Outward Bound administration to develop a comprehensive questionnaire to assess the outcomes of Character Development, Leadership, and Environmental Service.

The challenge of any self-report, field-based instrument is to accurately reflect the feelings and attitudes of the respondent, while being sensitive to issues emerging from interpretation, systematic bias such as social desirability responding, and the challenge of respondents having to transition from a

feeling or attitude to a number on a scale. From this effort emerged a questionnaire called the Outward Bound Outcomes Instrument (OBOI). The OBOI instrument attempts to capture course participant feelings regarding three major dimensions including Character Development, Leadership, and Service. Each dimension is further divided into items which directly relate to that dimension for a total of 24 items. See Table 1 for a complete list of items and factors.

The OBOI was initially field-tested in 2008 and included all or most of Outward Bound's course areas and student populations (Ewert & Frankel, 2009). This effort utilized a pre (course start) and post (last day of the course) format with the data being analyzed and reported upon by researchers at Indiana University. Results from this initial study included the following: $N = 577$, 61.2% male, 38.8% female, age range 12–56 years old. Cronbach Alpha scores for the dimensions ranged from $\alpha = 0.67–0.78$. Mean values were generated for both the dimensions and individual items with a repeated measure *t*-test with effect sizes (ES) being calculated. Statistically significant effects were noted on all the dimensions and individual items with effect sizes ranging from 0.11–0.77. Using two-way ANOVAs, significant differences were found for the variables of sex and ethnicity. No significant effects were found on the variables of age, course type or location.

Luo (2011) established construct validity and outcome model validation for the original OBOI instrument. More specifically, Luo (2011) sought to "(a) validate the outcome model used by Outward Bound USA, (b) predict outcome achievements from individual characteristics and course attributes by using multilevel modeling, and (c) improve the quality of outcome evaluation and provide evidence of accountability for Outward Bound USA" (p. 8). An examination of the factor structure of the OBOI revealed three factors corresponding to Character Development, Leadership, and Environmental Service (Luo, 2011). Additionally, multilevel models for each of these dependent variables were estimated with individual variables modeled at level 1 (sex, scholarship, age, ethnicity) and course variables modeled at level 2 (course length, sex type, course type) (Luo, 2011). This work provided evidence of the construct validity and factor structure of the OBOI and revealed that several individual and course level variables were significant predictors of participants' improvements in Character Development, Leadership and Environmental Service. For example, individuals who completed longer courses and all male courses (course level variables) reported higher improvement percentages in the Character Development and Leadership factors (Luo, 2011). In addition, younger participants and participants who did not receive a scholarship reported higher improvement percentages in the Environmental Service factor (Luo, 2011).

Table 1 Initial Outward Bound Outcomes Instrument (OBOI) including Subscale and Factor

Subscale-Factor	*Question*
C-SC2	I accomplish most things I set my mind to.
S-SR2	I help to improve my community.
L-GS2	I am motivated to accomplish my goals.
C-SA2	I have a sense of direction and purpose in my life.
L-GC1	I work productively with others.
S-ER2	I take responsibility in caring for the environment.
C-CO2	I am sensitive to the needs and feelings of others.
L-EC2	I listen when people talk to me.
S-ER3	I feel a connection to nature.
C-HL2	I have a personal commitment to physical fitness.
L-CR1	I find peaceful solutions to conflict.
C-SC1	I feel proud of myself.
L-PS1	I am flexible in my thinking and ideas.
S-ER1	I live in harmony with nature.
L-GC2	I contribute when I work in a group.
C-SA1	I realize my potential.
L-CR2	I resolve disagreement with others positively.
C-CO1	I help others when they need it.
L-EC1	I communicate effectively with other people.
S-SR3	I am active in serving my community.
C-HL1	I balance the time I spend on school/work and play.
L-GS1	I set goals for myself.
S-SR1	I act responsibly towards others.
L-PS2	I deal effectively with unexpected events.

Subscale
C = Character Development, L = Leadership, E = Environmental Service

Factors

SC = Self Confidence	Assuredness in one's abilities and he success of one's actions.
SA = Self-actualization	Tendency to actualize one's full potential.
CO = Compassion	Awareness of the suffering of another, coupled with the wish to relieve it.
HL = Healthy & Balanced Life	Engaging in positive choices.
GS = Goal Setting	Establish specific objectives and motivating to achieve them.
GC = Group Collaboration	Working and cooperating with other people to achieve group tasks.
EC = Effective Communication	Effectively communicating with other people in interpersonal and group settings.
CR = Conflict Resolution	Effectively resolving interpersonal and group conflicts.
PS = Problem Solving	Thinking critically in order to effectively look for solutions to problems.
SR = Social Responsibility	Demonstrating an understanding and commitment to one's role in the community.
ER = Environmental Responsibility	Demonstrating a sense of stewardship for the natural world.

From the initial development of the OBOI several issues were identified and attempts have been made to address in later versions of the instrument.

1. Issues related to the validity and reliability of the instrument were only partially addressed in this initial effort. Continued work has been done in these areas in subsequent versions of the OBOI (e.g., Luo, 2011).
2. Later versions of the OBOI have utilized a variety of designs (e.g., retrospective pre), populations (e.g., military veterans), and locations and/or OB Schools. Since its inception, the OBOI has identified important and positive changes on people participating in Outward Bound programs.
3. Differing scales have been used with the OBOI ranging from Likert-scale options of using 7, 9, or 11 as the anchor points.

In sum, since its development in 2008, the OBOI has been used by a variety of OB Schools and locations and with a broad spectrum of students. Results from this work have illustrated a consistency of findings indicating a number of positive changes in participants. In addition, the OBOI has presented Outward Bound with a usable and informative tool for ascertaining the value and effect of participation in an Outward Bound program.

North Carolina Outward Bound School Outcomes

The North Carolina Outward Bound School (NCOBS), one of the regional OB schools operating in the United States, has conducted various outcomes studies including a means end analysis of course outcomes (Goldenberg, McAvoy, & Klenosky, 2005), investigations focused on specific course components like the solo (Kalisch, Bobilya, & Daniel, 2011) and research focused on independent student travel and the influence of the instructor (Bobilya, Kalisch, & Daniel, 2014). A recent qualitative, retrospective study focused on investigating the lessons that students intended and actually reported transferring home two years after their NCOBS course (Bobilya, Kalisch, Daniel, & Colson, 2015). However, quantitative questions related to participant change attributed to completion of a NCOBS course remain. As a result, NCOBS adapted the previously developed OBOI to match its educational framework and created the NCOBS Course Impression Survey (NCOBSCIS; See Table 2). The bold text in Table 2 indicates items that were modified from the original OBOI, and italicized text indicates items that were unique from the OBOI. These changes were conducted in order to better align the items on the instrument with NCOBS' educational framework and specific language used in their curricula.

Table 2 North Carolina Outward Bound Student Course Impression Scale. **Bold** items are worded differently from the OBOI. *Italicized* items are unique from the OBOI.

Subscale-Factor	*Question*
C-SC	**1. I can accomplish most things I set my mind to.**
S-EA	**2. Community service is important to me.**
C-GS	**3. I am motivated to set and accomplish goals for my education or for my career/life.**
C-EM	4. I have a sense of direction and purpose in my life.
L-GC	**5. I am able to work productively with others.**
S-EA	6. I take responsibility in caring for the environment.
L-CO	7. I am sensitive to the needs and feelings of others.
L-EC	8. I listen when people talk to me.
S-EA	**9. I respect and feel a connection to nature.**
C-GS	10. I have a personal commitment to physical fitness.
L-EC	11. I find peaceful solutions to conflict.
C-SC	12. I feel proud of myself.
L-PS	13. I am flexible in my thinking and ideas.
L-GC	14. I contribute when I work in a group.
C-SC	15. I realize my potential.
L-GC	16. I help others when they need it.
C-GS	**17. I balance the time I spend on work/school and leisure time.**
L-CO	*18. I recognize that others may be different from me.*
L-PS	**19. I deal well with unexpected events.**
L-CO	*20. I realize the value of and embrace the differences that others may have from me.*

C =Character Development	
SC = Self-Confidence	Assuredness in one's abilities and the success of one's actions.
GS = Goal Setting	Establishing specific objectives and motivating to achieve them.
EM = Empowerment	The connection between one's sense of personal competence and willingness to take action.
L = Leadership	
GS = Goal Setting	Establish specific objectives and motivating to achieve them.
PS = Problem Solving	Thinking critically in order to effectively look for solutions to problems.
EC = Effective Communication	Effectively communicating with other people in interpersonal and group settings.
GC = Group Collaboration	Working and cooperating with other people to achieve group tasks.
CO = Compassion	Awareness of the suffering of another, coupled with the wish to relieve it.
S = Environmental Service	
EA = Environmental Awareness	Demonstrating a sense of stewardship for the natural world.

However, within OB USA, there has been no further work since Luo (2011) toward investigating the appropriateness of the Outward Bound Outcomes Instrument to evaluate OB course outcomes and particularly the outcomes associated with NCOBS wilderness courses. Therefore, the primary purpose of this study was to establish the psychometric properties of the NCOBSCIS and better understand the usefulness of the NCOBSCIS including the factor structure and internal consistency. The factor structure of the original OBOI was used as a point of reference and comparison. A secondary purpose of this study was to describe the processes that were used to modify the NCOBSCIS and assess its psychometric properties.

Method

Program and Sample

The North Carolina Outward Bound School has been operating multi-day wilderness experience programs since 1967 with courses representing various age groups, course lengths, modes of travel, and program locations. The components of a typical course follow the OB progression of training (heavy instructor involvement in teaching students), main (instructors serve more of a coaching role as students practice various skills), and final expedition (instructors step back to allow appropriate levels of autonomy for students), regardless of mode of travel (backpacking, sea kayaking, canoeing, etc.). Additional components include a service project, rock climbing, solo experience and personal challenge event.

The sample for the Exploratory Factor Analysis (EFA) was drawn from all NCOBS participants (N = 622) who completed an open-enrollment wilderness course of four days or longer during June–August, 2011 located in the mountains of western North Carolina or Outer Banks National Seashore also in North Carolina. The sample included those participants who provided consent, completed their respective NCOBS course and completed the NCOBSCIS (n = 266; see Table 3). Two individuals were removed from the analyses due to missing data. The sample consisted of more males (n=172) than females (n=94), and an age range of 12–54, with a mean age of 18. The flow of participants for the Confirmatory Factor Analysis (CFA) is also presented in Figure 1, and is described in detail later.

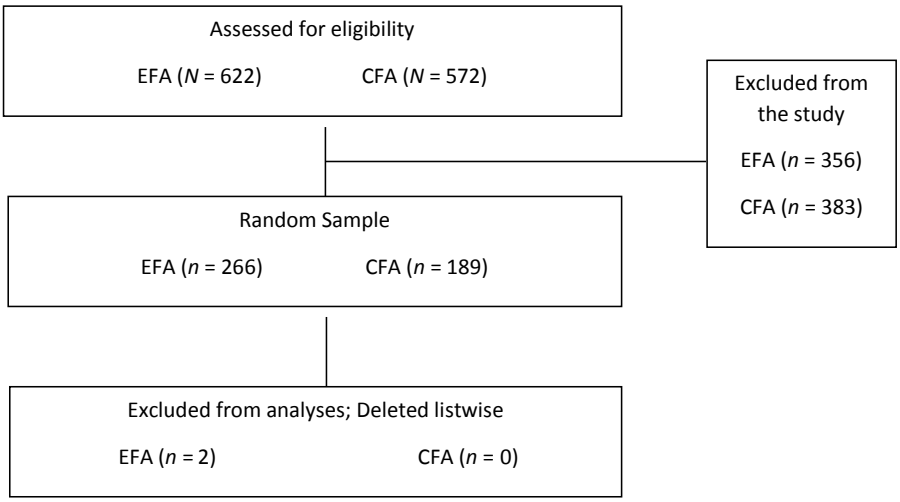

Figure 1 Participant flow chart (modeled after CONSORT guidelines; Begg, et al., 1996)

The North Carolina Outward Bound School Course Impression Scale (NCOBSCIS)

The NCOBSCIS is a 20-item measure using a 7-point Likert scale to rate the degree of agreement with each statement (1 = strongly disagree to 7 = strongly agree) developed from the original OBOI instrument. The measure consists of 3 separate subscales for Character Development, Leadership, and Environmental Service. Higher scores indicate stronger agreement with the survey outcomes (Faircloth & Bobilya, 2013). Participants completed the entire retrospective pre- and post survey on the last day of their NCOBS course prior to returning home.

Retrospective pretests are often used to reduce the potential for response-shift bias that can result from self-report measures (Howard, Ralph, Gulanick, Maxwell, Nance, & Gerber, 1979; Sibthorp, Paisley, Gookin, & Ward, 2007). Another way to think about the response-shift bias is in terms of how participants' understanding of concepts, such as leadership, change subsequent to their experiences. In other words, as participants are given opportunities to engage in leadership, their understanding of the concept changes. In retrospective pre-test designs, participants complete a pre measure by thinking back (retrospectively) on how they would have responded at some previously determined time. For example, the participants in this study were told: "There are two columns of numbers. One column for how you feel "now" (post-course) and another column for how you felt before

the course started." However, there is evidence that retrospective pretests can produce inflated effect sizes when compared to true pre/post methods (Taylor, Russ, & Taylor, 2009). The question of how to most appropriately assess change is one that cannot be answered *apriori*, but rather it must be empirically tested in light of the context and variables of interests by collecting and comparing pre, post, and retrospective pre data (Howard, Millham, Slaten, & O'Donnell, 1981). However, only retrospective pre data were collected in the current study.

Development and Analysis of the NCOBSCIS

The NCOBSCIS was developed by adapting questions to provide a more direct match for outcomes of interest at NCOBS and which were in alignment with their educational framework (see Table 2 presented earlier). There were only two new questions added to the instrument after reviewing the statements and the NCOBS curricula. Given the close relationship between the OBOI and the NCOBSCIS, one question of interest concerns the degree to which the factor structures of the two measures match. Therefore, the coding scheme for the OBOI served as a starting place for the initial phase investigating the NCOBSCIS.

Coding of the NCBOSCIS by Field Experts.
As an initial phase of investigation, the content of the NCOBSCIS was visibly inspected by field experts attending the 2013 Outdoor Leadership Research Symposium (OLRS) to determine which items corresponded to the original factors indicated by the OBOI Guidelines. According to the OBOI Guidelines, the OBOI was a 27-item questionnaire designed to measure the outcomes defined in the Outward Bound Educational Framework. Further, the guidelines stated that the OBOI specifically measured the following three factors (See Table 2): 1) Character Development (self-confidence, goal setting, resilience, empowerment), 2) Leadership (goal setting, problem solving, effective communication, group collaboration, compassion) and 3) Environmental Service. The OBOI definitions of each item in the three factors were used by field experts to match items 1–20 from the NCOBSCIS to the corresponding categories. Each item was then categorized by the field experts into one of three factors: Character Development (C), Leadership (L), or Environmental Service (E). This process resulted in the following item structure: C–items 1, 3, 4, 10, 12, 15, 17; L–items 5, 7, 8, 11, 13, 14, 16, 18, 19, 20; E–items 2, 6, and 9. The field expert codes formed the theoretical basis for comparing the factor structure generated by the Exploratory Factor Analysis.

Psychometric Analyses.
The psychometric phase of the study included calculating Inter-Item Correlations and Test-Retest Reliabilities. Additionally, an Exploratory Factor Analysis (EFA) was conducted to explore the underlying factor structure of the NCOBSCIS, using the process described above as to guide the EFA. Internal Consistency (Cronbach's Alpha) was calculated for the 3-factor solutions using pre and post NCOBSCIS scores. Finally, a Confirmatory Factor Analysis (CFA) was conducted on an independent sample to confirm the factor structure of the NCOBSCIS.

Results

Table 3 displays the intercorrelations of the NCOBSCIS. This intercorrelation table shows the relationships between each of the item on the NCOBSCIS.

The Inter-Item correlations range from r = .08 to r = .65. All of the correlations, with the exception of 3, are significant. This indicates a high degree of relationship between the majority of the items on the NCOBSCIS. Similarly, the test/retest reliability estimates conducted using dependent sample for the pre and post scores ranged from r = .37 for item number 12, to r = .74 for item number 2. This indicates a high degree of stability in the measure when estimating change between pre and post assessments.

Exploratory Factor Analysis of the NCOBSCIS

An Exploratory Factor Analysis using Principal Components Analysis (PCA) with varimax rotation and eigenvalues = 1 (Gorsuch, 1990; Tabachnick & Fidell, 2000), initially resulted in a 5 factor solution. However, since only one item was loading on factors 4 and 5, they were dropped. When the model was re-run fitting a three factor solution, this accounted for 50.6% of variance observed in the data (Table 4).

As shown by the factor loadings presented in Table 4, this 3-factor solution provided a good fit to the structure of the measure, and at the same time was consistent with the factor definitions provided by the original OBOI guidelines. The internal consistency estimates for each of the three factors at pre and post were also in the acceptable range (α = .725–.843; see Table 5). The 3 factors of the NCOBSCIS are all internally reliable (Faircloth & Bobilya, 2013).

Table 3 Correlation Matrix of Post NCOBSCIS Responses

	Q1	*Q2*	*Q3*	*Q4*	*Q5*	*Q6*	*Q7*	*Q8*	*Q9*	*Q10*	*Q11*	*Q12*	*Q13*	*Q14*	*Q15*	*Q16*	*Q17*	*Q18*	*Q19*
Q2	.32**																		
Q3	.32**	.45**																	
Q4	.20**	.35**	.51**																
Q5	.19**	.25**	.29**	.20**															
Q6	.37**	.46**	.28**	.29**	.35**														
Q7	.15*	.53**	.35**	.35**	.39**	.35**													
Q8	.19**	.37**	.43**	.33**	.36**	.22**	.53**												
Q9	.27**	.44**	.27**	.26**	.25**	.65**	.36**	.27**											
Q10	.21**	.19**	.22**	.28**	.08	.27**	.14*	.16**	.21**										
Q11	.08	.41**	.34**	.28**	.41**	.30**	.52**	.42**	.30**	.17**									
Q12	.32**	.34**	.39**	.40**	.26**	.22**	.28**	.30**	.14*	.29**	.22**								
Q13	.30**	.31**	.27**	.28**	.40**	.27**	.40**	.39**	.25**	.08	.30**	.24**							
Q14	.37**	.42**	.28**	.30**	.38**	.49**	.36**	.30**	.37**	.24**	.32**	.37**	.36**						
Q15	.31**	.22**	.47**	.49**	.29**	.23**	.19**	.24**	.19**	.25**	.24**	.55**	.29**	.31**					
Q16	.32**	.39**	.29**	.26**	.48**	.37**	.50**	.52**	.28**	.23**	.36**	.26**	.44**	.45**	.25**				
Q17	.12*	.37**	.41**	.46**	.24**	.39**	.34**	.26**	.31**	.34**	.34**	.31**	.15*	.28**	.34**	.31**			
Q18	.23**	.27**	.25**	.23**	.16**	.24**	.29**	.31**	.27**	.14*	.22**	.23**	.19**	.21**	.19**	.30**	.27**		
Q19	.26**	.23**	.19**	.19**	.34**	.30**	.24**	.25**	.26**	.19**	.30**	.21**	.42**	.31**	.30**	.35**	.27**	.22**	
Q20	.21**	.39**	.46**	.45**	.40**	.39**	.45**	.48**	.36**	.19**	.40**	.40**	.43**	.36**	.32**	.43**	.36**	.38**	.38**

Note. ($N = 266$) * $p < .05$ ** $p < .01$

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Table 4 Factor Loadings for Varimax Orthogonal Three-Factor Solution of the NCOBSCIS

Item	*Factor loading*
Factor 1: Leadership	
14. I contribute when I work in a group.	.66
20. I realize the value of and embrace the differences that others may have from me.	.63
16. I help others when they need it.	.62
5. I am able to work productively with others.	.61
7. I am sensitive to the needs and feelings of others.	.60
11. I find peaceful solutions to conflict.	.59
8. I listen when people talk to me.	.58
13. I am flexible in my thinking and ideas.	.58
18. I recognize that others may be different from me.	.53
19. I deal well with unexpected events.	.52
Factor 2: Character Development	
15. I realize my potential.	.60
12. I feel proud of myself.	.53
1. I can accomplish most things I set my mind to.	.45
3. I am motivated to set and accomplish goals for my education or for my career/life.	.41
10. I have a personal commitment to physical fitness.	.41
4. I have a sense of direction and purpose in my life.	.32
17. I balance the time I spend on work/school and leisure time.	.21
Factor 3: Environmental Service	
9. I respect and feel a connection to nature.	.72
6. I take responsibility in caring for the environment.	.61
2. Community service is important to me.	.26

Table 5 Internal Consistency of Total and Factor scales

Pre	
Leadership	α = .831
Character Development	α = .811
Environmental Service	α = .725
Post	
Leadership	α = .843
Character Development	α = .782
Environmental Service	α = .752

Confirmatory Factor Analysis

A Confirmatory Factor Analysis (CFA) was conducted on an independent sample of NCOBS participants (see Table 4) who completed an open enrollment course four days or longer between June–August 2013, including a total of 52 total wilderness courses (N = 572; n =189 provided consent and completed Pre and Post surveys). The majority of the sample were males (64%) and ranged in age from 12–55, with 85.7 % between 12–18 years old. This sample was comparable to the sample used for the EFA. Confirmatory Factor Analysis, using Maximum Likelihood (ML) estimation was conducted using SPSS (Bentler & Bonett, 1980; Marsh, Balla, & Mcdonald, 1988) and was grounded theoretically in the Exploratory Factor Analysis (EFA). Table 6 presents the results of the CFA.

The results of the CFA using ML estimation with varimax rotation and eigenvalues = 1 (Gorsuch, 1990; Tabachnick & Fidell, 2012), produced a 3-factor solution accounting for 52.95% of variance observed in the data. The three factors again corresponded to: (1) Leadership, (2) Character Development and (3) Environmental Service subscales identified in the original OBOI. The factor items are Leadership–items 5, 7, 8, 11, 13, 14, 16, 18, 19, 20; Character Development–items 1, 3, 4, 10, 12, 15, 17; and Environmental Awareness–items 2, 6, and 9. The Internal Consistency estimates for each of the three factors at Pre and Post were also in the acceptable range (α = .71–.90)

Discussion

Consistent with Luo's (2011) investigation of the Outward Bound Outcomes Instrument (OBOI), the current investigation of the North Carolina Outward Bound School Course Impression Scale (NCOBSCIS) also provides evidence of the validity and reliability of the instrument. The items on the NCOBSCIS are highly interrelated as indicated by the significant inter-item correlations. In other words, how participants respond to one item is likely to be related to how they respond to other items on the measure. The NCOBSCIS is also stable across time as indicated by the significant test-retest reliability estimates. While the NCOBSCIS seems to be stable over-time, questions remain about whether the measure can detect change and how to most appropriately collect pre data (retro-pre or true pre). Previous research with the OBOI indicates that it is stable while also being sensitive to change (Luo, 2011). Future research will use the NCOBSCIS for measuring program outcomes.

Table 6 Standardized Solutions by Confirmatory Factor Analysis for the Three-Factor Model

	Factor		
Item	*Leadership*	*Character Development*	*Environmental Service*
5. I am able to work productively with others.	.71		
7. I am sensitive to the needs and feelings of others.	.66		
16. I help others when they need it.	.65		
20. I realize the value of and embrace the differences that others may have from me.	.65		
14. I contribute when I work in a group.	.61		
18. I recognize that others may be different from me.	.60		
8. I listen when people talk to me.	.55		
11. I find peaceful solutions to conflict.	.44		
13. I am flexible in my thinking and ideas.	.43		
19. I deal well with unexpected events.	.41		
4. I have a sense of direction and purpose in my life.		.73	
15. I realize my potential.		.68	
1. I can accomplish most things I set my mind to.		.62	
12. I feel proud of myself.		.62	
3. I am motivated to set and accomplish goals for my education or for my career/life.		.60	
17. I balance the time I spend on work/school and leisure time.		.50	
10. I have a personal commitment to physical fitness.		.43	
9. I respect and feel a connection to nature.			.83
6. I take responsibility in caring for the environment.			.72
2. Community service is important to me.			.37

The results of the field expert evaluations and the independent factor analyses conducted in this study confirm the factor structure of the NCOBSCIS. The NCOBSCIS and the OBOI seem to measure comparable subscales of Character Development, Leadership, and Environmental Service. The Exploratory and Confirmatory Factor Analyses were conducted on independent samples which strengths the findings presented here. The EFA

and CFA produced the same three-factor solutions, and both models were consistent with the codes produced by the field experts.

The present study also strengthens previous calls (Howard, et al., 1981; Howard, et al., 1979) for collecting true pre, retrospective pre, and post data in the same study to empirically evaluate any biases that may be present in participants' ratings of their personal characteristics and traits. Both methods of collecting pre data have their strengths and weaknesses and require further investigation to determine which method is most appropriate for evaluating specific programs.

Limitations

The primary limitation of this study was the discontinuity of the various lines of research involving the OBOI and its adaptation, use, and evaluation. With OB research efforts decentralized and now the responsibility of regional schools, it became difficult to maintain a coherent history of the OBOI and its many adaptations, including the NCOBSCIS. Future research with the OBOI or any of it adaptations could be submitted to all regional schools as a way to maintain continuity across the various lines of research. Researchers tasked with evaluating programming in any outdoor program could benefit from adhering to a unified and documented process of adapting and validating the outcome measures being used.

In addition, the Environmental Service factor consisted of three items on a twenty-item measure. Future work with the NCOBSCIS should include an investigation of this subscale and the items that comprise that factor. Additional items could be added to this subscale to make it comparable to the other two subscales.

Another limitation of this study was the low factor loadings produced in the Exploratory Factor Analysis. While several of the items had low factor loadings, the overall structure of the measure was supported by multiple and various methods of evaluating the factor structure. First, field experts provided a theoretical basis for the factor structure by coding all of the items according to definitions and codes provided by the OBOI Guidelines. Next, the EFA and CFA both produced acceptable three-factor solutions that matched both the field expert codes and the original OBOI factor structure.

Recommendations

Several recommendations have emerged as a result this study. First, it is recommended that researchers working to investigate similar outcomes could be more efficient if there were continuity between the various lines of research. This continuity could be achieved through various activities including presenting and publishing the results of research regionally and nationally. Second, it is recommended that outdoor programs coordinate their research efforts to ensure that outcomes are appropriately operationalized and measured. When possible, programs are encouraged to use measures that are established in the literature and matched to their outcomes. Third, the NCOBSCIS should be revised to include more items related to the Environmental Service factor or to only reflect Character Development and Leadership. Finally, this study confirms that the NCOBSCIS is comparable to the OBOI in measuring Character Development, Leadership and Environmental Service. Therefore, it is recommended that other OB regional schools adopt one of these two measures when assessing course outcomes.

The following recommendations for practice emerged from this study. First, wilderness experience programs seeking similar outcomes should be overtly promoted as contributors to positive youth development. The psychometric findings in this study have shown that these kinds of programs can effectively measure outcomes in areas that youth development professionals are targeting and which the NCOBSCIS measured (character development and leadership). The processes presented in this study were used to validate and document the development of the NCOBSCIS. This process can be replicated in other settings, focused on different outcomes. Future research with NCOB participants will include outcomes evaluations using the NCOBSCIS.

Additionally, outdoor and adventure programs should give attention to their role in conducting research regarding increased Environmental Service among their participants. The results of this study indicate that Environmental Service was measured with only three items. This may suggest a lack of emphasis on the role that outdoor programs play in promoting environmental awareness and service, or the difficulty of measuring environmental service using self-report measures. Programs are encouraged to explore additional methods for assessing participants' service to the environment (e.g., public service hours, community garden, trail maintenance, etc.).

Conclusions

The findings of this psychometric investigation of the NCOBSCIS instrument contribute to the literature that seeks to understand the benefits and outcomes of outdoor and adventure programming and the appropriateness of new survey instruments designed to measure change in Character Development, Leadership and Environmental Service. These results indicate that NCOBS should continue to implement the NCOBSCIS. The NCOBSCIS and these analyses may be beneficial to other Outward Bound schools and wilderness experience programs as they develop their own outcomes-based assessment tools. Lastly, these findings help to further understand of the history of outcomes research in Outward Bound. The results of this study further validate and document various efforts to measure Character Development, Leadership, and Environmental Service.

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