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BACKGROUND

The Adventure Model, first developed and tested by Ewert and Hollenhorst in 1989, was an effort to describe participation behaviors of adventure recreators based upon their levels of skills and motivations. The model suggests that as adventure recreators increase their level of engagement they experience predictable changes along a number of variables, including level of skill, frequency of participation, locus of decision-making, and social orientation. In addition, as the level of engagement increases, the model predicts that participants will have increased motivation influencing how they participate in adventure activities.

The Adventure Model uses the theory of specialization (Bryan, 1977; Ditton, Loomis, & Choi, 1992) as a developmental framework by suggesting that participants become specialized in their adventure activities, implying that individuals have differing needs and expectations based on skill and activity type. In addition, as suggested by Scott and Shafer (2001), specialization implies a developmental process involving behavior, attitudes, and preferences. Thus, the Adventure Model suggests that as participants become more skilled and specialized, a number of attributes, such as frequency of participation and locus of decision making, change in a predictable manner (Anderson, Anderson, & Young, 2000; Ewert & Hollenhorst, 1989). If true, the implications for adventure education instructors and resource managers include providing more specific opportunities for recreators of different skill groups (Anderson et al., 2000). That is, programming specialists should offer a different "package" of experiences to an individual with more novice skills and abilities than they would to individuals who are more experienced.

The Adventure Model was tested again in 1999 (Anderson et. al., 2000). Although others have tested variations of the model (Priest, 1992; Schuett, 1992), the 1999 study was the first attempt to fully replicate the original study.

While results from the subsequent studies supported the original theory, the need to further investigate types of participants is warranted. For example, both the 1989 and 1999 studies sampled college students enrolled in college courses. As a result, the subjects were from fairly homogeneous backgrounds of skills and motivations. The results raised questions about whether participants from a more diverse background of experience and skills would also exhibit the same predictability as suggested by the model.

In an effort to further examine these questions, the purpose of this study was to answer the following questions: First, will components of the model accurately predict participant characteristics and patterns of use in adventure recreation settings? Second, are there differences between various activity types relative to the Adventure Model? Third, can activity type and skill level be used to predict level of engagement?

Based on Bryan's work on recreational specialization, the Adventure Model characterizes the adventure recreation experience as a merging of personal and environmental attributes as a function of their level of engagement (e.g., introductory, development, commitment). In the Adventure Model, personal attributes are identified as frequency of participation, skill level (self-reported), and locus of decision making (leadership sought as decision maker). Likewise, environmental, or setting attributes are identified as environment sought, risk level sought, group

size, group experience level, specialized equipment used, and type of leadership). In addition, the model is divided into three levels of engagement, based on the level of individual involvement in the activity. These three levels are identified as introduction, development, and commitment.

While past efforts have suggested that the model can be effective in predicting selected relationships (Ewert & Hollenhorst, 1989; Anderson et al., 2000), a number of suggestions for future work have been made. For example, Anderson et al. (2000) recommended that while "social orientation" was weak as a predictor, the background composition of subjects may have been an influencing factor. Their suggestion was to apply the model to a group of higher risk and nature-oriented activities, which are more homogeneous and sport-specific, and where the selection of the activity is based upon the preferred risk sought by the participants.

It was based upon these and similar recommendations that this study utilized subjects who were participating in sport-specific adventure activities and who registered for a specific skill level that involved a distinctly different level of risk.

METHODS

During the summer of 2000 (May - August) students who were registered for instruction through the University of Minnesota Duluth (UMD) Outdoor Program Kayak and Canoe Institute and Vertical Pursuits School of Climbing were asked to participate in the study. Program course types included sea kayaking, whitewater kayaking, whitewater canoeing, and rock climbing. Course skill levels provided were beginning, intermediate, and instructor training courses.

Participants ranged in age from 18 to 60 years old. While most participants came from the Midwest region of Minnesota, Wisconsin, and Illinois, many also came from other states to receive skills instruction. All participants were asked to complete the survey. Courses typically lasted three days, with the instructor level courses lasting seven days. No overnight trips were included in the study.

A 30-item Likert-type survey similar to that designed by Ewert & Hollenhorst (1989) was used. Each item asked respondents to indicate their level of skill and/or reasons for participating. Response sets ranged from beginning to instructor skills or reasons of participation. For example, "I have little or no experience" to "I have participated in a wide variety of trips, requiring a relatively high level of commitment and exposure to risk." Additional variables to the original model include "Course level" (beginning, intermediate, and instructor), "years of experience," and "frequency of participation." The skill variable asking what level of difficulty the respondent was most comfortable in was determined by the standards of the American Canoe Association. Validity was determined by a panel of experts in each of the skill areas (whitewater paddling, sea kayaking, and rock climbing). No reliability measure was taken.

Skill level was selected as the dependent variable because it can be a quantifiable measure with well recognized standards in both rock climbing (1-5.14) or canoeing (class I-VI). In addition, from the previous work of Ewert and Hollenhorst (1989) skill level was strongly correlated with level of engagement ($r=.79$). Thus, for this study, skill level was used as a surrogate measure for level of engagement. The variables used to indicate skill level were as follows: frequency of experience, number of years of participation, number of places visited, skill level, equipment needs, partners, decision maker, risk sought, group experience type, environment sought, and experience level. The survey was based on a self-report response with course instructors administering the surveys immediately prior to the start of the course. The data were analyzed with SPSS 10.0 using frequencies, Pearson correlation, one-way ANOVA with Scheffe's post hoc test, and a Discriminant Analysis. The purpose of this part of the study was to ascertain if the model accurately predicted the strength and direction of the identified attributes as a function of skill using a more heterogeneous and realistic sample.

The selected variables were defined in the following ways: Course level (beginning, intermediate, instructor); Frequency of participation (times of participation/season); Years of experience (identified in years); Equipment dependence (very general, some general, some special, technical); Travel partners sought (self, small group, organized group); Decision maker (self, other member, instructor); Risk sought (low, safe, high, on edge); Experience group (programs, peers, alone); Environment sought (developed, some facilities, wild); Gender; Experience level (none, small amount, experienced, very experienced); and, Skill rate (beginning, intermediate, advanced, expert, instructor).

RESULTS

The sample frame consisted of 210 participants who were registered for the University of Minnesota Duluth Outdoor Program summer programs. None of the courses were for college credit. A total of 132 completed questionnaires were received for a response rate of 63%. Course level distribution was as follows: beginning - 90 (69%); intermediate - 21 (16%); and instructor - 20 (15%). Participants were asked to rank their personal skill levels with these responses being: beginner - 65 (50%); intermediate - 45 (34%); advanced - 17 (13%); and, expert - 4 (3%). Course activity types were: rock climbing - 25 (19%), sea kayaking - 54 (41%), and whitewater paddling - 53 (40%). Whitewater canoeing and kayaking were collapsed into "whitewater paddling" because it was felt that the settings for the two were similar in context and mechanics.

Table 1 indicates the results of the Pearson's correlation including a comparison to the results of the Ewert and Hollenhorst (1989) study. As can be seen from these data, there is general congruency between the predicted and actual relationships between the selected variables. Likewise, as listed in Table 2, Anderson et al. (2000) also found corroborating data as to the model's ability to predict the direction of the selected variables. The measures of experience were broadened to include *years of experience and experience level.* E*quipment dependence* was added to determine if equipment is a variable in measuring skill level. The variables that did not support Ewert & Hollenhorst's (1989) Adventure Model were *risk sought, experience group, and travel partners.* No differences exist between gender.

To determine where differences exist among the selected attributes by skill level, a one-way analysis of variance was used. Scheffe's post hoc analysis was used to determine the presence of specific differences. The Scheffe's test was selected because it is a more conservative test than other post hoc tests (Vogt, 1999). Table 3 presents the results of that analysis. From these data, variables showing a positive increase across all skill levels are: *course level, equipment dependence, experience level, skill rate, values gained,* and *self-expression.* Variables that showed a difference only between beginner to intermediate were *decision makers, experience group,* and *environment sought.*

Differences between intermediate and advanced skilled participants, but not with beginners were noted in the variables: *frequency of participation, years of experience, sense of team.* This was expected since a beginner in this study would not yet have acquired a meaningful pattern for these variables. That is, since this was their first experience, they had no frequency, experience, nor sense of team. Also, the differences did increase from intermediate to advanced in these categories.

A Discriminate Analysis (non-stepwise) was used to determine which sets of variables would be the most effective indicators distinguishing between low to high skill levels (Tabachnick & Fidell, 1989). For this analysis, skill level was considered the dependent variable. As listed in Table 4 the Eigenvalue for Function (3.08) accounted for 51.9 percent of the variance and included the variables: *frequency of participation, skill rate, course level, equipment,* and *risk sought.* Function 2 (2.11) was also significant and accounted for 35.6 percent of the variance. The variables associated with Function 2 were: years of experience and environment sought. Table 5 lists the standardized canonical discriminate coefficients. that indicate where the largest correlation exists between each variable by function. Thus, *course frequency of participation, skill rate, course level, equipment*

TABLE 1
Pearson Correlation tests of significance between skill level (level of engagement) and selected variables including comparison to Ewert and Hollenhorst (1989) findings.

Variable	Model Prediction*	Current Study r	p	Supports Model?	Ewert & Hollenhorst, 1989 r	p	Supports Model?
Skill Measures							
Course level	positive	.674	.000	yes			
Frequency of participation	positive	.609	.000	yes	.45	.00	yes
Years of experience	positive	.354	.000	yes			
Equipment dependence	positive	.590	.000	yes			
Travel partners	negative	-.137	.119				
Decision maker	negative	-.335	.000	yes	.38	.00	yes
Risk sought	positive	.012	.896		.27	.00	yes
Experience group	positive	.157	.072				
Environment sought	positive	.221	.026	yes	.36	.00	yes
Gender	negative	-.003	.977				
Experience level	positive	.755	.000	yes			
Skill rate	positive	.708	.000	yes	.79	.00	yes

TABLE 2
Pearson Correlation tests of significance between skill level and selected variables including comparison to Ewert and Hollenhorst (1989), and Anderson et al. (2000) findings.

Variable	Model Prediction*	Anderson et al., 2000 r	p	Supports Model?	Ewert & Hollenhorst, 1989 r	p	Supports Model?
User Attributes							
Frequency of participation	positive	.37	.00	yes	.45	.00	yes
Skill	positive	.93	.00	yes	.79	.00	yes
Locus of decision-making	negative	.38	.00	yes	.38	.00	yes
Setting Attributes							
Type of environment	positive	.39	.00	yes	.36	.00	yes
Preferred level of risk	positive	.40	.00	yes	.27	.00	yes
Social orientation:							
friends	positive (sic)	-.06	.63		-.09	.19	
classes	negative	-.01	.92		-.13	.10	
self	positive	.06	.65		.27	.00	yes
teachers	negative	.15	.24		-.05	.32	
peers	positive	.34	.01	yes	.20	.02	yes

TABLE 3
Results of One-way Anova and Scheffe's test: Skill level by variables

Variable	F	p	Supports Model?	Direction
Skill Measures				
Course level	39.83	.000	yes	Increases +++
Frequency of participation	59.66	.000	yes	Increases ++
Years of experience	7.42	.000	yes	No diff. ++
Equipment dependence	24.31	.000	yes	Increases +++
Travel partners	1.67	.177		No differences
Decision maker	6.02	.001	yes	No differences
Risk sought	.110	.954		No differences
Experience group	5.05	.002		No differences
Environment sought	3.90	.011	yes	No differences
Gender	1.76	.159		No differences
Experience level	56.04	.000	yes	Increases +++
Skill rate	46.30	.000	yes	Increases +++

$p<.05$
+ differences lie between beginning and intermediate skill levels
++ differences lie between intermediate and advanced skill levels
+++ differences lie between all skill levels (beginning, intermediate, advanced, and expert)

TABLE 4
Results of Discriminant Analysis

Function	Eigenvalue	% of Variance	Canonical Correlation	Wilk's Lambda	Significance
1	3.08	51.9	.869	.045	.000
2	2.11	35.6	.824	.184	.000
3	.742	12.5	.653	.574	.064

TABLE 5
Standardized Canonical Discriminant Coefficients

Item	Function 1	Function 2
Course level	.444	
Frequency	.666	
Experience level	.511	
Skill rating	.537	
Equipment dependence	.362	
Risk sought	-.014	
Environment sought		.191
Years experience		.170
Gender		.109

needed, risk sought, years of experience and environment sought presented the combination of variables that were the most effective in distinguishing between students with high, intermediate, or low levels of skills. Thus, according to these data, knowing the level of difficulty of the particular course an individual was in, his/her frequency of participation, experience levels, and activity types, would be effective in predicting the level of skill of an individual in a particular activity.

DISCUSSION

The data from this study provide additional support to the findings of the Ewert and Hollenhorst (1989) and the Anderson et al. (2000) studies. Moreover, and as expected, the concept of specialization between activity types and skill levels (Bryan, 1977; Heywood, 1987) was further supported. Perhaps of greatest theoretical importance from this study has been reconfirmation that specialization is a process that involves changes in behavior, knowledge acquisition, and a refinement of one's skills and that these changes have been observed in this particular study. From a theoretical perspective, however, more work needs to be done on the influence activity type plays on the participant expectations and perceptions. This is particularly true given the fact that all of these types of activities (e.g. rock climbing, whitewater boating, caving, etc.) are all lumped under the rubric of adventure recreation. This implies that the activities are all the same which might not be an accurate assumption.

From a more applied perspective, if skill level and experience can be used to define "level of engagement," then the model suggests that as a person becomes more experienced and skilled, then their willingness to participate will increase. In addition, the literature is increasingly consistent relative to the dynamics of individual skill and experience levels with a broad range of attributes including those examined in this study appearing to change as a person's skills change. Said differently, beginners want different things than experts do (Fluker & Turner, 2000).

These findings suggest that instructional strategies might and should be approached differently between both activity types and skill levels. For instance, sea kayakers might not seek risk, but they might want to learn how to respond to dangerous conditions. Rock climbers may have to be instructed regarding clear judgment and decision-making to avoid inappropriate risk seeking. Not surprisingly, anecdotal evidence through discussions with course instructors suggests that sea kayakers would seek skills to access more remote sites in a wider range of sea conditions, but they did not appear to seek, outwardly, greater risk. Conversely, rock climbers sought skills that would allow greater risk taking, yet remoteness of the climbing site was less important to them.

In one sense, this study confirms what most experienced outdoor instructors already know; course design should be predicated on "where" the student is, particularly with respect to skill level, rather than assuming all individuals are starting at the same level. Of course, knowing that and having it confirmed by research is quite different from being able to institute it in program design and delivery.

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