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The Effect of Structure on Motivation in Adventure Education Environments

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ABSTRACT

The purpose of this study is to examine the effects of structured and unstructured environments on positive learning outcomes as measured by intrinsic motivation. In this between-subject design, participants are exposed to either a structured or unstructured environment during an activity creation task. Participants then complete a motivation inventory to assess their degree of intrinsic motivation. The intrinsic motivation inventory data trends suggest individuals will utilize structure when available. This study ultimately aims to equip educators with the tools to foster better learning outcomes.

The Effect of Structure on Motivation in Adventure Education Environments

Camp programs serve over 11 million youth each year with the goal of aspiring to advance friendship skills, self-confidence, competence, self-reliance, independence, citizenship, and many other developmental outcomes (Roark & Ellis, 2009). Camps are one of many settings where adventure education has prospered and where educators have a chance to guide individuals through learning opportunities. Developmental, recreational, and therapeutic uses of adventure education have been utilized in classrooms, community programs, and corporate settings (Sibthorp, 2003). Research has established the potential of adventure education programs to promote positive change across all kinds of populations (Cason & Gillis, 1994; Hans, 2000). Adventure education programs are designed to tailor organized, sequenced, and personalized activities in hopes of cultivating positive learning outcomes; just as school teachers prepare lesson plans for their classes, adventure educators create programs based on client's needs (Roark & Ellis, 2009). Research has not fully identified all the possible theories as to why adventure education is successful in reaching learning outcomes. Many practices that adventure educators use are based on past experience or direction from a second party causing means and methods of regulation and training to be porous. Enhancing the understanding of environments that better motivate participants could potentially assist facilitators in validating their teaching methods. Further research will support the professional development of educators and facilitators by providing substantial and reliable evidence of valuable learning outcomes.

Developing a suitable program for participants takes care, management, and organization. However, no matter how meticulous and well planned a facilitator may be, programs can change on a whim. Participants have all types of experiences, which makes facilitators need to know when or how to adjust; because of this, flexibility is important. Thus creating an itinerary in

developing a program could hinder a participant's experience and learning possibilities. Studies have suggested external controls or constraints on activities may harbor a negative effect on intrinsic motivation (Lepper, Greene, & Nisbett, 1973). Conformity may be an easier environment for educators to create and design, but not one that constitutes positive learning. Other research provides insight to a middle ground between structured and unstructured environments where levels of intrinsic motivation support better learning and developmental outcomes (Pittman, Davey, Alafat, Wetherill, & Kramer, 1980; Ryan & Deci, 2000). Feedback administered as information softens the harshness of the traditionally structured education systems. This form of structure applied as a technique for critique may lighten seriousness and create a resource for participants to utilize (Koestner, Ryan, Bernieri, & Holt, 1984). The strategy of creating a learning environment where participants feel informed and not ordered, or directed and not shoved, is a rule of thumb many adventure educators are governed by (Gass, 1985; Ryan, Koestner, & Deci, 1991). Educators act as a resource, not a dictator. When used properly, informationally structured environments can provide a useful resource for participants (Tamburrini, 1982).

Resources can guide participants towards assisting in the support of intrinsic motivation. Facilitators and educators who act as resources allow participants to internalize their learning. When participants believe they came to a learning experience on their own terms it is more valuable, therefore more likely to transfer readily into real world situations. Individuals with access to resources that they believe will better their learning experience are more likely to use them. As individuals get older, the necessity for resources is also attributed to the value of structure increasing; this is most likely correlated to the of rising responsibilities (Ryan & Deci, 2000).

Adventure educators must strive to create a prosperous learning environment for participants. Being resources, most educators look to professionally develop their own repertoire of knowledge in efforts to better serve their populations; yet, many still heavily rely upon instinct, past experiences, or guided advice. These methods are untested and only standing beliefs in designing adventure programs. Presently, adventure research has not focused on task value and structure within adventure programming (Sibthorp, 2003). Knowledge on how to properly address a participant's needs are critical in effectively cultivating a proper educational program; if not, delicately delivered educators could potentially create a de-learning experience (Sibthorp, 2003).

The structure provided in programming can support a participant's motivation to succeed in attaining their learning outcomes. Factors that aid in the measuring of an intrinsic motivation level include individual's perceived value, interest and enjoyment gained within the experience. Intrinsic motivation is described as when an individual or individuals are compelled to participate in an "...act out of interest, 'for the fun of it', and for the sense of challenge the activity at hand provides" (Reeve, 1996, p. 134). Adventure educators should compel others to be concerned with motivation (Ryan & Deci, 2000, p. 54). Intrinsic motivation, self-efficacy, and autonomy are believed to contribute to positive learning outcomes (Sibthorp, 2003).

Intrinsic motivation can also potentially be a vehicle to better assess the development of learning outcomes. Gaining higher levels of motivation can be attained through exposure to experiences where participants can master a skill (Sibthorp, 2003). The experiences that individuals interact in, other external influences, and their own predispositions can affect the complexities of intrinsic motivation (Vallerand & Ratelle, 2002). The dichotomies of intrinsic

motivation makes researching the relationship of the effects of structure and intrinsic motivation that much more valuable.

It has been additionally suggested that intrinsic motivation relates to overall creativity (Amabile, 1979). Creativity represents the mind's ability to not conform to norms, but rather to rely upon itself to construct autonomous originality (Koestner et al., 1984). Therefore, when creativity is present, intrinsic motivation is present too.

This study examines the variables of structure, intrinsic motivation, and creativity in an effort to better equip educators and facilitators alike in order to provide participants with better learning outcomes in the fostering of intrinsic motivation.

The study hypothesizes:

H1: Participants in the structured condition rely on structure if provided.

H2: There is a positive relationship between intrinsic motivation and structure.

H3: There is a positive relationship between intrinsic motivation and creativity, suggesting more activities and more creativity in the structured condition.

In summary, this research aims to study the differences in structure and how they affect intrinsic motivation. Also, the relationship intrinsic motivation has with creativity amongst structured and unstructured environments will be examined. Additionally, this study will assess participants' use of resources within structured environments. The present research is a between-subject design to simulate a structured and unstructured environment. Participants were randomly assigned to either the structured or unstructured condition. Within each condition a participant was given props to independently complete an activity creation task while being videotaped. The structured condition additionally permits the use of a hint board that gives the participant ideas as to how to create new activities if they chose to use it. After 45 minutes, a

researcher came back to the room where participants then completed a demographic survey and an intrinsic motivation inventory at a computer workstation.

METHOD

Participants

Twenty-five Georgia College students (Structured = 11, Unstructured = 14) were randomly assigned to experimental groups. These participants signed up for the study using Georgia College's online system SONA. Participants were compensated with psychology course credit for participation in the research study.

Materials

The study consisted of two flip cameras, props, a hint board, intrinsic motivation inventory, demographic survey, and computer workstations. The two flip cameras were used to visually and audibly capture participants' activity creation task. Props (see appendix A) were used to complete the activity creation task. The props used for this study were chosen based on function. For example, there are few props that already have fixated functions like a jump rope. Many of the props were chosen in effort to stimulate creativity. Props were present in both conditions, however the structured condition additionally had a hint board.

The hint board consisted of 12 ideas that could aid a participant in creation of a new game. The hints did not tell a participant how to create a new game. The 12 ideas were pasted to a foam poster board and then covered by 12 slips of poster board paper. The poster board paper was adhered to the foam board by Velcro. Lastly, the participants completed an intrinsic motivation inventory and a demographic survey and at the computer workstation. The structured condition has similar directions except that a hint board is added into the environment to create a form of structure. The amendment to the directions in the structured condition states that if you have run

out of ideas, there is a hint board for you to use to help think of new games. Hints include cues like, “What other functions could a glue stick have in a creation of a game?” Other than the addition of the hint board, the structured condition is run the same as the unstructured condition.

Ryan (1982) and his colleagues from the Rochester Research Group (Plant & Ryan, 1985; Ryan, Mims, & Koestner, 1983) developed a multidimensional measure called the intrinsic motivation inventory (IMI). It consisted of 37 questions and the responses were given on a 7-point Likert scale where 1 being not at all true, 4 being somewhat true, and 7 being very true. The subscales were Interest/Enjoyment (7 questions), Perceived Competence (6 questions), Effort/Importance (5 questions), Pressure/Tension (5 questions), Perceived Choice (7 questions), and Value/Usefulness (7 questions). The IMI had statements such as, “I enjoyed doing this activity very much, I think I am pretty good at this activity, and I did not feel nervous at all while doing this.” It also asked some questions like, “I think that doing this activity is useful for [blank inserted].”

Procedure

Each session had only one participant at a time. After completing a consent form participants are instructed to imagine they are a summer camp counselor for people of all ages. They must create as many games¹ as possible for the campers using the available props while being recorded by flip cameras. The directions additionally inform the participant of a researcher returning to the room in 45 minutes. The researcher first reads the directions and then leaves the participant in the room to complete the task allowing the participant to reread the instructions if need be. After 45 minutes, the researcher returns to the room, shuts off the cameras, and has the participant complete a demographic survey and the intrinsic motivation inventory at the

computer workstation. After finishing the questionnaires, participants receive a debriefing form, which states the purpose of the study and asks participants for consent to use their data.

Instrumentation

Participants were first informed within the consent form of being video taped throughout the study. When participants completed the study, two researchers independently coded participants' video to determine creativity ratings for each game created within the allotted 45 minutes. Along with the creativity ratings, researchers also collected the number of activities in each condition and whether the participants, if in the structured condition, used the hint board. Creativity was rated on a 5-point Likert-scale as an additional dependent variable (1 being the least creative and 5 being the most creative). Before the study progressed, researchers collaborated to create a rubric for the creative 5-point Likert-scale. One consists of minimal creativity in development of a game like jump rope or catch. A five constitutes a great deal of creativity such as manipulating a prop for uses other than its traditional purpose, or having elaborate instructions and parameters in playing the game. Each video was rated twice by different researchers to attain inter rater reliability. After two raters independently code a participant's video a mean was found for each activity created between the two rater's ratings. Then a final creativity mean was found by dividing the number of total activities by the raters combined creativity scores.

Twelve of the questions had to be reversed scored in calculating data. The subscale of the most concern pertaining to the purposes of this study is Interest/Enjoyment because it is an actual self reported indicator of intrinsic motivation (Ryan, 1982; Plant & Ryan, 1985; Ryan, Mims, & Koestner, 1983). Additionally, Perceived Competence and Pressure/Tension were also of interest.

The Effort/Importance subscale is relative to motivation, but not as direct as Interest/Enjoyment, and the Value/Usefulness is used in evaluating self-regulation and internalization (Ryan, 1982; Plant & Ryan, 1985; Ryan, Mims, & Koestner, 1983). Perceived Choice and Perceived Competence are positive predictors of intrinsic motivation (Ryan, 1982; Plant & Ryan, 1985; Ryan, Mims, & Koestner, 1983). Because some participants received compensation for class credit, they may have felt no choice in completing the study; therefore, it is of less interest to this study. Lastly, Pressure/Tension is a negative predictor of intrinsic motivation, meaning the higher the subscale mean, the less intrinsic motivation they endowed (Ryan, 1982; Plant & Ryan, 1985; Ryan, Mims, & Koestner, 1983).

RESULTS

In analyzing the data collected, results provided insight to the significance of a structured environment. Participants in the structured condition relied on structure when provided. Eleven out of the eleven participants who participated in the structured condition used the hint board at least once as a resource. This finding supports the prediction of H1: Participants in the structured condition will rely on structure if provided.

Composite sub-score means of the Intrinsic Motivation Inventory was conducted by first taking the mean of each participant's subscale so that there is one mean of Interest, Pressure, Choice, Competence, and Value for each participant. An overall mean is then derived for each subscale (Interest, Choice, etc.) where all participants' means, separated by condition and subscale, are added together and divided by the number of participants in each condition resulting in a composite mean. The IMI subscale of Interest is described as the most positive indicator of intrinsic motivation (Ryan, 1982; Plant & Ryan, 1985; Ryan, Mims, & Koestner, 1983). Other subscales of interest are Pressure, a negative predictor of IM, and

Value/Usefulness, which provides indications of generalizations to the real world and internal self-regulation (Table 1 provides a list of the subscales related to intrinsic motivation inventory) (Ryan, 1982; Plant & Ryan, 1985; Ryan, Mims, & Koestner, 1983).

The structured condition mean numbers of activities (4.34; SD = 1.34) were lower than the unstructured condition (4.70; 1.33), but the difference found was not significant ($t(23) = 0.68$; $p = 0.502$). Pressure's subscale means provided more insight into the use of structure where in the structured condition the means (3.29; SD = 1.34) were lower than in the unstructured condition (3.53; 1.19), however, the differences found amongst these conditions was not significant ($t(23) = 0.35$; $p = 0.673$). Pressure is distinguished as a negative predictor of intrinsic motivation; although not significant, trends suggest that perhaps structure provides a less anxiety-ridden environment. The Value/Usefulness subscale also provides some notable trends within its means, where the structured condition (5.00; SD = 1.36) is higher than the unstructured (4.39; 1.40), however the differences found were not significant ($t(23) = 1.09$; $p = 0.287$). Thus, all finding amongst the subscales do not provide enough evidence to accept or reject H2: There is a positive relationship between IM and structure.

The structured condition's mean numbers of activities (22.09; SD = 9.28) were higher than the unstructured condition's (16.07; 8.52), but the difference found was not significant ($t(23) = 1.69$; $p = 0.105$). Participants in the structured condition mean number of creativity scores (1.84; SD = 0.38) were lower than the unstructured condition (1.99; SD = 0.54).

Therefore, findings within this study lack in support of the prediction of H3: There is a positive relationship between intrinsic motivation and creativity, suggesting more activities and more creativity in the structured condition.

DISCUSSION

The results did not present everything that was expected; yet, some factors may have attributed to the findings. Developing substantial evidence as to whether structure effects motivation in adventure education environments was difficult in using such a small sample size; however, the structured condition did provide some support in the notion that some structure, within a learning environment will provide better outcomes than no structure at all. Yet some implications exceeded beyond the control the study withheld. An unstructured environment may warrant one's self to rely more on intrinsic motivation as a self-regulating motivator than structure. This notion may explain why the unstructured environment subscale Interest unexpectedly exceeded that of the structured condition within this study. The structured condition was essentially developed to mimic informational structure where participants did not feel pushed or forced, but rather inspired and resourced. A certain amount of structure can be a catalyst for learning, but making a participant feel constrained or externally forced to participate can devalue or hinder motivation (Lepper, Greene, & Nisbett, 1973). Participants may have felt pressured or forced in both conditions to perform because of the compensation they received. Many participants in the unstructured condition vocalized their internal pressures of not being able to perform while being video taped, "I'm sorry. I'm just not that creative" or "Wow this is harder than you would think". This is another factor that may have caused unexpected results in legitimizing H2.

Also, all participants were college students whose responsibilities were becoming more apparent and real. Responsibilities was one aspect that Ryan & Deci (2000) attributed to age, and ultimately attributed to why people rely more and more on structural resources. A participant's need for resources or guidance due to responsibility may explain why they used the board, even

if they felt no real need to. Participants in the structured condition referred to the hint board when stumped; some vocalized these feelings out loud while being video taped during the study saying things like, “I didn’t want to have to use it, but...” which insinuated they wanted to rely on themselves rather than an external source. This exemplifies the benefits of informative structure. When participants’ minds are exhausted of ideas, is it better to let them keep trying or to give them some informative direction? Not telling them an answer, but directing them towards a new answer to make their own ideas could potentially be more motivating than letting them keep trying and possibly creating internal frustration (Koestner, Ryan, Bernieri, & Holt, 1984). Being directive and resourceful was the entity the hint board was created to encompass in an effort to mirror educators.

Some participants, previously to being debriefed, categorized their activities as structured and unstructured. Some would say things like, “Maybe be able to do something structured with this like...” or “You can use this for free time or play time which is not very structured.” People in general have ideas and predispositions as to what they believe constitutes “acceptable,” or what is “the norm” in creating appropriate games, which can hinder creative new games to surface. Perhaps this aspect could have influenced a participant’s idea of what an acceptable game could be for campers; to rely on the games that have in the past “worked before” or “are safe,” rather than create different ones. This conception could explain why the means within the IMI subscales were so close in range within both conditions.

Essentially, the framework in the experiment’s design was addressing structure’s effect on motivation in adventure education environments. The activity creation itself was not of interest, but the process participants experienced within the study was. The activity creation and instructions resembled some adventure education procedures and jargon, however the IMI,

creativity ratings, and number of activities were of most interest in research. The process the participants within the study experienced imitates that of what many participants in adventure education environments practice. Many adventure education environments include activities that promote participants to engage, problem-solve, use creativity, and process outcomes.

Participation within this study was shown through the number activities created, problems solved through the use of the hint-board, assessed creativity, and processing of the activities occurred through the IMI with questions such as “I think doing this activity could help me to [insert blank]” or “I think that doing this activity is useful for [insert blank].”

Further research within motivation’s relation to adventure education environments could better inform educators in developing meaningful outcomes for their participants. The adventure education field’s gaps within research and proofs of assistance in adjudicated youth needs further conjecture in relation to motivation. In doing so, a better understanding of intrinsic motivation’s capacity to better an individual would support the educator in reaching students needs. There will continue to be lackadaisical students that are in need of thoughtful attention or persuasion, however further research must focus on if it is an internal struggle of motivation that a educator may learn to help aid or if it is a facilitator’s role to persuade a student. The dynamics of students learning styles will continue to change past the 21st century’s educational tactics making it necessary to discover details, such as structure, in providing the most thorough aid and education to students who are seeking progressive change.

NOTES

¹ The use of the word “game” was only used in respect to layman’s terms for the participant. “Activities” is a more appropriate descriptor when used in the adventure education field because the reputation the word “game” insinuates does not promote professionalism or positive development.

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APPENDIX A

Props

1. Jump rope
2. Four mesh bags
3. Twenty feet of white rope
4. Five red floppy spots
5. Twelve tennis balls
6. Ten sheets of white paper
7. Frisbee
8. Fifty rubber-bands
9. Twelve clear Dixie cups
10. Scissors
11. Three stuffed animals
12. Pool noodle
13. Four orange cones
14. Five green Nerf balls
15. Three roles of masking tape
16. Twelve Sharpies in an assortment of colors
17. Six glue sticks
18. One plastic container

FIGURES

Table 1

Group Statistics of IMI Subscales

Subscale	Condition	Mean	SD
Interest	UN	4.704	1.330
	ST	4.338	1.340
Pressure	UN	3.529	1.186
	ST	3.291	2.596
Choice	UN	5.796	1.002
	ST	5.610	1.271
Competence	UN	3.905	1.735
	ST	4.000	1.667
Value	UN	4.393	1.340
	ST	5.000	1.360