

EXAMINING THE IMPACT OF AN OUTWARD BOUND SINGAPORE PROGRAM ON THE LIFE EFFECTIVENESS OF ADOLESCENTS

by

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ABSTRACT

The purpose of this study was to investigate the effects of an Outward Bound (OB) Singapore program on participants. The participants were Secondary Three students from two independent schools (N=800) from Singapore, city, state, and nation. The students attended a five-day OB Singapore program at the beginning of their academic year.

A longitudinal research panel study (pre-, post-, 3-, and 9-month assessments) was designed to study the development of life effectiveness skills in these students using the Life Effectiveness Questionnaire-Version I (LEQ). The LEQ is an instrument designed to measure eight life effectiveness subscales including: a) Time Management, b) Social Competence, c) Active Initiative, d) Task Leadership, e) Intellectual Flexibility, f) Achievement Motivation, g) Emotional Control, and h) Self-Confidence. The LEQ was developed specifically to assess learning outcomes and measure the program impact of outdoor education programs.

The results of this study indicated that OB Singapore participants experienced the most significant difference in overall life effectiveness at the post-test, as well as significant positive changes ($p<.001$) in all eight subscales at the post-test. At the 3-month follow-up test, all subscales except Time Management maintained significantly different scores ($p<.05$). At the 9-month follow-up test, the subscales which still showed significance differences from pre-test scores were Task Leadership, Emotional Control, Self-Confidence, and Active Initiative ($p<.05$).

These subscales of the LEQ were reasoned to be closely aligned with the Desired Outcomes of the Singapore Ministry of Education for Secondary students. The findings of the study demonstrated a potential for students to develop the following intermediate Desired Outcomes of Education; seeking for students to: a) believe in their own ability, b) be enterprising and innovative, c) have care and concern for others, and d) be able to work in teams and value every contribution.

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INTRODUCTION

In his inaugural National Day Rally Speech 2004, the current Prime Minister of Singapore Lee Hsien Loong acknowledged the Outward Bound (OB) approach toward education and student development. He mentioned a school that “sent their entire cohort of Secondary 3 students to Outward Bound Singapore for 5 days” (Outward-Bound-International, 2004b). The Prime Minister went on to say:

“So you do the Outward Bound routine, you camp, you rough it out, you do the physical part, test out your character, experience the roughness and so challenge each other and put their leadership skills to the test. The education ministry can’t order this, the schools must want to do this.” (p. 18)

The Outward Bound Singapore (OBS) started in 1967 when the mission at that time was to prepare boys for National Service. In 1991, the OBS came under the direction of the Ministry of Community Development and focused on personal growth and team development for youth in Singapore. The program design placed participants in an outdoor environment where instructors facilitated the development of *life skills* through the completion of a series of difficult and challenging tasks requiring communication, cooperation, and teamwork skills. Life skills training is reflected in this study as *life effectiveness*, which is defined as “developmental change through experienced-based educational interventions” (Neill, Marsh, and Richards, 2003, p. 3). A person’s life effectiveness includes skills and competencies which help them function at work or in school, as well as their personal and social life in an effort to achieve their wishes and desires in life.

Outward Bound Singapore Program Model

The OB Singapore program can best be described as using the Walsh and Golins (1976) OB process model. This model placed participants in a prescribed unique environment with an instructor, where they were then given a characteristic set of problem-solving tasks and activities that interacted to produce mastery allowing the learner reorganize the meaning and direction of experience (Walsh & Golins, 1976, p. 16). This model forms part of the theoretical basis of OB Singapore’s program design and planning. A typical five-day program may include: a) ice-breakers and de-inhibitor activities, b) trust activities, c) individual rope courses, d) group problem-solving tasks and activities, and e) a final expedition.

The instructors were trained to deliver the program using the Experiential Learning Cycle (ELC) (Kolb, 1984). Essentially, the ELC described that when a learner had a concrete experience, it was through facilitation that learners were able to reflect and generate a “recipe” for their success. These applications were then tried out in various other situations, allowing the learner to practice and apply their skills in a neutral environment with appropriate risk management. The facilitation style practiced by most OB Singapore instructors resembled the Outward Bound Plus model outlined by Bacon (1987), also referred to as the third generation of facilitation by Priest & Gass (1997). This facilitation style allowed for learning through instructors debriefing the experiences and facilitating group discussions on the events of the day. This was done with the hope that participants will use the learning in subsequent activities and eventually in their own lives.

Two other important features of the OB Singapore program were the concepts of challenge by choice and full value contract (Henton, 1996). Challenge by choice is the notion that learning occurs when individuals choose and commit to goals that are challenging and meaningful. The full value contract represented a prescribed culture developed within the group of individuals to enhance the respect and support of the adventure learning process. Both of these concepts helped guide the operating principles of the OB Singapore program by allowing participants to be physically and emotionally supported in a challenging environment.

OB Singapore Five-day Program Course Objectives

The OB Singapore five-day program consisted of five course objectives. These five objectives were very closely aligned to five of the eight Desired Outcomes of the Singapore Ministry of Education for Secondary students (Ministry of Education, 2004). The five course objectives of OB Singapore were:

- 1) Have moral integrity
- 2) Have care and concern for others
- 3) Believe in their own ability
- 4) Be enterprising and innovative
- 5) Be able to work in teams and value every contribution

These five objectives were also closely aligned to most of the subscales of the Life Effectiveness Questionnaire LEQ (see Table 1). Based on the close alignment between the OB course objectives and the LEQ subscales, the instrument was selected to measure the outcomes of the OB program.

Table 1: OB Singapore five-day course objectives comparable to LEQ subscales.

OB SINGAPORE COURSE OBJECTIVES	LEQ SUBSCALES
Have moral integrity	
Have care and concern for others	Social Competence
Believe in their own ability	Self-Confidence Emotional Control
Be enterprising and innovative	Active Initiative Task Leadership
Be able to work in teams and value every contribution	Intellectual Flexibility

Purpose of Study

The purpose of this study was to assess the degree to which a five-day OB Singapore program enhanced and affected the life effectiveness of adolescents who participated at post-test, 3-, and 9-month assessments following their adventure experience.

Research Questions

The four research questions relating to total LEQ scores, the subscales, participant demographics, and the type of OB program were as follows:

1. What was the effect of an OB Singapore program on the overall LEQ scores on participants following the completion of the program at post-test, 3-month and 9-month follow-up tests?
2. Which are the LEQ subscales most affected and/or had a lasting impact on the participants?
3. Are there gender differences in their life effectiveness as measured by the LEQ?
4. Does the type of five-day program (i.e., residential or mobile) have an impact on the LEQ scores of participants?

Limitations of Study

The limitation and factors affecting this study were as follows: a) selection of participation, b) history and maturation of participants, and c) experimental design.

Definition of Terms

Life Effectiveness Questionnaire Subscales and Concepts: Neill (2005) refers life effectiveness to a set of personal skills which influence factors linked to personal achievement (school/work and personal/social). This instrument was developed to measure the extent to which a person's actions, behaviors, and feelings are effective in managing and succeeding at life.

- a) Time Management: The extent that an individual perceives that they make optimum use of time.
- b) Social Competence: The degree of personal confidence and self-perceived ability in social interactions.
- c) Achievement Motivation: The extent to which the individual is motivated to achieve excellence and put the required effort into action to attain it.

- d) Intellectual Flexibility: The extent to which the individual perceives they can adapt their thinking and accommodate new information from changing conditions and different perspectives.
- e) Task Leadership: The extent to which the individual perceives they can lead other people effectively when a task needs to be done and productivity is the primary requirement.
- f) Emotional Control: The extent to which the individual perceives they maintain emotional control when faced with potentially stressful situations.
- g) Active Initiative: The extent to which the individual likes to initiate action in new situations.
- h) Self Confidence: The degree of confidence the individual has in their abilities and the success of their actions.

LITERATURE REVIEW

Foundations of Outward Bound

Kurt Hahn was one of the founders of the first Outward Bound School which was based in Aberdovey, Wales in 1941. Hahn was a school master who was interested in the process of training young people through experience in preparation for challenges in real life. As an educator, Hahn 's mission was to impel students into "experiences which would produce memories conducive to the strengthening of character for the duration of life" (Kalisch, 1979, p. 10). Hahn once said: "I regard it the foremost task of education to ensure the survival of these qualities, an enterprising curiosity, an undefeatable spirit, tenacity in pursuit, readiness of sensible self-denial, and above all, compassion." (Outward-Bound-International, 2004a).

Components of the Walsh and Golins (1976) Model

Victor Walsh and Gerald Golins wrote a paper in 1976 to better describe the theoretical foundations of Outward Bound. This model placed participants in a prescribed unique social and physical environment with an instructor, where they were then given a characteristic set of problem-solving tasks and activities that interacted to produce mastery allowing the learner to reorganize the meaning and direction of experience (Walsh & Golins, 1976, p. 16). The participants may experience some dissonance but work to overcome the disequilibrium in a group setting. The desired effect of this interaction between the environment and overcoming anxiety was mastery, which helped the participant recognized the direction and meaning of their lives through this learning. This process exists within the program, and understanding the process can help in the design of goals and objectives.

Social Learning Theory

Social learning theory explains human behavior as a result of cognitive, behavioral, and environmental factors. It consists of three broader concepts: observational learning, self-regulation and self-efficacy, and reciprocal determinism.

Observational Learning

Observational learning or modeling was strengthened when these four steps were present: attention, retention, reproduction and motivation.

Self-regulation and Self-efficacy

Learning is also reasoned to take place when a person interacts with the environment and combined it with their mental processes. Bandura (1977b) called this self-regulation, which involved self-observation, judgment and self-response. According to (Bandura, 1977a), there were two kinds of expectancy: outcome and efficacy. The more likely the person was to believe they would succeed, the more involved and persistent they would be in their expectation toward personal mastery. Outcome efficacy was defined as a person's estimate that a given behavior would lead to certain outcomes (p. 193). Efficacy expectancy was the conviction that one could successfully execute the behavior required to produce the outcomes (p. 193). For the purpose of this paper, the life effectiveness scores as reported by the participants following the OB Singapore program is reasoned to be similar to efficacy expectancy. The expectations of personal efficacy were based on four major sources of information: a) performance accomplishments, b) vicarious experience, c) verbal persuasion, and d) physiological states.

Reciprocal Determinism

The behavior of a person was affected by the environment but the environment also had an effect on how this person might behave. Personal determinants included expectations, self-perceptions, and goals.

Research Conducted on Outward Bound Programs

Burton (1981) reviewed 72 studies on Outward Bound-type programs and suggested mostly positive effects. The specific areas included self-perception, defined as self-concept, personality, locus of control and self-assertion. Hattie (1993) presented four reasons why OB programs were successful in enhancing self-concept: a) emphasized the quality of experience, b) set difficult goals and structured tasks so that students attained these goals, c) increased the amount and quantity of feedback that was so vital to learning, and d) reassessed the individual's coping strategies. Research conducted on OB programs since the 1970s have shown positive outcomes for youth upon completion of Outward Bound-type programs (Hattie, Marsh, Neill, & Richards, 1997; Jickling, 1977; Lee & Lindner, 1995; McKenzie, 2003; Neill, 1999; Sibthorp, 2003; Yaffey, 1992). More specifically, OB programs have been shown to be effective in raising self-concept in students (Hattie, 1993; Simpson, 1991).

Design of the LEQ and Research Related to LEQ

Life effectiveness was reasoned to be a multi-dimensional construct of self concept, which aimed "to enhance a person's capacity to be effective in the multitude of tasks involved in life" (Neill et al., 2003, p. 6). The Life Effectiveness Questionnaire (LEQ) was originally developed by Garry Richards, of Outward Bound Australia. The aim was for an instrument designed to measure developmental changes, "since a major aim of many outdoor experiential programs is to facilitate individuals' personal development in a broad range of life skills" (p. 5). The LEQ sought to measure eight subscales (see Definition of Terms on p. 2). These eight subscales in the LEQ encompassed the course objectives set by OBS for the five-day program.

Although several studies have researched the outcomes of OB-like programs using the LEQ (McLeod & Craig, 2004; Neill, 1999; Powers, 2004; White, 2001), little is known if OB programs in another country could have similar effects. Neill (1999) presented LEQ outcome results for a range of programs and found that school programs compared to other adult programs in OB Australia had a lower effect size of $d=.26$. The explanation offered was that school programs tend to be shorter in duration (2 – 10 days) and it might have been compulsory for students to attend. The follow-up period ranged from 3- to 9- months. Neill (1999) presented changes for the different LEQ subscales, and tracked the greatest positive change in Time Management, followed by second tier outcomes that include Task Leadership, Self-Confidence, Social Competence and Emotional Control.

METHODS

Research Design

This study was a longitudinal panel design consisting of four repeated measures. Participants were from two five-day OB Singapore programs conducted in the second and third week of January 2002. Only participants who completed the OB Singapore program were included in this study, there was no control group.

Sampling Strategy

The study sample included a census of 800 adolescent students from two Singapore Secondary Independent schools. Those who were certified medically unfit by their doctors were exempted from attending the program. Of the 800 students, 50.6% were male and 49.4% were female. The average age of the students was 14.08 years old. The participants sampling was based on convenience sampling.

Data Collection

The LEQ was administered at four time periods in this study: pre-, post-, and follow-up periods at 3 and 9 months following the completion of the OB program. At each time period, data was collected from each individual who completed the LEQ and the results were entered in a spread sheet program for storage. A pre-test was administered one or two days before the start of the program at their school. The second LEQ was completed by the participants on the last day of their five-day program at OB Singapore. The follow-ups were conducted in the schools at a large assembly hall. OB Singapore staff went to the schools and all the students from each school were in the hall at the same time. The completed LEQ surveys were handed back to the OB staff.

Data Analysis

Results were computed using the Statistical Package for the Social Sciences (SPSS), after being transposed from an Excel spreadsheet. Four total scores were computed for each participant: a) pre-test (Time 0), b) post-test (Time 1), c) 3-month follow-up test (Time 2), and d) 9 month follow-up test (Time 3). The steps taken in analysis of

the data were: a) tests of normality, b) descriptive statistics, c) repeated measures analysis of variance (ANOVA), and d) follow-up/post hoc t tests.

Demographic variables for gender, and type of program: residential or mobile, were also used to examine differences in overall LEQ scores. This study's primary interest was in the lasting effects of any changes in life effectiveness of the adolescents. The LEQ results were analyzed as an entire cohort, with trends plotted of the eight different subscales and subscales that had the longest impact were highlighted.

Non-response bias Analysis

The sample revealed a complete data set for 552 students, including students assessed at time 0 (N=785), time 1 (N= 836), time 2 (N=763), and time 3 (N=634). The researcher chose to use the complete data for most analysis because all four assessments were included. A non-response bias analysis was conducted between the complete set and those that had assessments at the respective time periods. At each time period, the LEQ scores of the 552 who completed all four surveys and those assessed at the respective time periods showed no significant difference.

RESULTS

The effects of the OB Singapore program on changes in life effectiveness scores in measured in self-report surveys using the Life Effectiveness Questionnaire (LEQ). The results are presented first by descriptive statistics of the sample, and second by differences in total and subscale scores across various demographic and independent variables.

Descriptive Statistics

The 552 participants who completed the LEQ at the four time periods consisted of 212 males and 340 females. More female participants (61.6%) completed all four LEQ surveys compared to male participants (38.4%). The average age of participants was 14.08 years old.

The overall mean LEQ scores for the entire cohort were recorded and the means and standard deviation of the scores are presented in

Table 2. The lowest LEQ score was at the pre-test ($M = 154.37$, $SD = 26.05$) and the highest was at post-test ($M = 183.22$, $SD = 24.46$). At the 3-month follow up test, the mean LEQ score ($M = 175.00$, $SD = 27.28$) decreased slightly but remained higher than the pre-test score. Subsequently, at the 9-month follow-up test, the mean LEQ score ($M = 174.09$, $SD = 27.51$) showed little change from the score at the 3-month follow-up test.

Table 2. Means and standard deviations of overall LEQ scores over time.

LEQ SCORES	Time	N	M	SD
Pre-test	0	552	154.37	26.05
Post-test	1	552	183.22	24.46
3-month follow-up test	2	552	175.00	27.28
9-month follow-up test	3	552	174.09	27.51

One-way Repeated Measures ANOVA on Overall LEQ scores

A within-subjects analysis of variance, using the Greenhouse-Geisser adjustment, revealed a significant difference in the mean overall LEQ scores of participants over four time periods, $F(2.3,1240.3) = 317.7$, $p < .001$, partial $\eta^2 = 0.37$). The results indicate the greatest gain in mean overall LEQ occurred from pre-test, ($M = 154.37$, $SD = 26.05$) to post-test, ($M = 183.22$, $SD = 24.46$) (see *Figure 1*). The 95% confidence interval for the mean difference between the two LEQ scores was 30.60 and 27.10. At the 3-month and 9-month follow-up tests, the overall LEQ scores decreased slightly but still remained significantly higher from the pre-test score.

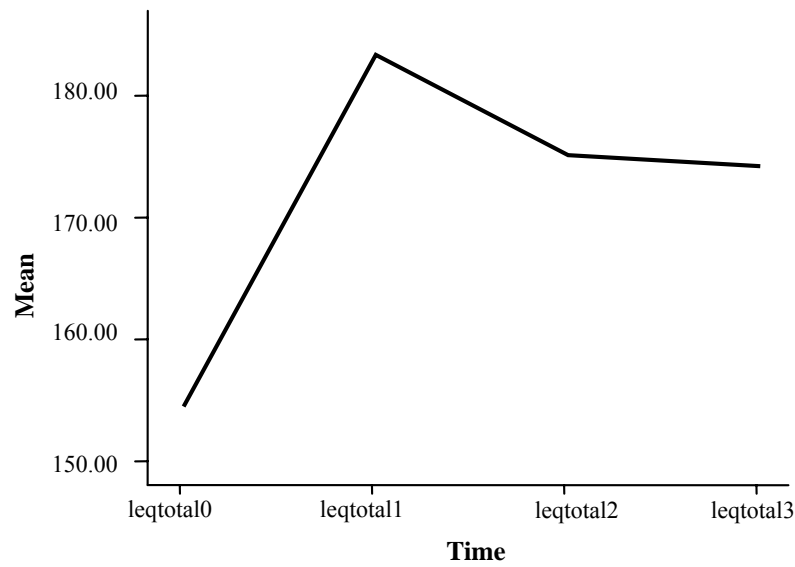


Figure 1: Means of overall LEQ scores by time.

Follow-up Tests of Overall LEQ Scores

A series of paired-samples *t* tests using a Bonferroni adjustment as a post hoc procedure was conducted to examine the differences between mean overall LEQ scores. Five of the six paired-samples *t* tests indicated statistically significant differences ($p < .001$).

Table 3 shows the results of the post hoc tests for overall LEQ scores, indicating: a) the highest gain was between pre-test and post-test, b) the scores at the 3- and 9-month follow-up test fell slightly, and c) both follow-up test scores, (from pre-test to 3-month and pre-test to 9-month), reached the $p < .001$ significance level.

Table 3. Results of the paired sample t-tests of overall mean LEQ scores.

LEQ SCORES	<i>t</i>	<i>df</i>	<i>p</i>
Pre-test to post-test	-32.41	551	.000
Pre-test to 3-month follow-up	-18.87	551	.000
Pre-test to 9-month follow-up	-17.73	551	.000
Post-test to 3-month follow-up	8.13	551	.000
Post-test to 9-month follow-up	8.97	551	.000
3-month to 9-month follow-up	1.47	551	.140

Measuring Changes in Subscales of LEQ

A repeated measures within-subject ANOVA was conducted for each of the eight subscales to determine the subscales which indicated a significant lasting impact at follow-up tests. At Time 1 (post-test immediately after the program), all the subscales showed significant differences ($p < .001$). At Time 2 (3-month follow-up test), seven out of eight subscales showed significant differences ($p < .05$); the only subscale that was not significant was Time Management. At Time 3, four of the eight subscales, Task Leadership, Emotional Control, Self-Confidence, and Active Initiative showed significant differences ($p < .05$).

Table 4 shows the means and standard deviation of the subscales over the four periods and those that showed significant differences.

Table 4. Analysis of variance (ANOVA) for mean of subscales in LEQ scores.

	Time 0	Time 1	Time 2	Time 3
LEQ SUBSCALES	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Time Management	13.01 (4.93)	16.94*** (3.81)	15.14 (4.57)	15.08 (4.63)
Social Competence	27.37 (4.96)	32.35*** (4.50)	30.75*** (4.82)	30.33 (5.31)
Achievement Motivation	18.28 (3.26)	20.39*** (2.74)	19.67** (3.23)	19.38 (3.30)
Intellectual Flexibility	17.62 (3.21)	20.01*** (4.15)	19.35* (5.29)	19.20 (5.38)
Task Leadership	14.51 (3.78)	17.62*** (3.42)	17.26*** (3.64)	17.27*** (3.60)
Emotional Control	15.08 (4.22)	18.50*** (3.77)	17.70*** (4.05)	17.86*** (3.96)
Active Initiative	16.75 (4.49)	19.16*** (3.95)	18.61*** (4.16)	18.40* (4.28)
Self-Confidence	31.85 (6.68)	38.41*** (6.68)	36.52*** (6.32)	36.10** (6.64)

* p<.05
 ** p<.01
 *** p<.001

The subscales that showed the most significance (p<.001) and indicate a lasting impact through the 9-month follow-up test was Task Leadership and Emotional Control.

Gender Differences

To examine gender differences, 212 males and 340 female participants were compared. A 4 x 2 repeated measures ANOVA revealed that the overall mean scores for females were higher than males and were found to be significantly different $F(1, 550) = 7.88, p = .005$. There was no interaction in the main effect of gender over time as illustrated in Figure 2.

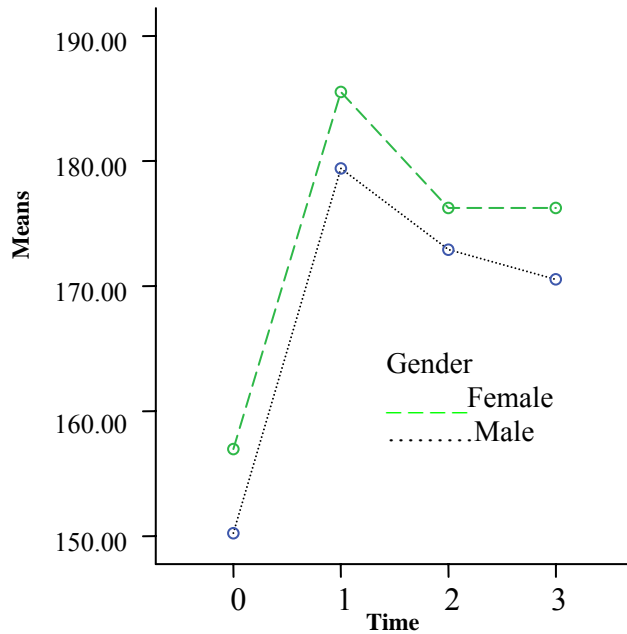


Figure 2: Means of overall LEQ total scores by gender.

Four independent sample *t*-tests were then conducted as a post hoc procedure and revealed significant differences at each time period ($p < .05$), except for Time 2 (3-month follow-up test). To examine differences in changes between time periods, independent sample *t*-tests were conducted using score differences between each time period by gender. The independent *t*-tests yielded no significant differences in changes of LEQ scores between each of the time periods for males and females.

Although the *t*-tests showed no significant differences in changes between time periods, real score differences suggest: a) the males and females increased at the same rate pre- to post-test in LEQ scores, b) the females' score decreased more between the post-test to 3-month follow-up compared to the males, and c) the females leveled off and stabilized between the 3-month and 9-month follow-up tests while the males continued to decline in their scores (see Figure 2).

Type of Program

A 4 x 2 repeated measures ANOVA was conducted with the factor being type of program and the dependent variable being total LEQ scores. The means and standard deviation are presented in Table 5.

Table 5. Means and standard deviation of overall LEQ scores by type of program.

	<u>Residential (n=400)</u>		<u>Mobile (n=152)</u>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Pre-test	154.48	25.88	154.17	26.64
Post-test	182.25	24.31	185.72	24.83
3-month follow-up test	175.33	27.22	173.96	27.53
9-month follow-up test	173.90	28.04	174.41	26.15

The result of the 4 x 2 repeated measures ANOVA indicated no significant difference, $F(1, 550) = .072, p = .78$. Therefore, we can conclude that there was no statistical difference in overall LEQ scores for those who participated in the mobile or residential program at the four time periods.

DISCUSSION

The purpose of this discussion section is to compare the results of this study with the stated OB Singapore five-day program objectives. This provides an integral perspective by evaluating the extent to which students' perception of their life effectiveness skills are related to and consistent with the Desired Outcomes of Education established by the Singapore MOE.

Summary of Findings

Overall LEQ Scores for the Entire Cohort

Participation in OB Singapore program showed a significant difference in the mean LEQ scores of participants over the four time periods. The greatest difference was seen between pre-test and post-test immediately after the program. This may be because the program occurred in the first month when students were back in school after six weeks of vacation. During the pre-test, students may still be getting oriented to their new classmates, teachers, and academic subjects. The OB program provided an opportunity for students to be acquainted with their new classmates and to have a common shared experience of working together as a class.

The significance difference in overall LEQ scores was maintained over the 3-month follow-up and 9-month follow-up test periods. The 3-month and 9-month follow-up tests revealed a slight drop in overall LEQ scores, though they were still significantly higher than their pre-test scores. The impact of the OB Singapore program is reasoned to have assisted in the development of life effectiveness skills, as measured by the LEQ in this study. There is potential evidence the effects of an OB Singapore program can last beyond the initial "post-program euphoria" as described by Hattie et al. (1997). This is in support of Neill (1999) and McLeod and Craig (2004), who also reported positive longer-term life effectiveness program effects after five to ten months of participation in OB and similar outdoor education programs.

Significant Changes in LEQ Subscales

Participation in the OB Singapore program showed significant differences ($p < .001$) in all the eight subscales in the post-test (See

Table 4). The subscale that showed the least significant difference was Time Management. At the 3-month follow-up test, LEQ scores for Social Competence, Task Leadership, Emotional Control, Active Initiative, and Self Confidence continued to show high significant differences from pre-test scores ($p < .001$). At the 9-month follow-up test, Task Leadership and Emotional Control continued to maintain significant differences ($p < .001$). Self-Confidence ($p < .01$) and Active Initiative ($p < .05$) also maintained significant differences at this 9-month follow-up test. These four subscales are consistent with two of the OB Singapore/ MOE's Desired Outcomes: a) Believe in your own ability and b) To be enterprising and innovative.

The four subscales that showed no significant differences at the 9-month follow-up tests were: a) Time Management, b) Social Competence, c) Achievement Motivation, and d) Intellectual Flexibility.

Gender Differences in LEQ Scores

The mean LEQ scores for female participants were higher than male participants for all time periods. A repeated measures analysis showed a significant difference ($p < .05$) in the overall mean LEQ between the males and females. This could be related to the level of maturity attributed to female adolescents whose emotional development may be ahead of male adolescents. However, the paired sample *t*-tests on changes in score differences between periods did not reveal any significant differences ($p > .05$).

A closer look at the trend of changes occurring in the males and females revealed that both gender increased significantly in LEQ scores at the post-test. At the 3-month follow-up test, the males' scores decreased less compared to the females. At the 9-month follow-up test, males continued to decline in their LEQ scores while the females showed no change in scores. The females in this study seemed to have stabilized and reached a plateau at the final data collection point of this study while the males continue to decline. This suggests the developmental differences in males and females at this point.

Type of Program and LEQ scores

No difference in scores was found based on type of program, (i.e., residential or mobile) following the completion of the OB Singapore program. This was contrary to the thoughts of some program design staff who had felt that mobile programs possessed more impact on students. This result found the environment provided in the residential settings was unique enough, and in contrast to what the students were accustomed to at home or in school to enhance the same results as found in the mobile programs. Although the groups had slightly different sequences

to the program, the factors inherent in these different programs did not seem to have significant effect the outcomes as measured by the LEQ. Both the OB programs support the unique environment that was conducive to produce changes, as suggested by Walsh & Golins (1976).

Conclusion

The purpose of this study was to assess the changes in the life effectiveness of the students from the participation in an OB Singapore program through the use of the LEQ. The outcomes of the study showed a positive impact of the OB Singapore program on the life effectiveness of adolescents. This is commendable as close to 70% of all OB Singapore programs are the five-day programs for Secondary Three students. It can be implied the outdoor experience at OB Singapore helped in the development of life effectiveness skills as assessed by the LEQ.

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