

Does Outdoor Education *Really* Work? A Summary Of Recent Meta-Analyses

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Abstract

As the empirical literature about the effects of outdoor education grows, it is important that emerging trends are reviewed and the implications for practice discussed. Traditional reviews of the literature have created impressionistic narratives of the research evidence. An alternative approach is to use 'meta-analysis' which is a way of combining the outcome statistics from many different studies into a single, overview study. Three meta-analyses of the effects of outdoor education have been conducted (Cason & Gillis, 1994; Hans, 1997; Hattie, Marsh, Neill, & Richards, 1997). Overall these studies, representing over 12,000 participants, show that outdoor education has a small to medium impact on typically measured outcomes such as changes in self-concept, self-confidence and locus of control. These effects seem not only to be retained over time but to increase still further, which is impressive. The most effective programs seem to be longer, involve adult-age participants and to be conducted by some particular organisations. Recommendations are made for more detailed description of how programs are conducted and investigation of the role that individual differences, such as personality and coping styles, have on outcomes. Finally it is argued that more widespread use of 'educational auditing' research techniques would help develop program quality.

Introduction

What are the effects of outdoor education? Are people any different after participating in challenging adventure activities? Such questions have attracted animated discussion ever since modern forms of outdoor education started appearing over 50 years ago. Typically answers have come forth in the form of testimonial support, anecdotal examples and passionate rhetoric. Philosophies of outdoor organisations, promotional material and outdoor instructors' verbiage collectively express the view that outdoor programs are 'good' things for people. For many of us this sort of evidence speaks for itself...the renewed sparkle in someone's eyes, the excitement when people realise that their potential is more than they had previously dreamt, the close sense of community experienced by people who were once strangers...and so the list goes on. For many people, what can be seen, heard and felt is what outdoor education is really about.

One of the most prevalent claims is that outdoor education programs make a valuable contribution to a person's sense of him or herself. We hear phrases like 'improved self-confidence', 'increased self-knowledge', 'better able to work in a team with others', 'becomes more open and caring', 'has a new lease of life' and so on. Despite the enthusiastic anecdotal support for such claims, it has been far more difficult to establish 'scientific proof' for or against the numerous claimed benefits. So, what is the empirical evidence? Does it support the claims? Or is the fervour for outdoor education just misguided enthusiasm from people with vested interests in outdoor activities?

One of the more common methods of testing out such claims is to directly ask participants at the end of a program something like "How valuable was this program for your personal growth?". On face value this approach has appeal. Indeed it is a prevalent method as indicated by a recent survey of the practices of over 100 outdoor educators - almost 80% reported that their program

used “written surveys” for program evaluation (Richards, Neill & Butters, 1997). There are critics, however, of taking end-of-program surveys as reliable indicators of program value. A recent study of a program for at risk youths reported small correlations (.2 to .4) between staff ratings of effectiveness, participant ratings of effectiveness and actual change scores in participants’ self-perceptions (Neill, Richards & Badenoch, 1997).

The apparent disparity between different ways of assessing program value is a phenomenon which is broader than outdoor education. In a review of management training research, for example, it has been claimed that the “reaction of trainees bore no relationship to the effectiveness of the training” (Dr. Bright quoted in Lawson, 1997, p.7). To date very little outdoor education research has explored the relationships between what stakeholders, such as staff and participants, say about a program’s value and other more ‘objective’ indicators of the program effectiveness. Clearly we need further investigation to better understand what is happening here.

The other major approach to examining the effectiveness of outdoor education has been to gather participants’ self-perceptions before and after a program and then test to see if there are any differences. Hundreds of empirical evaluation studies have utilised this basic ‘quasi-experimental’ design, or an expansion of it, and this has produced an array of insights. Such studies have used a diversity of measures (e.g. self-esteem, locus of control, etc.) and have been done on many different types of programs which have varied in characteristics such as participant age and program length.

The variety in the methods and outcomes of the research makes the task of reviewing the outcome literature rather formidable. While there have been several notable reviews (e.g. Barrett & Greenaway, 1995; Devlin, Corbett & Peebles, 1995; Ewert, 1983; Godfrey, 1974; Reddrop, 1997; Richards, 1977; Shore, 1977) they have all faced difficulties in presenting a systematic overview of the outcome research.

An alternative to the traditional ‘literature review’ is to use ‘meta-analysis’ which is a statistical technique for accumulating and representing the research results reported in various studies. Meta-analyses pool the findings

about a single research question from many different sources and analyse the overall effects.

There have been three separate meta-analytic studies of outdoor education research (Cason & Gillis, 1994; Hans, 1997; Hattie, Marsh, Neill, & Richards, 1997). These studies make particularly valuable additions to our knowledge about the effects of outdoor education. The aim of this article is to present an overview of key findings from these studies.

Understanding Meta-analysis: What is an “Effect Size”?

Meta-analyses report results in terms of ‘effect sizes’ (ESs). An ES, as utilised in the three studies of interest here, is a measure of ‘how much’ difference there is between peoples’ rating at themselves at two different points in time. In other words the ES indicates the *amount of change*. An ES of 0 means no change, a negative ES means a lowering of perceptions, while a positive ES means an enhancement of perceptions. ESs are proportional, so an ES of .40 represents twice as much change as an ES of .20.

Various experts have offered suggestions about the ‘meaning’ of different ESs. For example it has been suggested that an ES of .50 is a change of practical significance while .25 is educationally significant (Wolf, 1986). Other authors have warned against global guides to interpreting ESs since it is necessary to know about who and what is being measured in order to make a genuine assessment about the value of a particular ES.

In practice, a small ES can be very impressive if, for example, the outcome is difficult to change (e.g. a personality construct) or if the outcome is very valuable (e.g. an increase in life expectancy). On the other hand, a large ES doesn’t necessarily mean that there is any practical value in the change, particularly if it isn’t related to the aims of the intervention (e.g. religious orientation).

For program evaluation purposes it is most useful to compare ‘like with like’. For example, if a school-based outdoor education program aims to enhance students’ self-concepts then it should be compared with self-concept research on similar programs. On the other hand, it can also be useful to compare a program’s outcomes with other types of outdoor education, such as management training or special education programs, and also to other intervention techniques such as counselling and

psychotherapy. These sort of comparisons can provide valuable feedback about a program's relative strengths and weaknesses. This article seeks to present sufficient ES information for such comparisons to be made.

The Outcomes

Does Outdoor Education really 'work'?

Does outdoor education work? It's a big and complex question but the answer from the three meta-analyses is that, yes, outdoor education does 'work'. The overall results from the largest meta-analysis found an average ES of .34 from the beginning to the end of the programs (Hattie et al., 1997). This ES was based on over 12,000 participants in 96 different research studies and using a variety of outcome measures. By broader educational and psychological standards .34 can be considered to be a small to medium amount of change. Alternatively this ES can be statistically converted to say that 65% of those who participate in adventure programs are better off than those who do not participate.

The two other outdoor education meta-analyses have reported similar overall ESs. Cason and Gillis (1994) analysed 43 studies on adolescent adventure education programs and found an average ES of .31. Hans (1997) examined 24 studies of locus of control changes and reported an ES of .38. The consistency of these meta-analytic results strengthens the conclusion that, on average, outdoor education programs have a positive impact on the self-perceptions of participants.

Do the effects of outdoor education last?

Only one meta-analysis has examined the long-term effects of outdoor education programs. Hattie et al. (1997) reported an *additional* ES of .17 for assessments up to 18 months after the end of the program. This means that the average program ES of .34 is followed by an average ongoing improvement of .17, amounting to a notable overall ES of .51.

In other words, this evidence suggests that participants experience additional growth on returning to their home environments. There were wide variations between different studies for the ESs after the program but the .17 average is impressive. Overall this shows that outdoor education effects last well beyond the immediate

buzz. Unfortunately, understanding of how the ongoing positive benefits are achieved is lacking. This promises to be a fruitful direction for future research.

With most forms of intervention and training there is a steady loss of benefits once the program has finished. This makes the long-term outdoor education results particularly impressive. Educational methodologies which produce long-lasting positive changes in self-perceptions are needed. These positive results for outdoor education deserve wider recognition and further application.

Are outdoor education programs effective in all areas?

While the overall outcomes are useful as a general guide, it is important to examine the effects in more detail. One way of breaking down the results is to look at the ESs in terms of different outcome categories. The Hattie et al. (1997) meta-analysis grouped the results into 6 broad categories and these are presented in Table 1. The immediate program ESs for each of these outcomes were statistically significant. Interestingly the smallest program ES was for self-concept (.28), however the follow-up ES for self-concept was the largest (.23). This might indicate a 'sleeper' effect whereby self-concept changes are seeded during a program and continue to grow afterwards. This intriguing evidence warrants further investigation.

The ESs reported by Cason and Gillis (1994) are shown in Table 2. The most dramatic feature is the very high ES (1.05) for studies using clinical measurement scales. This could be due to the specialised and intensive nature of programs for people who have emotional, behavioural or psychological difficulties. Such 'adventure therapy' programs tend to utilise outdoor education in the context of a more disciplined and individualised approach than is usually the case for educational or recreational programs. The high ES may also be partially due to adventure therapy participants having a greater 'room for growth' than everyday outdoor education participants.

Overall, it can be concluded that the ESs for different outcomes categories are fairly similar, with the notable exception of assessments using clinical scales. In addition, the largest ongoing effects appear to be in the area of self-concept.

Table 1. Effect sizes (ESs) reported for different outcome measures (from Hattie et al., 1997)

Category	Description	Program Effect ES (N)	Follow-up Effect ES (N)
Leadership	Conscientiousness, Decision making, Leadership, Organisational ability, Time management, Values, Goals	.38* (222)	.15 (58)
Self-concept	Physical ability/appearance, Peer relations, General, Academic, Confidence, Self-efficacy, Family, Self-understanding, Well-being, Independence	.28* (271)	.23* (149)
Academic	Mathematics, Reading, Grade Point Average (GPA), Problem solving	.46* (30)	.21 (9)
Personality	Femininity/Masculinity, Achievement motivation, Emotional stability, Aggression, Assertiveness, Locus of control, Maturity, Neurosis reduction	.37* (235)	.14 (76)
Interpersonal	Cooperation, Interpersonal communication, Social competence, Behavior, Relating skills, Recidivism	.32* (176)	.17 (36)
Adventuresome	Challengeness, Flexibility, Physical fitness, Environmental awareness	.38* (69)	-.06 (19)

*
 $p < .05$

Table 2. ESs reported for different outcome measures (from Cason & Gillis, 1994)

Category	Examples	Program Effect ES (N)
Behavioral assessment by others	-	.40 (23)
Self-concept	-	.34 (23)
Academic	Grades	.61 (10)
Attitude surveys	-	.46 (19)

Locus of control	Shift towards perceptions of personal control	30 (13)
Clinical scales	MMPI, depression, anxiety	1.05 (12)
School attendance	-	.47 (9)

Are all outdoor education programs effective?

In summarizing their findings Hattie et al. (1997, p.77) stated that:

adventure programs can obtain notable outcomes and have particularly strong, lasting effects. It is clear, however, that adventure programs are not inherently good. There is a great deal of variability in outcomes between different studies, different programs, and different individuals.

This theme of wide variability in the ESs for different studies and programs was also evident in the Cason and Gillis (1994, p.46) meta-analysis which stated that "when one considers the large range of effect sizes collected, -1.48 to 4.26, and the wide variation in the findings, a singular summary effect size...cannot adequately reflect the effectiveness of adventure programming".

The variability is a striking feature and warns against being lulled into false comfort by the small to moderate average ESs. Indeed, Hattie et al. (1997, p.70) emphasized that "only some adventure programs are effective, and then on only some outcomes, and it is probable that only parts of the programs are influencing these outcomes".

Other research reviews have come to similar conclusions. Burton (1981), for example, reviewed 161 outdoor education studies and reported that 38% had "mostly positive" outcomes, 26% had "some positive" outcomes, 34% had "non-significant" outcomes and 2% had "negative" outcomes.

What are the most important factors which influence the outcomes?

Meta-analytic methods of summarizing research can be used to consider 'processes' as well as outcomes. The potential influences examined by the meta-analytic studies included program length, participant gender, participant age, participant type (e.g. delinquent, management, etc.), gender mix of group (all male, all female, co-educational), nature of program (e.g. sailing, wilderness, etc.), organisation running the program and quality of the study.

Hattie et al. (1997) found that 36% of the variance in the outcomes could be explained by the above mentioned factors. The outcomes were most

influenced by: (i) the organisation running the program, (ii) the program length (programs greater than 20 days were the most effective) and (iii) the age of participants (ESs for adults were greater than for adolescents).

Cason and Gillis (1994) found that the quality of the study had an impact on the outcomes, with lower quality studies reporting higher ESs. This should warn researchers to be wary of using instrumentation and designs which are below par since they may inflate the results. This concern becomes even more important in the light of how few programs use high quality assessment tools. According to a recent survey only 7% of outdoor educators reported that their programs utilised standard tests as part of their evaluation strategy (Richards, Neill & Butters, 1997).

The Cason and Gillis (1994) study also found a weak but positive relationship between program length and the size of outcome. With regard to age, stronger outcomes were found for younger rather than older adolescents. This is consistent with other research suggesting that older adolescence is a period during which self-concept is somewhat resilient to change (e.g. see Hattie, 1992).

The Hans (1997) meta-analysis of 24 studies of locus of control outcomes found two significant influences. Firstly, programs which had therapeutic goals as their primary purpose had higher ESs than programs with goals such as recreation. Secondly, residential and semi-residential programs were more effective than 'sessional' programs which utilized adventure activities but did not take participants away from their familiar environments overnight.

Although these findings help to show which types of programs produce the greatest changes, the picture is by no means definitive. There is still much unexplained variation in the outcomes. Part of the problem is that empirical research evaluation studies have tended to lack descriptive detail about how the programs were conducted. All three meta-analytic studies commented that this lack of detail limited the extent to which further insights about program processes could be gained. Future empirical studies need to provide more information about the nature of the participants, activities, instructional techniques and other aspects of the program which may influence the outcomes. Such a coming together of what have traditionally been called 'qualitative' and 'quantitative' approaches

represents perhaps one of the more exciting potential developments in this field.

On the other hand, the lack of definitive evidence about what causes the variations in outcomes may signal a need for different lines of investigation. It could be, for example, that certain types of individuals experience greater growth on outdoor education programs. Two recent studies have illustrated some possibilities in this area.

One study looked at the effects of personality on the mood states of participants in an outdoor education program. In particular, this study found that extroverts and introverts had noticeably different mood patterns during the program (Fry & Heubeck, 1998).

Another study has found that school students who reported using productive coping skills (such as 'focusing on the positive', 'working hard' and 'solving the problem') had greater mental health benefits from outdoor education programs than those who reported using non-productive coping skills (such as 'self-blame', 'worrying' and 'ignoring the problem') (Neill & Heubeck, 1997).

These lines of investigation suggest that a greater focus on how individual differences, such as personality or coping styles, operate in the dynamics of outdoor education may offer a path to developing more effective programs.

How does outdoor education compare to other intervention programs?

There are other educational, training and therapeutic intervention programs with which the outdoor education outcomes can be usefully compared. The most famous meta-analytic study (based on 475 studies) reported an average ES of .68 for psychotherapy (Smith, Glass & Miller, 1980) which is noticeably greater than the average outdoor education ESs. This comparison, however, is probably unfair since psychotherapy tends to be conducted with a different clientele than is normally the case for outdoor education programs.

In a meta-analysis of self-concept enhancement programs (based on 89 studies) an average ES of .37 was reported (Hattie, 1992). This ES represents an average of outcomes for self-concept change programs such as psychology courses, behaviour therapy, cognitive therapy, client-centred counselling and so on. As with the outdoor

education meta-analyses, this study found large differences in the effectiveness of different programs. Nevertheless, this comparison suggests that the average outcomes for outdoor education programs are on par with the average outcomes for other programs which aim to enhance people's self-perceptions.

Conclusion: What does it all mean?

After five decades of modern day outdoor education it has become possible to systematically summarize the empirical outcome research. On average, outdoor education programs appear to have small to moderate effects on participants' perceptions of their own qualities and capabilities. This outcome is roughly equivalent to the average outcomes for other types of self-concept change programs.

These results are a positive endorsement of outdoor education as a legitimate and effective educational training method, evidence that has arguably been wanting until now. Outdoor education definitely has something to offer. A particularly impressive strength would seem to be that outdoor education programs can trigger in participants an ongoing cycle of personal growth, as evidence by the positive follow-up findings.

The finding of most concern from the meta-analyses is that taking the average ES is not really a good indicator of all programs, since some programs are much less effective and some programs are more effective. Outdoor education programs are not panaceas as evidenced by the fact that a number of evaluation studies reported negative outcomes.

It is becoming widely acknowledged that more research is needed to examine the psychological and social processes which lead to the outcomes of outdoor education programs. The three outdoor education meta-analyses to date provide some useful clues: (i) It would seem that one of the most critical factors influencing the outcomes is the operating organisation's program design and facilitation; (ii) There is, at last, consistent evidence that longer programs produce slightly better outcomes; (iii) Outdoor education programs with adults achieve larger outcomes than programs with adolescents, however it needs to be borne in mind that many adolescent programs are compulsory whilst adult programs tend to be voluntary; (iv) There is some evidence of higher ESs for adventure therapy approaches which supports the idea of

tailoring programs to individual needs and applying therapeutic psychological principles.

More research is one thing but using the available results to improve program quality is another. Readers are warned against the apparent comfort of the average results. Many programs which claim to deliver personal development through the outdoors could be substantially improved. Part of the problem is that many programs do not use standard testing instruments and place too much reliance on 'happy sheets' (written surveys) to evaluate their effectiveness.

The approach recommended here is that programs utilise the ESs reported in the three outdoor education meta-analyses as benchmarks. Programs can then compare their own outcomes: i) externally, with other programs with similar clientele and objectives, and ii) internally, to outcomes achieved by the same organisation on previous occasions. Gathering disciplined feedback about program effectiveness has been critical for improving quality in mainstream education and with other forms of psychological intervention. This approach has, however, been underutilised in outdoor education.

In the 1990's virtually all outdoor education organisations engage in financial and safety auditing, often with external expertise. Audits of this nature are accepted today as fundamental for running high quality outdoor programs. In a climate of increasing professionalism it seems out-of-kilter that 'educational auditing', using research techniques such as ES benchmarking of outcomes, is yet to find common acceptance. This may be because many people believe that the benefits of outdoor education are best seen by the smiles on participants' faces and the light in their eyes. Maybe this is so. If, however, we genuinely wish to give the best possible experiences to our participants then surely it makes sense to utilise all available tools?

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