

Forest school: evidence for restorative health benefits in young people



Based on research by Jenny Roe, Peter Aspinall and Catharine Ward Thompson.



The background

In developing the strategy for *“Every child matters”*, the New Economics Foundation (NEF 2006) has suggested that natural environments can help promote mental well-being in young people but there is very little empirical evidence to support this link in the U.K. Much of the research to date has been generated in the U.S. suggesting natural settings can promote psychological restoration in children, particularly cognitive restoration. Restoration is a term that refers to the process of recovery from a depleted physiological, psychological and/or social resource. In children, Wells (2000) has shown that

playing in natural settings can improve concentration and act as a buffer to stress (Wells and Evans 2003). Faber Taylor and Kuo (2008) have shown a reduction in the symptom severity of attention deficit hyperactivity disorder (ADHD) in young people who engage in activities in green, open space. Nature is also known to raise mood in children (Faber Taylor and Kuo 2008) and improve self-discipline (Faber Taylor et al 2002). In this research, the evidence base within a U.K. context is extended, specifically, to explore whether forest settings could offer psychological benefits to adolescents with varying emotional needs.

Restorative health benefits in young people



Method

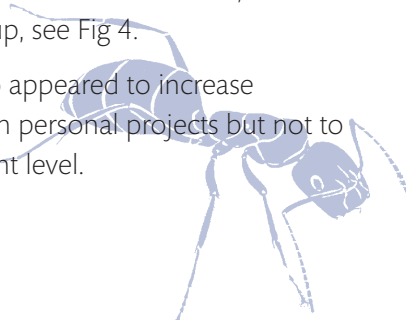
Mental health was explored in young people (aged 10-13) across three behavioural states (as defined by Buchanan et al 2004), ranging from 'no behaviour problem' to 'significant behaviour problem' to 'mental disorder'. Restoration was measured in two different settings, both before and after a typical day at school versus (v.) forest school. Cognitive reflection on project planning was explored using personal project techniques (Little 1983) and affective restoration was explored using a mood scale University of Wales Institute of Science and Technology (UWIST) Mood and Adjective Check List (MACL), (Mathews et al 1990), measuring anger, energy, stress and hedonic tone (happiness). Two studies took place between Winter 2006 and Spring 2007:

- A study of young people in mainstream school, aged 11-13, n=10, exploring outcomes of school v. forest settings between two groups with good v. poor behaviour.
- A study of young people in a specialist residential school, aged 10-12, n=8, exploring outcomes of school v. forest settings in young people with severe behaviour problems resulting in mental disorder.

Mixed methods were employed but this short summary note reports on quantitative results only.

Results

- The school setting significantly depressed mood ($p < 0.05$) across all behaviour groups. The typical outcome pattern in each group can be seen in the measures anger, see Figs 1, 2 and 3. A repeated measures analysis of variance (ANOVA) showed a significant main effect of both setting ($p < 0.01$) and behaviour ($p < 0.05$) on anger with large observed effect sizes. This shows the two settings were having different effects, as was behaviour, on the outcomes.
- The forest setting was advantageous to mood in all behaviour groups but particularly in those children suffering from 'mental disorder', see Fig 3.
- The intensity of the restorative experience was greatest in those with worst mental health, i.e. the 'mental disorder' group, see Fig 4.
- The forest setting also appeared to increase cognitive reflection on personal projects but not to a statistically significant level.



Restorative health benefits in young people

Figures

Note: blue denotes statistically significant change over time.

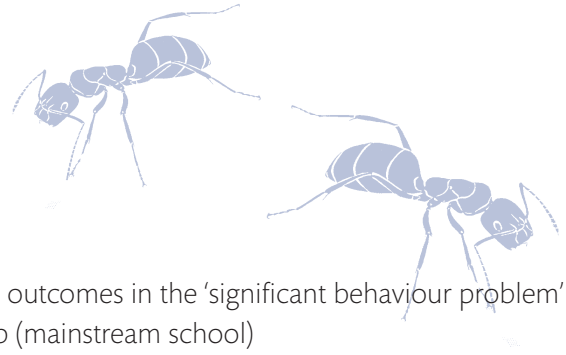


Figure 1: outcomes in the good behaviour group (mainstream school)

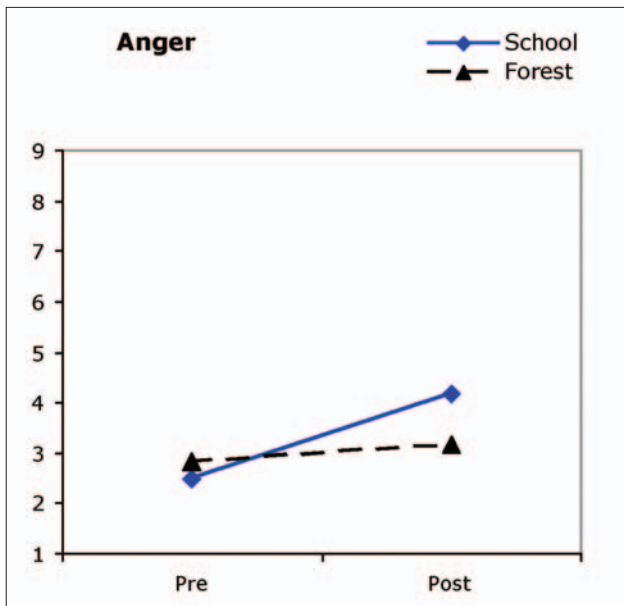


Fig 2: outcomes in the 'significant behaviour problem' group (mainstream school)

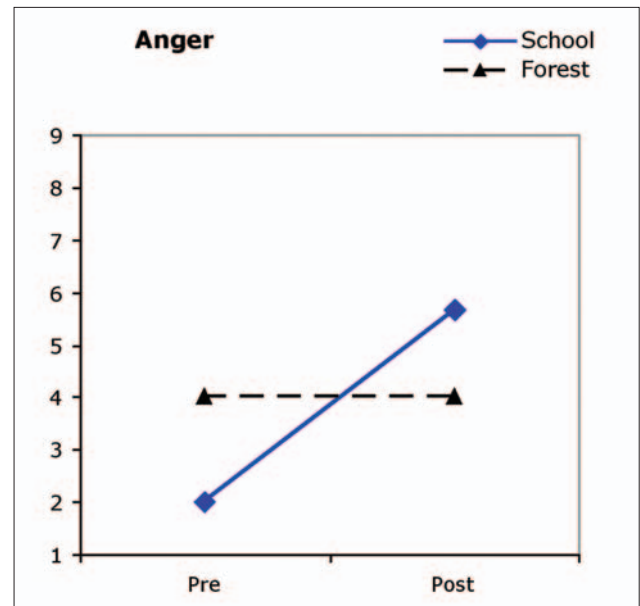


Fig 3: outcomes in the 'mental disorder' group (specialist school)

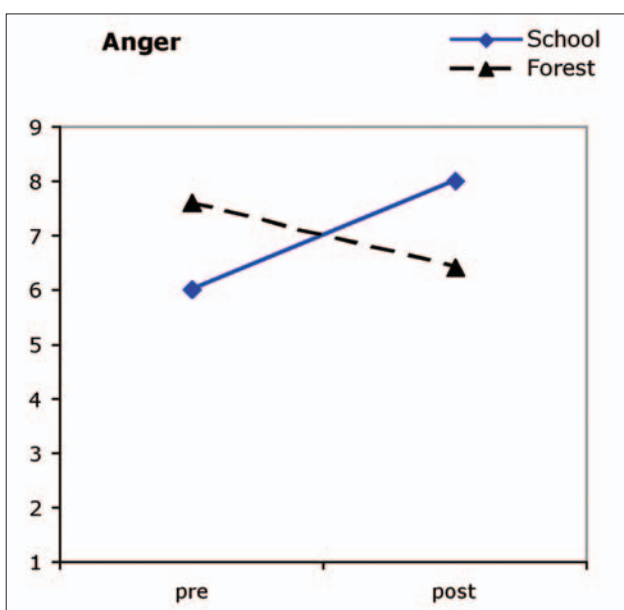
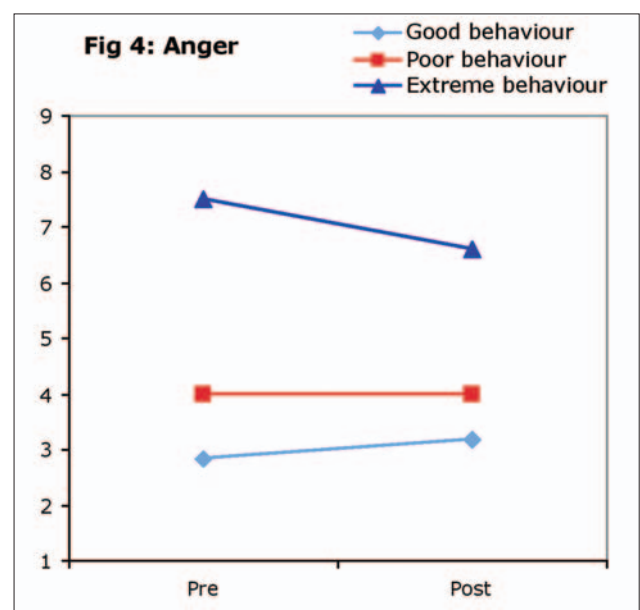


Fig 4: outcomes of forest school across three behaviour states



Restorative health benefits in young people

Limitations

Carrying out research with young people with behavioural and emotional difficulties inevitably imposed practical limitations on aspects of methodology and sample size.

Nonetheless, effect sizes on some mood variables were large and the results replicate restorative outcomes in adults with good and poor mental health (Roe and Aspinall, 2008).

Conclusions

The results were consistent with restorative outcomes in natural settings. The forest setting was advantageous to mood in all three behaviour groups, but the restorative experience was most intense in the 'mental disorder' group. A key finding was the ability of forest settings to stabilise anger across all three groups. Anger in young people is linked in the literature with reduced physical and mental health, depression and increased anti-social behaviour (Kerr and Schnieder 2008). This study suggests forest school can help control anger in young people at risk, opening a potential door to improved learning experiences and rehabilitation. Further research is required to explore longer-term behaviour and learning outcomes. The full study can be found in Roe (2008).

References

Buchanan, A. and Ritchie, C. (2004). *'What works for troubled children'* (revised edition). London: Barnardo's/Russell Press.

Faber Taylor, A., Kuo, F. E. and Sullivan, W. (2002), *'Views of nature and self discipline: evidence from inner city children'*, *Journal of Environmental Psychology*, 22: 49-63.

Faber Taylor, A. and Kuo, F. (2008), *'Children with Attention Deficits Concentrate Better After Walk in the Park'*, *Journal of Attention Disorders*, August 25, 2008.

Kerr, M. A. and Schneider, B. H. (2008), *'Anger expression in children and adolescents: a review of the*

empirical literature' *Clinical Psychology Review*, 28(4): 559-77.

Little, B. R. (1983) *'Personal projects: a rationale and method for investigation'* in *Environment and Behavior*, 15: 273-309.

Mathews, G., Jones, D. M. and Chamberlain, A. G. (1990) *'Refining the measurement of mood: the UWIST Mood Adjective Checklist'* in *The British Journal of Psychology*, 81: 17-42.

New Economics Foundation (2006), *'Review of the environmental dimension of children and young people's well-being'*. A report for the Sustainable Development Commission

Roe, J. (2008) *'The Restorative Power of Natural and Built Environments, Doctoral thesis, Heriot Watt University.'*

Roe, J. and Aspinall, P. (2008), *'Walking in urban and rural settings and its restorative benefits for adults with good and poor mental health'*, International Association for People-Environment Studies (IAPS) 20th Conference, Rome.

Wells, N. M. and Evans, G. W. (2003) *'Nearby Nature: A buffer of life stress among rural children'*, *Environment and Behavior*, 35 (3), 311-330.

Wells, N. M. (2000), *'At home with nature: effects of "greenness" on children's cognitive functioning'*, *Environment and Behavior*, 32 (6), 775-795.

Contact

National Health Advisor

Tel: 0131 3146187

Email: kevin.lafferty@forestry.gsi.gov.uk

Central Scotland Health Advisor

Tel: 01698 368555

Email: hugh.mcnish@forestry.gsi.gov.uk

Highland Health Advisor

Tel: 01349 862144

Email: angus.mcwilliam@forestry.gsi.gov.uk

www.forestry.gov.uk/centralscotland