Routledge
Taylor & Francis Group

Journal of Adventure Education and Outdoor Learning

ISSN: 1472-9679 (Print) 1754-0402 (Online) Journal homepage: https://www.tandfonline.com/loi/raol20

Evaluation of a surfing programme designed to increase personal well-being and connectedness to the natural environment among 'at risk' young people

Amanda Hignett, Mathew P. White, Sabine Pahl, Rebecca Jenkin & Mod Le Froy

To cite this article: Amanda Hignett, Mathew P. White, Sabine Pahl, Rebecca Jenkin & Mod Le Froy (2018) Evaluation of a surfing programme designed to increase personal well-being and connectedness to the natural environment among 'at risk' young people, Journal of Adventure Education and Outdoor Learning, 18:1, 53-69, DOI: 10.1080/14729679.2017.1326829

To link to this article: https://doi.org/10.1080/14729679.2017.1326829

Published online: 19 May 2017.

Submit your article to this journal

Article views: 1637

View related articles

View Crossmark data

Citing articles: 3 View citing articles

Full Terms & Conditions of access and use can be found at
https://www.tandfonline.com/action/journalInformation?journalCode=raol20

JOURNAL OF ADVENTURE EDUCATION AND OUTDOOR LEARNING, 2018
VOL. 18, NO. 1, 53–69
https://doi.org/10.1080/14729679.2017.1326829

Routledge
Taylor & Francis Group

Check for updates

Evaluation of a surfing programme designed to increase personal well-being and connectedness to the natural environment among 'at risk' young people

Amanda Hignett[a], Mathew P. White[b], Sabine Pahl[a], Rebecca Jenkin[b] and Mod Le Froy[c]

[a]School of Psychology, Plymouth University, Plymouth, UK; [b]European Centre for Environment and Human Health, University of Exeter Medical School, Truro, UK; [c]GB Boardriders Community Interest Company, Marazion, UK

ABSTRACT

Outdoor activities can be an important complement to classroom learning, especially for children/young people excluded, or at risk of exclusion, from mainstream schooling. The current research explored the impact of a 12-week surfing programme among such a group in the UK. Pre-post data on physiological health (heart rate (HR)/blood pressure), self-reported well-being (life and domain satisfaction), connectedness (e.g. to nature, school), environmental awareness (e.g. role of sand dunes) and teacher evaluations (e.g. behaviour) were collected. Results found significant drops in HR (suggesting improved fitness), increased satisfaction with appearance, more positive attitudes towards school and friendships, greater environmental awareness and more positive teacher evaluations, post-intervention. A lack of findings in other domains suggests these results were not due to participants simply conforming to demand characteristics. Overall, the results suggest that surfing interventions could have important benefits for vulnerable young people who struggle with mainstream schooling. The need for future research using control groups and longer term follow-up is discussed.

KEYWORDS

Surfing intervention; young people; well-being; bluespace; Not in Education; Employment, or Training (NEET)

The current research aimed to conduct a preliminary evaluation of an existing surfing programme for young people (aged 12–16) already excluded, or at risk of being excluded, from mainstream school. The 'Surf to Success' programme was designed and implemented in Cornwall, England, by GB Boardriders Community Interest Company and developed in close collaboration with local schools and Cornwall County Council. Although Cornwall is at the heart of the surfing scene in England, much of the surfing, especially in the summer, takes place by visitors, and the teaching staff with whom we worked on this project reported that many of their students, especially in the more deprived areas of the county, felt that their local beaches were 'not really for us' and had little connection with their local environment.

Further, although ostensibly a 'free' activity, the cost of equipment (board, leash, etc.), a wetsuit (needed the whole year round in English waters), travel and lessons for novices, was also cited by teaching staff as a reason why 'at risk' youngsters in Cornwall were not engaged in surfing despite the possibilities being, often literally, on their doorstep. As well as providing all of these services at no expense to the students, the 'Surf to Success' programme was about more than just getting at risk youngsters into the water. Specifically, it adopted an ethos whereby it aimed to build (a) self-esteem and psychological well-being though both the mastery of a new (societally 'cool') activity

CONTACT Mathew P. White mathew.white@exeter.ac.uk
© 2017 Institute for Outdoor Learning

and the social bonding that can take place while learning to surf in a group; (b) a connection to and respect for the natural environment in which the activities took place; and (c) more positive attitudes towards, and, crucially, behaviours at their respective schools/educational establishments, through the recognition that the schools were trying to offer them alternatives to the classic classroom approach which all of the children on the programme had already demonstrated difficulty with. The aim of the current article was to follow a cohort of participants through a single season of the programme to see to what extent it was able to achieve these goals.

Background

Cornwall is the poorest region of England and one of the poorest in the whole of Europe (Eurostat, 2014). Few people are still employed in the two traditional main industries, mining and fishing, and low paid seasonal agricultural and tourism work dominates the local economy (SQW Group, 2012). This has led to areas of relatively high deprivation and high rates of various social problems. One issue of concern is the number of children and young people being excluded, or at risk of being excluded, from mainstream schooling. Exclusion is often the result of challenging behaviour that poses a risk to other pupils or staff and those excluded are then referred to specialist educational establishments known as Short Stay Schools (SSSs, or Pupil Referral Units at the time the current research was conducted). Although the behaviour of some individuals is related to diagnosed conditions such as attention deficit activity disorder (ADHD), there is also considerable evidence that exclusions are more likely to take place in areas of high deprivation, such as Cornwall (Department of Education, 2011).

Apart from the obvious problems for the young people, their families and schools at the time, these individuals are also at particular risk of becoming 'Not in Education, Employment, or Training' (NEET) when they reach age 16 (Bynner & Parsons, 2002). Sadler, Akister, and Burch (2014), for instance, found 40% of young people in England who had been permanently excluded from school were NEET for over 12 months, compared to just 6% of those who had not been excluded. The consequences of this can be detrimental to the health and well-being of the young people concerned, including increased risk of depression and mental health problems compared to older unemployed people (Public Health England, 2014), and having a higher risk of being involved in crime and drug use (Powis, Griffiths, Gossop, Lloyd, & Strang, 1998). There are also negative social and financial implications for society in general with the average cost of each young NEET to the economy estimated as being £56,301 (Coles, Godfrey, Keung, Parrott, & Bradshaw, 2010).

The aim of the current work was to evaluate a surfing programme that aimed to work with a cohort of young people excluded, or at risk of being excluded, from school to try and increase their feelings of self-worth and respect for others and the environment, and ultimately increase their chances of entering education, employment and training. Before discussing the programme in more detail, we first of all consider the background as to why learning to surf, in particular, may be an interesting possibility for achieving these goals.

Positive effects of engaging with the natural environment

There is increasing evidence that exposure to natural environments, in general, can have a beneficial effect on children and young people's mental and physical health (Chawla, Keena, Pevec, & Stanley, 2014; Corraliza, Collado, & Bethelmy, 2012; Faber Taylor & Kuo, 2009; Faber Taylor, Kuo, & Sullivan, 2002; Fjørtoft, 2004; Wells & Evans, 2003). Moreover, the greatest beneficiaries are likely to be those from lower socio-economic backgrounds (Maas et al., 2009; Mitchell & Popham, 2008; Pretty et al., 2009), which is often the case for those classified as NEET (Public Health England, 2014). Theoretical work suggests these benefits derive from the ability of natural environments to benefit individuals in terms of indices of (a) physiological stress (e.g. blood pressure; Pretty, Peacock, Sellens, & Griffin, 2005), (b) cognitive abilities (e.g.

working memory; Berman, Jonides, & Kaplan, 2008; Berto, 2005; Kaplan, 1995) and (c) emotional states (e.g. positive mood; Ulrich et al., 1991). Exposure to natural environments is also often associated with increased connectedness to nature (Mayer, Frantz, Bruehlman-Senecal, & Dolliver, 2009) which is a predictor of ecological behaviour and subjective well-being (Mayer & Frantz, 2004) and promotes positive environmental attitudes and behaviours thought to be important in addressing current environmental problems (Liefländer, Fröhlich, Bogner, & Schultz, 2013).

This evidence is based primarily on research established with regard to natural green space environments such as parklands or woodlands and these landscapes have been successfully utilised for interventions with young people. For instance, Forest Schools are often run for children who are struggling at school (O'Brien & Murray, 2007; Roe & Aspinall, 2011a, 2011b) and have been found to increase social skills and confidence in children (O'Brien & Murray, 2007), increase children's trust towards their peers and school staff (Roe & Aspinall, 2011a) and may provide an opportunity for environmental education (Maynard, 2007). Further, there is some evidence that utilising an outdoor learning approach with disaffected school age children can lead to improved behaviour and academic achievement (Fox & Avramidis, 2003) as well as improved school attendance (Price, 2015).

Engaging with the marine environment and surfing

Within the literature on natural environments and their relationship with human health and well-being, there is also growing recognition of the beneficial effects of bluespaces, such as rivers, lakes and the sea (Depledge & Bird, 2009) for both adults (Völker & Kistemann, 2011; Wheeler, White, Stahl-Timmins, & Depledge, 2012; White et al., 2010), and children and young people (Ashbullby, Pahl, Webley, & White, 2013; Tapsell, Tunstall, House, Whomsley, & Macnaghten, 2001; Wood et al., 2016). On the one hand, these places are seen as particularly relaxing and good for reducing stress and inducing positive emotions (Cocker, 2012; MacKerron & Mourato, 2013; White, Pahl, Ashbullby, Herbert, & Depledge, 2013). On the other hand, for many they also offer the opportunity to engage in, potentially strenuous, physical activities such as kayaking, sailing, open water swimming and, of particular interest for the current research, stand up board-riding or 'surfing' (Papathanasopoulou et al., 2016; White et al., 2016; White, Pahl, Wheeler, Fleming, & Depledge, 2016; White, Wheeler, Herbert, Alcock, & Depledge, 2014).

Surfing, both the stand-up and prone (or body boarding) versions, has received increased academic attention in recent years. Much of this work has focused on issues of (adult) identity and how a pursuit traditionally seen as the realm of a 'cool', young, fit, white, male, countercultural clique is gradually becoming normalised (e.g. there are now an estimated 23 million surfers worldwide; Anderson, 2015), and diversifying to include multiple identities (e.g. female surfers and life savers, motherhood, ethnicity; lisahunter, 2015; Nemani, 2015; Olive, McCuaig, & Phillips, 2015; Spowart, Burrows, & Shaw, 2010) and practices (wave kayaking, body boarding, stand-up paddle boarding; Anderson, 2015). A consistent theme in this work is the surfer's experience of heightened positive emotion during (or shortly after) the act of surfing, referred to as the 'stoke'. In Evers' words, '[i]f one is stoked, they experience a fully embodied feeling of satisfaction, joy, and pride. You tingle from the head to your toes … Stoke is an ongoing affective state … and it varies according to intensity and duration' (2006, p. 230). Although these emotions are in some sense purely personal, the recognition of someone experiencing them is widespread in the surfing community and witnessing someone else riding a great wave often brings a smile to the observers face as well. This is nicely encapsulated by Nemani (2015), who after pulling off an aerial manoeuvre on her body board (i.e. generating enough speed to leave the face of the wave and make a successfully re-entry) reports hearing 'someone yell "Woooo hooooo" as I complete a full loop and land heavily on my board back onto the face of the wave. Ahead of me a line of surfers

are paddling to get out of my way; I note some are smiling, another has his arms up in the air cheering my manoeuvre' (p. 84).

Thus, although surfing may be seen as a fundamentally 'selfish endeavour' (Booth, 2001, p. 84), there can also be a strong camaraderie among the surfing community. In short, we might expect any intervention that supports young people learn to surf to result in both positive emotional states and also potentially feelings of camaraderie and friendship, both of which may be particularly important to develop among young people faced with exclusion from mainstream school. Indeed, in one recent evaluation of a surfing intervention with young people with ADHD diagnoses, initial results suggested positive outcomes including increased well-being based on self-report measures by participants, and feedback from parents and referrers to the scheme (Godfrey, Devine-Wright, & Taylor, 2015).

In sum, the current study aimed to build on earlier work in the field of young people and natural environments, as well as work with adult engagement with surfing in particular, to investigate whether a bespoke 12-week surf programme might show a range of benefits to children and young people excluded, or at risk of being excluded from, mainstream school. Key outcomes were (potential) changes in physical fitness, self-reported life and domain satisfaction (i.e. self-reported well-being), connectedness to nature and other life domains, environmental awareness and teacher reports of behaviour. Where possible, the youth section of the British Panel Household Survey (BHPS) was used to measure participant well-being (Freed, Brice, Buck, & Prentice-Lane, 2010) to enable us to compare the life and domain satisfaction of our sample to nationwide norms.

Method

Description of the surf program

GB Boardriders' Surf to Success programme specifically targets young people between the ages of 12 and 16 years, who have either been excluded from mainstream schooling and therefore attend SSSs, or attend mainstream schools, but are considered at risk of exclusion. The programme consists of 12-weekly lessons at a local beach, where the young people are primarily taught to surf, but are also taught about issues of environmental awareness and sustainability (*in situ*). A core philosophy of the programme is to foster connectedness to the natural, and especially the marine, environment. The team are qualified in surfing tuition, life-saving and outdoor education and believe it is important that the programme is closely integrated with the young people's in-school activities. Much of the funding for the programme came from Ecominds, the environmentally focussed strand of the mental health charity Mind. Funding was also provided by the local County Council, who recognised the programmes' high standards of care and education.

As a sustainable, not for profit, organisation offering outdoor interventions, GB Boardriders felt that surfing had the potential to benefit these particular young people as it was a completely immersive experience, which involved both personal challenge and tight social bonding, within a highly structured, yet at the same time fundamentally free, environmental context. Many of the participants had previously exhibited physically aggressive behaviours, potentially reflecting pent-up energy, and surfing offered them the chance to expend much of this physical energy as paddling out, maintaining position in the line-up and paddling for waves are all physically demanding activities. Moreover, the extremely positive 'stoke' described by surfers can be an incredibly strong emotion, and may be able to counteract the more usual strong emotions of anger and frustration, more familiar to many in this cohort. Moreover, the way in which the lessons, or sessions, were delivered was less didactic than traditional classroom settings, and coaches worked to deliver an essentially experiential educational experience. All of these arguments convinced the funders, the local council and the schools that offering this cohort of pupils the opportunity to take part in the programme may be associated with a range of potential benefits.

The current study concerns an evaluation of one year of the programme (i.e. between March and July 2011). SSS surf sessions (i.e. with young people already excluded from mainstream settings) were held one morning a week and pupils were taught in small groups of up to five pupils with one instructor and one teaching assistant (as per school protocol). Each of the community schools had an after-school session and were taught in groups of between 12 and 20 with two surf coaches. Environmental awareness activities, including beach cleaning, took place before and/or after the surfing session.

Participants and design

Fifty-eight school pupils (10 female) aged between 13 and 16 years (M = 14.25 years old) took part in the study. All were attending schools in Cornwall, UK. Nineteen were pupils of SSSs (excluded from mainstream schools), with many experiencing a range of social, emotional and behavioural difficulties. The other 39 participants were pupils of mainstream schools; however, they were only eligible to take part in the Surf to Success programme if they were judged to have similar difficulties and be at risk of exclusion. Selection was made by referral from teachers following a criterion set out by the local County Council. Prior to taking part in the Surf to Success programme, 18 participants reported never having surfed before, 8 had surfed a few times (less than 10 times) and 27 had surfed more than 10 times. Seventeen participants had engaged with the Surf to Success programme during previous years. All data (apart from teacher ratings) were collected during individual interviews with each participant approximately one week before the first surf session (T1) and one week after the last session (T2). All interviews were conducted, and physiological and questionnaire data collected, by the lead author. As a university research assistant, she had not met any of the participants before the study, but endeavoured to engage with as many of them as possible during preparatory school visits before data collection began in order to build relationships and develop trust. Due to varying attendance, this was not possible for all pupils. Further, varying attendance, common among this cohort, was the primary reason why we were unable to follow up with all participants during the post-test phase.

Outcome measures physiological measures

As a proxy indicator of fitness, resting HR and both systolic blood pressure (SBP) and diastolic blood pressure (DBP) were recorded using an Omron M7 blood pressure monitor with a dual-sized cuff (22–42 cm) which automatically inflated to the optimal level. While two measures were taken during each interview (at approximately 5 min (Measure 1: M1) and 7 min (Measure 2: M2), the combined mean was used in our analysis to increase reliability. This was made possible by high positive correlations between the two readings at each time point (HR: M1, $r = .88$, M2, $r = .83$; SBP: M1, $r = .59$, M2, $r = .78$; DBP: M1, $r = .60$, M2, $r = .66$).

Self-reported well-being

The relevant section of the Youth version of the British Panel Household Survey (BPHS-Y) was used to measure participant well-being (Freed et al., 2010). This longitudinal panel survey has been running in the UK since 1991 (now known as the UK Longitudinal Household Panel Survey) and aims to further the understanding of social and economic change at the individual and household levels in the UK.

Participants were asked to rate how they felt about five different life domains (school work, family, appearance, friends and school) as well as their life as a whole, on a scale from 1 ('great') to 7 ('very bad'). In line with the BPHS-Y, each response was also represented pictorially by a small face icon to aid understanding. Scores were reversed before being analysed so that higher values represented greater well-being.

Connectedness

In order to determine how connected participants felt to different areas of their lives, we adapted and extended the 'Inclusion of Nature in the Self' (INS, Schultz, 2002) scale, itself adapted from the Inclusion of Others in the Self scale (Aron, Aron, & Smollan, 1992). The original INS asks people to indicate their relationship with the natural environment by choosing one of seven pictures of increasing overlapping circles—one circle symbolising the self and the other nature—representing increasing interconnectedness with nature. As the pictorial nature of the scale makes it suitable for use with children/young people, we used the same format to measure seven additional domains which aimed to determine how connected participants felt to certain aspects within their life. These were their family, their friends, their local community, the marine environment (beach), the woodland environment (woods), the school they go to and the world as a whole. Participants were instructed to rate how connected they felt with each item by circling the picture that best described their relationship with the particular item. For scoring, these pictures were all allocated a number from one to seven with 'one' reflecting the least overlapping circles, and 'seven' the most overlapping. While we did not pilot this adapted scale, several of the domains we included were the same as those we were also measuring using the items from the BPHS-Y.

Mood and attitudes towards surfing

After completion of the survey items, participants were interviewed talking, in their own words, about their school, their free time (outside of school) and (at T2) their views on the surf programme. We asked what they were (and were not) looking forward to about school (pre-surfing questions), or had/had not enjoyed about school (post-surfing questions) in order to see whether participation in the surf programme was spontaneously mentioned. These questions, along with one about what they do in their free time, were analysed quantitatively with the purpose of measuring (potential) changes in positive and negative mood following the surf programme. At T2, participants were asked what they had/had not enjoyed about the surf programme and these questions were analysed qualitatively, e.g. looking at themes and typical statements. The interviews were recorded using a video camera and then watched and coded later.

For the quantitative analysis, an adapted version of the *Parent-Child Interaction System* (*PARCHISY*; Deater-Deckard, Pylas, & Petrill, 1997) was used. The PARCHISY was developed by the Institute of Psychiatry to monitor interactions between parents and children with emotional/behaviour problems. Its focus is on the number and strength of positive and negative mood and behaviours during a period of observation. Our adapted version of the PARCHISY only included evaluations of positive affect (from '*1) No positive affect displayed*' to '*7) Constant positive affect—smiling and laughing throughout task*') and negative affect (from '*1) No negative affect displayed*' to '*7) Constant negative affect displayed—always scowling/frowning, voice always in harsh tones*') and did not include other dimensions such as 'Non-responsiveness to Mother' as these were less relevant in the current context.' Participants were firstly rated on their positive and negative affect on a 7-point scale for the interview questions relating to both school and free time separately during each interview. A score of 1 signified that no affect (either positive or negative) was displayed and a score of 7 reflected positive or negative affect displayed constantly throughout the interview. To obtain a single score, negative scores were then subtracted from the positive ones. This provided an overall 'affect balance' score (Bradburn, 1969) for each domain at each time point. Two coders, the first author and a researcher naïve to the study, viewed and coded all interviews using this approach to aid robustness of interpretation and any disagreements were resolved following discussion.

Environmental knowledge

In order to assess environmental awareness, the programme deliverers provided four questions representing the environmental themes they discussed as part of the programme. It should be noted that while more than these four areas were covered during the intervention, it was felt, in

discussion with teachers, that asking more questions may demotivate pupils who often did not enjoy being 'tested'. Specifically, the four questions concerned: carbon footprints; bio-diesel (with which the van taking them to the beach was fuelled); ecological function of sand dunes; and beach litter decay rates. Because questions encouraged open-ended answers, e.g. 'Can you tell me what a carbon footprint is?', answers were coded in terms of their approximate level of accuracy: 0—no correct elements; 1—some vague idea of some elements; 2—some elements correct but confused or irrelevant concepts also mentioned; 3—very clear idea of the basic concepts. Scoring was developed with advice from GB Boardriders.

Global programme evaluation

Two final questions during the interview asked pupils if they enjoyed surfing with GB Boardriders and if they would recommend the programme to a friend with response options coded as 0, 'Not much'; 1, 'A little'; 2, 'Definitely'. Again faces accompanied the scale to aid understanding.

Teacher observations

The Social and Emotional Aspects of Learning (SEAL) questionnaire, already used by teachers to monitor pupils' progress, was filled out by the teachers. This 25-item measure uses teachers' observations of five key domains: self-awareness, social skills, empathy, motivation and managing feelings. Teachers of the participants completed the measure at both T1 and T2 independently and gave their completed sheets to the research team for analysis.

Procedure

The evaluation protocol was developed by the second and third authors and approved by The Faculty of Science and Technology Ethics Committee at Plymouth University. All data (including interviews, questionnaire data, etc.) were subsequently collected by a single research assistant (the first author) in schools, and verbal consent was gained from head teachers and teachers before starting. Written consent was gained from all of the participants, and their parents/legal guardians also had the option of withdrawing them from the research.

T1 data collection was carried out before the surfing programme began. The researcher carried out the data collection with each participant individually. First, the researcher gave the participant full details of the procedure, before obtaining informed consent, demographic information and details of any previous surfing experience.

Participants were asked to complete the two pre-test questionnaires (well-being and connectedness). Afterwards, their blood pressure and HR were recorded. These measures were taken after the questionnaires had been completed so that the participants had been sitting down in a relaxed position for roughly 5 minutes before the readings were taken. A second reading was taken after a further 2 min. Between these two time points, participants were asked to sit quietly. Afterwards, participants took part in the interview, which involved questions about school and free time, their attitudes towards the surfing programme and the four environmental knowledge questions. It was made clear to participants that this was not a test. Following the 12-week programme, the procedure was repeated. At the end, the researcher thanked the participant for taking part, discussed the answers to the questions and then debriefed the participants.

Statistical analysis

Preliminary analysis investigated whether there were differences in T1 scores, and analysis of change scores over time, as a function of school type (SSSs vs. community schools) and surfing experience (none vs. some prior experience) to see if these variables affected the results. No substantive differences were found suggesting that the whole sample could be analysed

collectively. No parents/legal guardians chose to withdraw their child from the research. Fifty-eight pupils were interviewed at T1, and of these, 40 (69%) also participated in evaluations at T2. A further five participants only participated at T2; these pupils were only included in analysis for the post-surfing questionnaire. Further variations in N (where N refers to the participant numbers in the statistical analysis that follows) are due to missing data for specific variables which in some cases (e.g. physiological data) were relatively large.

Results

Physiological measures

Overall means and standard deviations for all variables can be seen in Table 1. Paired *t*-tests carried out on the physiological data for those who had data at both T1 and T2 indicated a significant drop in resting HR from T1 (M = 72.35, SD = 11.92) to T2 (M = 68.23, SD = 10.46), $t(29) = 2.22$, $p = .035$, indicative of improved fitness. There were, however, no significant changes for either SBP, $t(29) = 0.71$, $p = .483$, or DBP, $t(29) = 0.56$, $p = .581$.

Self-reported well-being

Paired-samples *t*-tests comparing each individual domain from the BPHS-Y found that only satisfaction with appearance was significantly better at T2 (M = 5.58, SD = 1.03) than T1 (M = 5.14,

Table 1. Means (M) and standard deviations (SD) for all key measures, Time 1 (pre-surfing) and Time 2 (post-surfing, +12 weeks).

	Time 1 (pre-surfing)		Time 2 (post-surfing)	
	M	(SD)	M	(SD)
Physiological data				
Heart rate	72.79	(11.84)	68.23	(10.46)
Systolic blood pressure	105.50	(9.10)	104.73	(9.62)
Diastolic blood pressure	62.64	(8.46)	61.97	(8.04)
Well-being questionnaire				
School work	5.19	(1.04)	5.47	(0.94)
Family	6.00	(1.16)	6.06	(1.01)
Appearance	5.13	(1.00)	5.58	(1.03)
Friends	6.09	(0.99)	6.44	(0.70)
School	5.75	(1.23)	5.94	(1.19)
Life	5.79	(1.17)	5.97	(0.77)
Connectedness				
Family	4.88	(1.73)	5.03	(1.40)
Nature	3.89	(1.75)	4.00	(1.96)
Friends	5.40	(1.46)	5.81	(1.04)
Local community	3.68	(1.54)	4.03	(1.75)
Marine (beach)	4.60	(1.80)	4.69	(1.64)
School	3.70	(1.51)	4.28	(1.65)
The world as a whole	4.53	(1.51)	5.81	(1.47)
Environmental knowledge				
Carbon footprint	0.95	(1.13)	1.67	(1.27)
Biodiesel	0.45	(0.86)	1.42	(1.28)
Sand dunes	0.02	(0.15)	0.18	(0.58)
Litter decay	0.83	(1.19)	2.06	(1.25)
Teacher assessment				
Self-awareness	17.56	(3.99)	18.92	(3.55)
Managing feelings	15.91	(4.06)	17.00	(4.76)
Motivation	15.50	(4.08)	17.58	(4.36)
Empathy	16.73	(3.41)	17.67	(4.48)
Social skills	16.52	(3.66)	19.26	(3.63)

These data include all participants and thus means in the text, where associated with repeated measures analysis, may be different due to pair-wise deletion of missing values.

SD = 1.10), $t(35) = 2.17$, $p = .037$. Satisfaction with Friendship showed a marginally significant improvement from T1 (M = 6.11, SD = 1.09) to T2 (M = 6.44, SD = 0.70), $t(35) = 1.83$, $p = .076$. There were no significant changes for the domains of school work, family, school or life in general (all t's <1.235, all p's >.225); however, for all but family the means were in the direction of increased satisfaction. To put these results in context, we also plotted the results against the national norms for this age group using data from the BHPS-Y survey (see Figure 1). Although we were unable to compare the results statistically, they are nonetheless informative. For instance, for satisfaction with life overall, appearance and friends, the participants appear below the national norm at T1 but approximately at, or even above in the case of appearance, the national norm at T2. Intriguingly satisfaction with school appears higher at both T1 and T2 than national norms but this may be the results of being asked this question in a school context.

Connectedness

Analysis of the our connectedness scale items (Figure 2) found significant improvements in connectedness towards school, $t(35) = 2.39$, $p = .023$ from T1 (M = 3.64; SD = 1.38) to T2 (M = 4.28; SD = 1.65). Friendship, $t(35) = 1.72$, $p = .095$, also showed a marginally significant improvement between T1 (M = 5.42, SD = 1.38) and T2 (M = 5.81, SD = 1.04), consistent with the self-reported domain satisfaction results for friendship. There were no significant changes in connectedness towards family, nature, the local community, the beach or the world (all t's <1.582, all p's >.122).

Mood and attitudes towards surfing

Next, we analysed the interview questions to find out whether pupils spontaneously mentioned participating in the surf programme when asked what they were looking forward to about school (pre-surfing question), or had enjoyed about school (post-surfing question). Before surfing, 4 out of 46 pupils mentioned surfing (8.7%), and after surfing, 8 out of 32 pupils mentioned surfing (25%). Thus, although the interviews were associated with the surf programme, this does not seem to have made the programme especially salient.

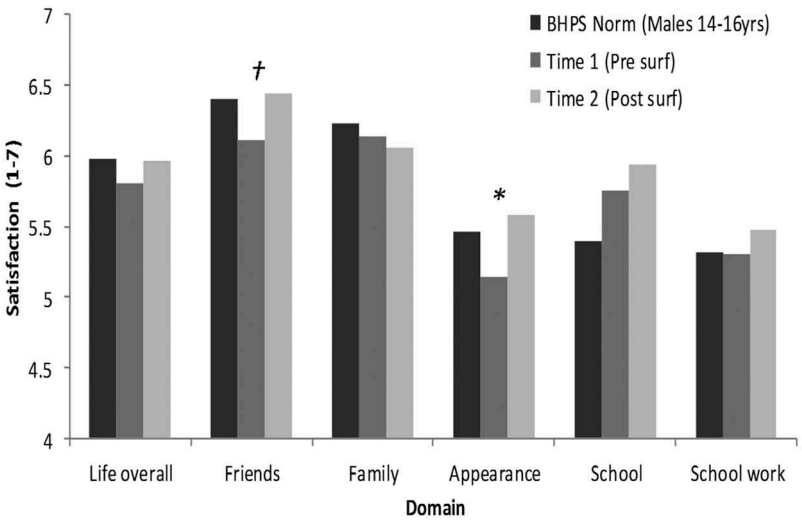

Figure 1. Mean life and domain satisfaction for BHPS norms, and pre-intervention (Time 1) and post-intervention (Time 2). Significant differences between time points are indicated: $^{\dagger}p < .10$; $^{*}p < .05$.

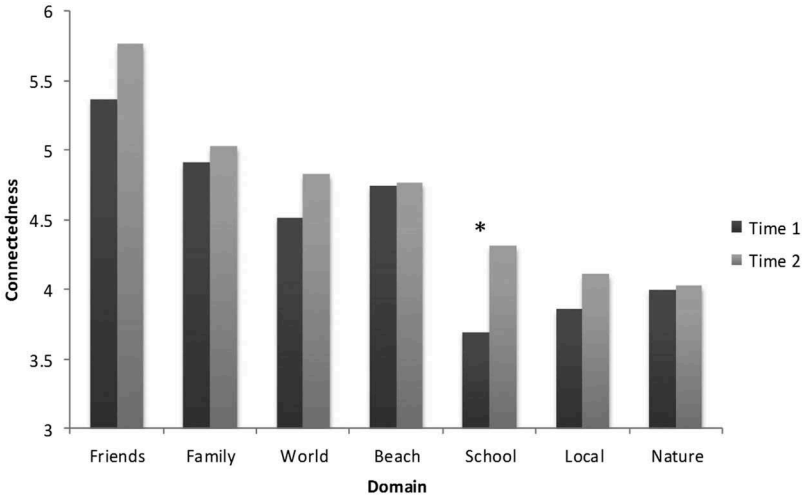

Figure 2. Mean differences in connectedness pre-surfing (Time 1) and post-surfing (Time 2). Significant differences between time points are indicated: *$p < .05$.

Next, we explored whether there were any changes in mood, using the affective balance scores from the video-coding, with a 2 (time: pre/post) by 2 (domain: school/free time) repeated measures analysis of variance. There was a marginally significant effect of time $F(1,27) = 4.018$, $p = .055$, with pupils exhibiting more positive attitudes at the second time of interviewing (M = 1.07; SD = 0.29) than the first (M = 0.11, SD = 0.47). There was a significant main effect of domain $F(1,27) = 8.213$, $p = .008$, with attitudes towards school (M = 1.00, SD = 0.43) actually more positive than those towards free time ($M = 0.18$, $SD = 0.22$). The interaction was not significant $F(1,27) = .031$, $p = .861$, suggesting that the change was roughly comparable in the two domains. Although apparently supportive of the contention that the surf programme raised emotional well-being across both domains, caution needs to be exercised in interpreting this data as we cannot rule out the possibility that the reason why pupils exhibited more positive affect during the second interview was due to greater researcher familiarity.

During the T2 interview, we also asked pupils what they felt about the programme, what was good and what was not so good. In terms of positives, examination of the statements suggested that the programme seemed to fulfil different needs for different individuals. Some focussed on the particular skills they learnt, some on the pleasure of the feeling of surfing, and other focussed on the friendship bonds. Figure 3 shows that the majority of comments (27) focussed on the fun or enjoyment of surfing, for example, '[y]eah that was pretty fun because we had contests who could get wiped out the most, and the biggest wipe-outs and stuff, yeah that was fun.'

There were 23 comments that focussed on the enjoyment of surfing and technical competence gained from the sessions, 'learning to keep your feet on the board, keep your balance', 'it's probably catching the wave because that's what it's all about.' Some students specifically mentioned pleasure they derived from being in the sea, 'just getting in the water really, (I) love the water.'

Negatives were also mentioned but featured less often ($N = 18$). The most common negatives mentioned were the weather, 'some of the weather when it was raining and windy', the sea, 'the sea was really rough, it was a bit scary', and getting changed out of the wetsuits (in the cold), 'the getting changed part.'

These negatives will be recognised by anyone who has learned to surf and their elicitation shows the pupils were not inhibited in discussing the cons as well as the pros. This raises the

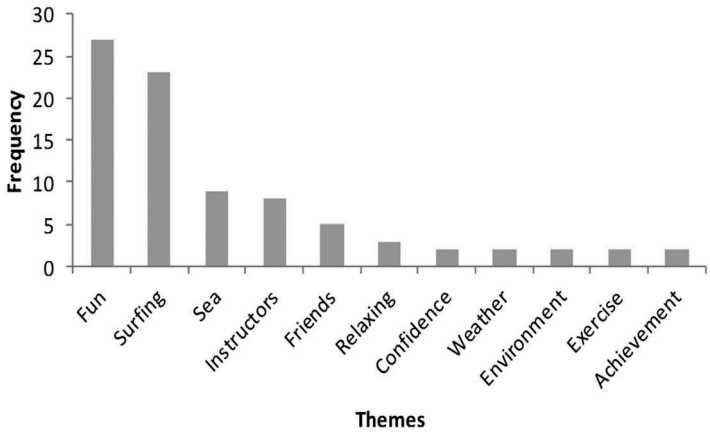

Figure 3. Frequency with which different positive themes were mentioned when discussing surfing. Individual students may have commented on more than one category.

possibility that the pupils may have ultimately enjoyed greater sustainable well-being from an activity that was demanding and challenging (Bandura, 1997).

Environmental knowledge

Paired *t*-tests carried out on the four environmental questions indicated significant improvements in knowledge for three of the four questions. Students were more aware of the time it takes for litter to breakdown in the sea at T2 (M = 2.04, SD = 1.26) than T1 (M = 0.89, SD = 1.23), $t(27) = 4.22$, $p < .001$. Their knowledge regarding biodiesel was also better at T2 (M = 1.36, SD = 1.28) than T1 (M = 0.46, SD = 0.84), $t(27) = 3.26$, $p = .003$, and they were better able to say what a carbon footprint is, $t(27) = 3.10$, $p = .004$, at T2 (M = 1.61, SD = 1.26) than T1 (M = 0.96, SD = 1.07). There was no change in knowledge regarding the ecological function of sand dunes, $t(27) = 1.00$, $p = .326$.

Global programme evaluation

Finally, two questions at T2 tried to get an overview of pupil's perceptions of the programme. Attitudes were highly positive, with 98% saying they enjoyed it (83% responded 'definitely' and 15% 'a bit'), and 93% saying they would recommend the programme to a friend (73% responded 'definitely' and 20% 'a bit').

Teacher evaluations

We then went on to analyse the SEAL questionnaire that was completed by teachers before and after the surf programme. Across all five domains, there were mean increases in ratings of emotional literacy between pre- and post-testing (Figure 4). Paired *t*-tests indicated, however, that these increases were only significant for social skills, $t(22) = 3.19$, $p = .004$ from T1 (M = 16.70; SD = 4.00) to T2 (M = 19.26, SD = 3.63), and motivation $t(23) = 2.89$, $p = .008$ from T1 ($M = 14.92$; SD = 4.54) to T2 (M = 17.58; SD = 4.36). The changes for self-awareness, managing feelings and empathy were not significant, all *t*'s <1.62, all *p*'s >.116.

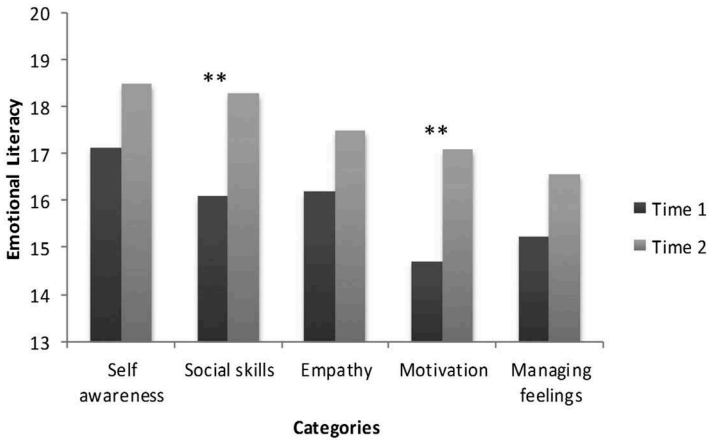

Figure 4. Mean differences in emotional literacy (SEAL scores) pre-surfing and post-surfing. Significant differences between time points are indicated: $^{**}p < .01$.

Discussion

Summary of main findings

This research examined the effects of an existing surfing intervention programme targeting young people either already excluded, or at risk of exclusion, from main stream school. Data were collected from those taking part, and their teachers, before and after the programme took place. The first aim was to determine if taking part in the Surf to Success programme could improve pupils' well-being. Previous research on interventions carried out in natural environments (including surfing) has found positive benefits on participant's social skills, confidence and well-being (Godfrey et al., 2015; Roe & Aspinall, 2011b; Taylor, 2013).

It appears there were several benefits of taking part when the pre- and post-test data was compared. Firstly, resting HR fell by four beats a minute on average, suggesting the possibility that pupils may have become fitter. This could tie in with another finding: participants became significantly more satisfied with their appearance after taking part as well. Thus, the programme seems to have improved what Fox refers to as one's 'physical self-worth' (Fox, 1999). This dimension of well-being is especially important in the teenage years (Harter, 2000; Rees, Goswami, & Bradshaw, 2010) and may be especially important for pupils, like those here, who are, according to teacher reports, generally low in self-confidence and self-esteem.

A second finding seemed to be a general increase in positive social relationships among peers and pro-social behaviour at school. This is very much in keeping with the notion that learning to surf in a group context may be helping to provide a group identity and a body of shared experiences in the water that can be used to build improved social connectedness among peers (e.g. Godfrey et al., 2015; Nemani, 2015). Although we did not look at this issue further here, it would be intriguing to see whether any lasting friendships had been made as a consequence of the project and whether the activity and/or the beach environment became an important link between the participants in their subsequent conversations and later leisure time choices.

Finally, there also appeared to be greater connectedness to the school, both in terms of the ratio of positive to negative attitudes towards school in the interviews and in terms of reports from teachers about behaviour at school. This was unpredicted. If anything, we had expected the participants to gain stronger connections to the natural and marine environments as part of the project rather than the school one. We are unsure why this was although one possibility might have been that participants recognised that their schools were providing them with the opportunity to engage in a 'cool' activity as part of their curriculum and were reacting positively to these

steps from the institutions to broaden their educational experience. Further work, possibly using a more in-depth interview and narrative approach, would be needed to explore this and other possibilities further.

The mixed results across the well-being and connectedness domains could be considered a strength of the findings. There were only increases in some of the well-being and connectedness domains, rather than a blanket improvement across all domains. This suggests that pupils were not merely telling the researcher what they thought they might want to hear, but rather that they were able to differentiate and comment on different domains separately. It also highlights which specific aspects of well-being and connectedness the surf programme may have affected.

Pupils' knowledge of key environmental issues also appeared to improve over the programme. These results should be interpreted with caution, however, as the questions were only about four environmental issues. Nevertheless, this information clearly 'stuck', even though (or perhaps because) it was delivered in a non-classroom setting. Surprisingly, there was no direct improvement in connectedness to nature or the beach as a result of the study overall, which does not tie in with previous literature that states positive experiences with nature can build environmental connectedness (Liefländer et al., 2013).

Limitations and future research

Originally the research was supposed to have a matched control group, to determine if any changes in the intervention group were due to the surf programme or if the changes would have happened anyway (e.g. due to greater activity over the spring period). Unfortunately only eight control group participants were recruited (who did not take part in the programme but who were still tested using the measures), which was not a sufficiently large enough sample to conduct reliable statistical analysis. For future research, a waiting control design, where the programme is staggered over the spring and summer months so monitoring of those who will engage with the programme later in the year at the same time as those already engaged with the project, could be used. This type of approach avoids a selection bias, and other variables such as the season can be controlled for. Further, we were unable to follow-up with all participants from the pre-test phase in the intervention cohort (due to non-attendance on post-phase evaluation dates). This leaves open the possibility that we had a self-selected sample, with those who did not feel that they had benefited from the experience reluctant to speak to the researcher again. This possibility is hard to address among these kinds of cohorts but suggests caution should be exercised in interpreting the generally positive results from the current findings.

A second limitation is that we were unable to systematically monitor or evaluate the intervention itself. Thus, we have little idea why it may have worked except for the feedback of the surf programme derived from the interviews. When the participants discussed the programme, they talked about how it was fun, that it helped them develop a new skill, that they enjoyed being in the sea and that they liked the instructors. In terms of 'active ingredients', then, we remain unsure as to the relative importance of these different factors, and future research should incorporate a process evaluation to explore these factors further. We also did not collect data on the extent to which pupils engaged in other outdoor activities as part of their schooling or how this might affect their reactions to this particular programme. Of note, however, participation was entirely voluntary, and as noted earlier, several students were taking part in the programme for a second time—suggesting they had derived some benefit from it.

Another limitation was that pupils were unable to be followed up beyond T2 as part of the current evaluation due to time and resource limitations. For future studies such as these, it would be helpful to have more longitudinal follow-up of the participants who took part in the programme (e.g. at six months and a year) as we believe this could shed greater light on the potential long-term benefits of the programme, and may even enable a full cost-benefit analysis. For example,

one could compare the likely cost to the economy of the average pupil who had been excluded from school with those who had also taken part in the Surf to Success programme to see whether the programme is ultimately cost-effective. Although our early findings suggest this may be the case, more detailed economic analysis would help potential recommendations for policy-makers.

Finally, our approach was fundamentally quantitative, in that we were trying to establish whether there were observable differences on a range of key metrics, such as self-reported well-being, emotional experiences, connectedness to nature and classroom behaviour. Although we did interview participants, and drew some conclusions from their responses, more could have been done to explore the narratives that emerged during these interviews, or, alternatively, less structured interview approaches could have been adopted to allow the young people greater opportunity to explain in their own words what the taking part in the programme meant to them. Such a narrative, self-reflective approach, is more in keeping with much of the previous discussion of adult experiences of surfing (e.g. lisahunter, 2015; Nemani, 2015; Olive et al., 2015; Spowart et al., 2010) and may have been particularly useful in drawing out identity issues among this group. For instance, issues of feeling not part of the traditional 'surfing' culture were threads in much previous work, and there may be parallels with the current cohort who almost by definition are likely to have felt excluded from mainstream society. Future work trying to better understand how taking part in programmes of this kind might change the self-identities of these particularly challenged young people would thus be a potential fruitful avenue for further exploration.

Conclusion

Results from this evaluation of the Surf to Success programme are highly encouraging. They suggest that the programme resulted in greater satisfaction with appearance, connectedness with friends, positivity towards school and environmental knowledge, among young people at risk of exclusion, or already excluded, from mainstream schooling. The findings are consistent with work on Forest schools (e.g. O'Brien & Murray, 2007) among similar cohorts and suggest that 'bluespace' environments may provide an alternative location for delivering high-quality outdoor educational experiences. That surfing, in particular, is both so immersive in terms of contact with the natural environment and physically demanding, may be important for certain cohorts with challenging behaviour who may thrive on the necessary expenditure of energy and associated high arousal emotions. Further work is now needed to look at the long-term legacy of programmes such as these, including cost-effectiveness analysis, in an effort to support the development and inclusion of such programmes for use with young people who are experiencing difficulties with the traditional educational system.

Acknowledgments

This research has been part funded by Ecominds [Eco10032R], a funding scheme run by Mind on behalf of the BIG Lottery Fund. Further funding has come from Cornwall County Council and West Cornwall Youth Trust. We would like to thank all of the schools, teachers and teaching assistants who supported the programme, and also to the young people who took part in the research. We would also like to thank Global Boarders surf coaches, Chris Brown and Steve Hancock, and Abi Corcoran, and Simon Coley for help with data collection.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This research has been part funded by Ecominds [Eco10032R], a funding scheme run by Mind on behalf of the BIG Lottery Fund. Further research funding has come from Ecominds and West Cornwall Youth Trust funded the research.

Notes on contributors

Amanda Hignett is a doctoral student at Plymouth University. Her research focuses on the health and well-being benefits of spending time in nature with a particular interest in the beneficial effects of nature on cognitive functioning.

Dr Mathew P. White is a senior lecturer in Psychology Applied to Health and the Environment. He researches people's relationships with natural environments, with a particular focus on the coast and other aquatic settings.

Dr Sabine Pahl is an associate professor (reader) in the School of Psychology at Plymouth University. Her research interests are social cognition, restorative effects of natural environments, and the psychology of sustainable attitudes and behaviour especially applied to energy and protecting the marine environment.

Dr Rebecca Jenkin is a post-doctoral research assistant at the European Centre for Environment and Human Health. Her work focusses on the health and well-being benefits of natural environments on children's health and well-being.

Mod Le Froy is a director of GB Boardriders Community Interest Company and an outdoor educator and coach mentor working with the health and well-being sector.

References

Anderson, J. (2015). On being shaped by surfing: Experiencing the world of the littoral zone. In M. Brown & B. Humberstone (Eds.), *Seascapes: Shaped by the sea* (pp. 55–70). Surrey, England: Ashgate Publishing, Ltd.

Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of other in the self scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology*, *63*(4), 596. doi:10.1037/0022-3514.63.4.596

Ashbullby, K. J., Pahl, S., Webley, P., & White, M. P. (2013). The beach as a setting for families' health promotion: A qualitative study with parents and children living in coastal regions in Southwest England. *Health & Place*, *23*, 138–147. doi:10.1016/j.healthplace.2013.06.005

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W.H. Freeman and Company.

Berman, M. G., Jonides, J., & Kaplan, S. (2008). The cognitive benefits of interacting with nature. *Psychological Science*, *19*, 1207–1212. doi:10.1111/psci.2008.19.issue-12

Berto, R. (2005). Exposure to restorative environments helps restore attentional capacity. *Journal of Environmental Psychology*, *25*, 249–259. doi:10.1016/j.jenvp.2005.07.001

Booth, D. (2001). Australian beach cultures: The history of sun, sand and surf. *London*: Frank Cass.

Bradburn, N. M. (1969). *The structure of psychological well-being*, Chicago: Aldine.

Bynner, J., & Parsons, S. (2002). Social exclusion and the transition from school to work: The case of young people Not in Education, Employment, or Training (NEET). *Journal of Vocational Behavior*, *60*(2), 289–309. doi:10.1006/jvbe.2001.1868

Chawla, L., Keena, K., Pevec, I., & Stanley, E. (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. *Health & Place*, *28*, 1–13. doi:10.1016/j.healthplace.2014.03.001

Cocker, H. (2012). The positive effects of aquarium visits on children's behaviour: A behavioural observation. *The Plymouth Student Scientist*, *5*(2), 165–181.

Coles, B., Godfrey, C., Keung, A., Parrott, S., & Bradshaw, J. (2010). *Estimating the life-time cost of NEET: 16-18 year olds not in education, employment or training*. York: University of York.

Corraliza, J. A., Collado, S., & Bethelmy, L. (2012). Nature as a moderator of stress in urban children. *Procedia - Social and Behavioral Sciences*, *38*(0), 253–263. doi:10.1016/j.sbspro.2012.03.347

Deater-Deckard, K., Pylas, M., & Petrill, S. (1997). *The parent-child interaction system (PARCHISY)*. *London*: *Institute of Psychiatry*.

Department of Education. (2011). *Underperforming schools and deprivation: A statistical profile of schools below the floor standards in 2010* (Education Standards Analysis and Research Division, Research Report DFE-RR141). Retrieved January 4, 2017, from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/181731/DFE-RR141.pdf

Depledge, M. H., & Bird, W. J. (2009). The blue gym: Health and wellbeing from our coasts. *Marine Pollution Bulletin*, *58*(7), 947–948. doi:10.1016/j.marpolbul.2009.04.019

Eurostat. (2014). The poorest regions in the UK are the poorest in Northern Europe. Retrieved January 4, 2017, from: http://inequalitybriefing.org/graphics/briefing_43_UK_regions_poorest_North_Europe.pdf

Evers, C. (2006). How to surf. *Journal of Sport and Social Issues*, *30*(3), 229–243. doi:10.1177/0193723506290394

Faber Taylor, A., & Kuo, F. E. (2009). Children with attention deficits concentrate better after walk in the park. *Journal of Attention Disorders*, *12*(5), 402–409. doi:10.1177/1087054708323000

Faber Taylor, A., Kuo, F. E., & Sullivan, W. C. (2002). Views of nature and self-discipline: Evidence from inner city children. *Journal of Environmental Psychology*, *22*(1–2), 49–63. doi:10.1006/jevp.2001.0241

Fjørtoft, I. (2004). Landscape as playscape: The effects of natural environments on children's play and motor development. *Children Youth and Environments*, *14*(2), 21–44.

Fox, K. R. (1999). The influence of physical activity on mental well-being. *Public Health Nutrition*, *2*(3a), 411–418. doi:10.1017/S1368980099000567

Fox, P., & Avramidis, E. (2003). An evaluation of an outdoor education programme for students with emotional and behavioural difficulties. *Emotional and Behavioural Difficulties*, *8*(4), 267–283. doi:10.1080/13632750300507025

Freed, M., Brice, J., Buck, N., & Prentice-Lane, E. (2010). *British household panel survey user manual volume A: Introduction* (Technical Report and Appendices). Colchester: University of Essex.

Godfrey, C., Devine-Wright, H., & Taylor, J. (2015). The positive impact of structured surfing courses on the wellbeing of vulnerable young people. *Community Practitioner*, *88*(1), 26–29.

Harter, S. (2000). Is self-esteem only skin-deep? The inextricable link between physical appearance and self-esteem. *Reclaiming Children and Youth*, *9*(3), 133–138.

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*, *15*, 169–182. doi:10.1016/0272-4944(95)90001-2

Liefländer, A. K., Fröhlich, G., Bogner, F. X., & Schultz, P. W. (2013). Promoting connectedness with nature through environmental education. *Environmental Education Research*, *19*(3), 370–384. doi:10.1080/13504622.2012.697545

lisahunter. (2015). Seaspaces: Surfing the sea as pedagogy of self. In M. Brown & B. Humberstone (Eds.), *Seascapes: Shaped by the Sea* (pp. 41–54). Surrey, England: Ashgate Publishing, Ltd.

Maas, J., Verheij, R., de Vries, S., Spreeuwenberg, P., Schellevis, F., & Groenewegen, P. (2009). Morbidity is related to a green living environment. *Journal of Epidemiology & Community Health*, *63*(12), 967–973. doi:10.1136/jech.2008.079038

MacKerron, G., & Mourato, S. (2013). Happiness is greater in natural environments. *Global Environmental Change*, *23*(5), 992–1000. doi:10.1016/j.gloenvcha.2013.03.010

Mayer, F. S., & Frantz, C. M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology*, *24*(4), 503–515. doi:10.1016/j.jenvp.2004.10.001

Mayer, F. S., Frantz, C. M., Bruehlman-Senecal, E., & Dolliver, K. (2009). Why is naturebeneficial? The role of connectedness to nature. *Environment and Behavior*, *41*(5), 607–643. doi:10.1177/0013916508319745

Maynard, T. (2007). Forest schools in Great Britain: An initial exploration. *Contemporary Issues in Early Childhood*, *8*(4), 320–331. doi:10.2304/ciec.2007.8.4.320

Mitchell, R., & Popham, F. (2008). Effect of exposure to natural environment on health inequalities: An observational population study. *The Lancet*, *372*(9650), 1655–1660. doi:10.1016/S0140-6736(08)61689-X

Nemani, M. (2015). Being a brown bodyboarder. In M. Brown & B. Humberstone (Eds.), *Seascapes: Shaped by the sea* (pp. 83–100). Surrey, England: Ashgate Publishing, Ltd.

O'Brien, L., & Murray, R. (2007). Forest school and its impacts on young children: Case studies in Britain. *Urban Forestry & Urban Greening*, *6*(4), 249–265. doi:10.1016/j.ufug.2007.03.006

Olive, R., McCuaig, L., & Phillips, M. G. (2015). Women's recreational surfing: A patronising experience. *Sport, Education and Society*, *20*(2), 258–276. doi:10.1080/13573322.2012.754752

Papathanasopoulou, E., White, M. P., Hattam, C., Lannin, A., Harvey, A., & Spencer, A. (2016). Valuing the health benefits of physical activities in the marine environment and their importance for marine spatial planning. *Marine Policy*, *63*, 144–152. doi:10.1016/j.marpol.2015.10.009

Powis, B., Griffiths, P., Gossop, M., Lloyd, C., & Strang, J. (1998). Drug use and offending behaviour among young people excluded from school. *Drugs: Education, Prevention, and Policy*, *5*(3), 245–256.

Pretty, J., Angus, C., Bain, M., Barton, J., Gladwell, V., Hine, R., … Sellens, M., (2009). *Nature, childhood, health and life pathways*. Interdisciplinary Centre for Environment and Society (iCES), Occasional Paper 2009-2. Colchester: University of Essex.

Pretty, J., Peacock, J., Sellens, M., & Griffin, M. (2005). The mental and physical health outcomes of green exercise. *International Journal of Environmental Health Research*, *15*(5), 319–337. doi:10.1080/09603120500155963

Price, A. (2015). Improving school attendance: Can participation in outdoor learning influence attendance for young people with social, emotional and behavioural difficulties? *Journal of Adventure Education and Outdoor Learning*, *15*(2), 110–122. doi:10.1080/14729679.2013.850732

Public Health England. (2014). *Local action on health inequalities: Reducing the number of young people not in employment, education or trainning (NEET)*. (PHE publications gateway number: 2014334). Retrieved from https://www.gov.uk/government/publications/local-action-on-health-inequalities-evidence-papers

Rees, G., Goswami, H., & Bradshaw, J. (2010). *Developing an index of children's subjective well-being in England: Summary Report*. The Children's Society, London.

Roe, J., & Aspinall, P. (2011a). The emotional affordances of forest settings: An investigation in boys with extreme behavioural problems. *Landscape Research*, *36*(5), 535–552. doi:10.1080/01426397.2010.543670

Roe, J., & Aspinall, P. (2011b). The restorative outcomes of forest school and conventional school in young people with good and poor behaviour. *Urban Forestry & Urban Greening*, *10*(3), 205–212. doi:10.1016/j.ufug.2011.03.003

Sadler, K., Akister, J., & Burch, S. (2014). Who are the young people who are not in education, employment or training? An application of the risk factors to a rural area in the UK. *International Social Work*. doi:10.1177/0020872813515010

Schultz, P. W. (2002). Inclusion with nature: The psychology of human-nature relations. In P. Schmuck & W. P. Schultz (Eds.), *Psychology of sustainable development* (pp. 62–78). Norwell, MA: Kluwer.

Spowart, L., Burrows, L., & Shaw, S. (2010). "I just eat, sleep and dream of surfing': When surfing meets motherhood'. *Sport in Society*, *13*(7), 1186–1203. doi:10.1080/17430431003780179

SQW Group. (2012). Cornwall and the Isles of Scilly LEP: Strategy and business plan. Retrieved January 4, 2017, from http://www.cioslep.com/assets/file/LEP%20Strategy/Evidence%20Base%206.pdf

Tapsell, S., Tunstall, S., House, M., Whomsley, J., & Macnaghten, P. (2001). Growing up with rivers? Rivers in London children's worlds. *Area*, *33*(2), 177–189. doi:10.1111/1475-4762.00021

Taylor, J. (2013). Giving kids a break: how surfing has helped young people in cornwall overcome mental health and social difficulties. *17*(2), 82-86.

Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A., & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology*, *11*(3), 201–230. doi:10.1016/S0272-4944(05)80184-7

Völker, S., & Kistemann, T. (2011). The impact of blue space on human health and well-being – Salutogenetic health effects of inland surface waters: A review. *International Journal of Hygiene and Environmental Health*, *214*(6), 449–460. doi:10.1016/j.ijheh.2011.05.001

Wells, N. M., & Evans, G. W. (2003). Nearby nature - A buffer of life stress among rural children. *Environment and Behavior*, *35*(3), 311–330. doi:10.1177/0013916503035003001

Wheeler, B. W., White, M., Stahl-Timmins, W., & Depledge, M. H. (2012). Does living by the coast improve health and wellbeing? *Health & Place*, *18*(5), 1198–1201. doi:10.1016/j.healthplace.2012.06.015

White, M. P., Bell, S., Elliott, L., Jenkin, R., Wheeler, B. W., & Depledge, M. H. (2016). The health effects of blue exercise in the UK. In J. Barton, R. Bragg, C. Wood, & J. Pretty (Eds), *Green exercise: Linking nature, health and well-being* (Chp 7, pp. 69–78). Oxford: Routledge.

White, M. P., Pahl, S., Ashbullby, K. J., Herbert, S., & Depledge, M. H. (2013). Feelings of restoration from recent nature visits. *Journal of Environmental Psychology*, *35*, 40–51. doi:10.1016/j.jenvp.2013.04.002

White, M. P., Pahl, S., Wheeler, B. W., Fleming, L. E. F., & Depledge, M. H. (2016). The 'Blue Gym': What can blue space do for you and what can you do for blue space? *Journal of the Marine Biological Association*, *96*, 5–12. doi:10.1017/S0025315415002209

White, M. P., Smith, A., Humphryes, K., Pahl, S., Snelling, D., & Depledge, M. (2010). Blue space the importance of water for preference, affect, and restorativeness ratings of natural and built scenes. *Journal of Environmental Psychology*, *30*(4), 482–493. doi:10.1016/j.jenvp.2010.04.004

White, M. P., Wheeler, B. W., Herbert, S., Alcock, I., & Depledge, M. H. (2014). Coastal proximity and physical activity. Is the coast an underappreciated public health resource? *Preventive Medicine*, *69*, 135–140. doi:10.1016/j.ypmed.2014.09.016

Wood, S. L., Demougin, P. R., Higgins, S., Husk, K., Wheeler, B. W., & White, M. P. (2016). Exploring the relationship between childhood obesity and proximity to the coast: A rural/urban perspective. *Health & Place*, *40*, 126–136. doi:10.1016/j.healthplace.2016.05.010