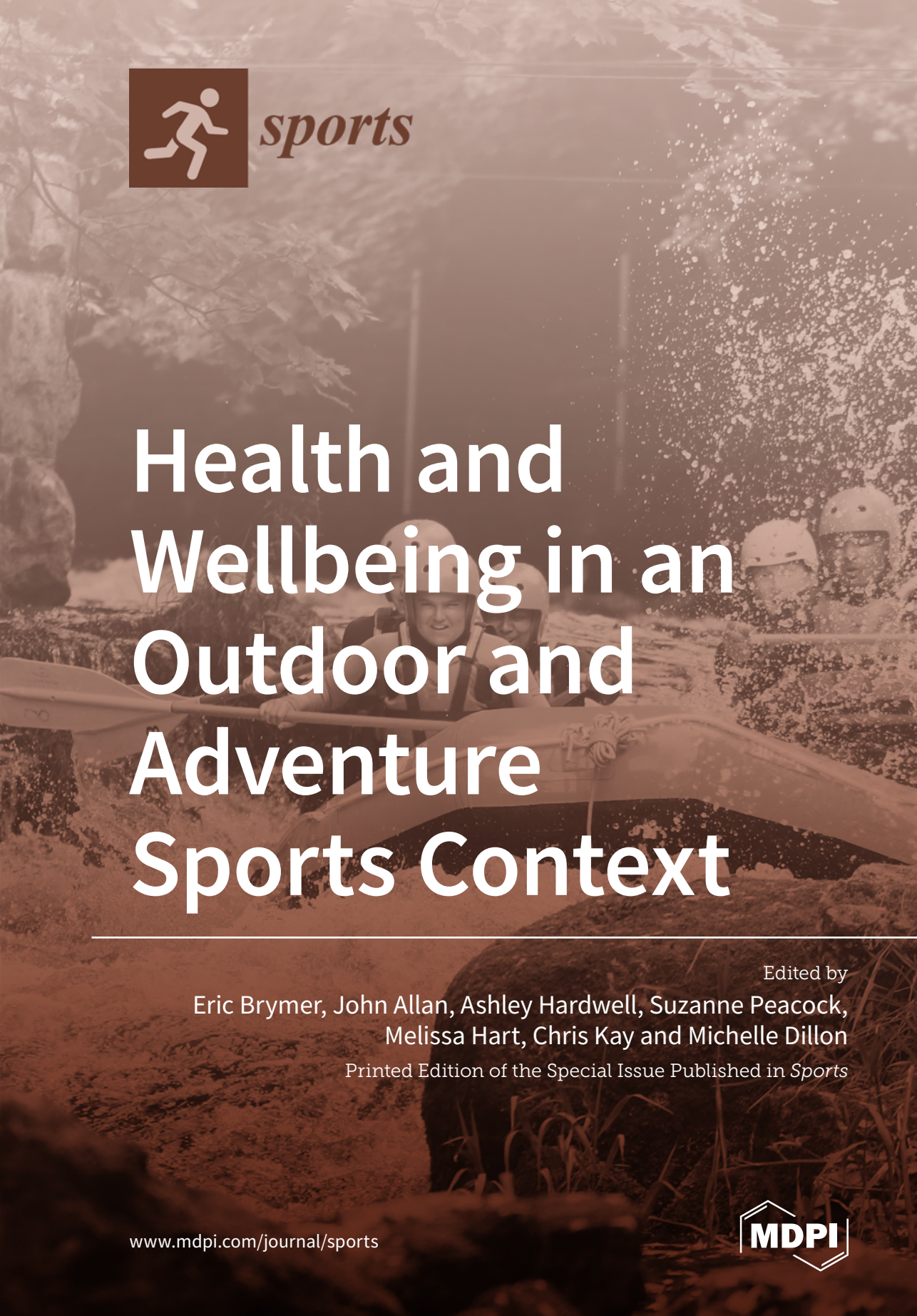

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Health and Wellbeing in an Outdoor and Adventure Sports Context

Edited by
Eric Brymer, John Allan, Ashley Hardwell, Suzanne Peacock, Melissa Hart, Chris Kay and Michelle Dillon

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Cover image courtesy of Eric Brymer.

Contents

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John Allan, senior lecturer. Dr John Allan is a psychologist focusing on sports pedagogy and adventure education. As an academic and outdoor practitioner, John leads undergraduate and post-graduate programmes in outdoor education. His area of research centres on positive psychology and resilience building through adventure and green space immersion. John has a great passion for the outdoors. He provided sports science support (psychological strength-based functioning) for the Everest West Ridge 2006 Expedition, has undertaken two trips to the Himalayas, and was deputy leader of a university staff/student expedition to the Everest region in 2009. He is an active member of both the Institute for Outdoor Learning and the British Association of Sport and Exercise Sciences (BASES). His research outputs include international and national journal publications, book chapters, a keynote address, conference symposiums and presentations.

Ashley Hardwell, senior lecturer. Dr Ashley Hardwell is a senior lecturer in physical education and outdoor education at the Carnegie School of Sport, Leeds Beckett University. He specialises in the theoretical and practical delivery of outdoor modules. His research interests are fuelled by over forty years in the outdoors in a personal and professional capacity. Participation in outdoor and adventure activities can have a profound and personal impact on life, people and landscapes. How we embrace these changes—socially, culturally and environmentally—is the foundation of his teaching and research.

Suzanne Peacock, senior lecturer in outdoor education. Suzanne graduated with her first degree, in applied sport science and coaching with outdoor education, in 2005, before gaining a master of science in sport and exercise psychology from Leeds Beckett University in 2009. Following this, she remained at the university and completed her doctoral degree. Her Ph.D. explored the role of adapted sport and adventure training in the recovery of UK military personnel who are wounded (battle casualties), injured (non-battle casualties) or sick (physical/mental illness). Outside the university, Suzanne is an active person who loves to climb, mountain bike and ski.

Melissa Hart, senior lecturer. Melissa Hart is a senior lecturer in the Carnegie School of Education and course leader for the BA in primary education with QTS. Melissa Hart has a Ph.D. in the enactment of educational policy in academy schools and has recently worked on a consultancy project, evaluating the role of Lloyds Banking Group staff placed as governors in schools. Melissa enjoys challenging herself by climbing, ski mountaineering, running and cycling in multi-week adventures to remote locations around the world. In addition, having previously worked as the course leader for the BA in outdoor leadership at both the University of Central Lancashire and Cumbria University, a teacher of outdoor education and field studies, a freelance outdoor instructor and an expedition leader, Melissa's research interests lie in overseas expeditions and residential outdoor experiences and their role in learning about self and others. She was a technical expert for the generation of the National Occupational Standards in Expedition Leadership. Melissa's expertise includes post-modern qualitative methods of research design and the use of a Foucauldian theoretical lens.

Chris Kay is a senior research fellow with Carnegie Great Outdoors. He predominantly works with wounded, injured and sick military personnel at the Battle Back Centre. This work is delivered and studied by our staff on behalf of the Royal British Legion. At the Battle Back Centre, week-long courses are delivered, which encompass adaptive adventurous training and personal development for military personnel who are recovering from injury or illness. Chris's research explores how participation in structured, adapted outdoor and adventurous activities helps facilitate recovery, personal growth and aspects of psychological and physiological wellbeing. Chris is a neurobiologist, and alongside his scientific career he has worked professionally as a rock climbing, mountaineering, kayaking and mountain biking instructor since 2007.

Michelle Dillon, senior lecturer. Michelle Dillon is a senior lecturer at Leeds Beckett University, UK. Michelle's research interests surround the teaching and learning of outdoor and adventure education. Michelle's Ph.D. investigated student teachers' learning to teach when delivering an outdoor and adventure education programme as part of a physical education (PE) curriculum. Prior to academia, Michelle worked in the outdoor industry as an instructor, manager and business proprietor. Michelle regularly reviews for academic journals and collaborates on education, outdoor and adventure education issues in an international capacity.

Preface to "Health and Wellbeing in an Outdoor and Adventure Sports Context"

While the world responds to the latest health issue, it is perhaps timely that we think broadly about human and planetary health and wellbeing. Across the globe, there is a call for a different future, one that prioritises wellbeing. Even before the COVID-19 crisis, governments such as those in Bhutan, Wales and New Zealand had recognised the importance of wellbeing and working within natural systems. Ultimately, human beings are a part of nature, and our health and wellbeing depend on the health and wellbeing of our planet's ecosystems. This book explores how an important emerging sector, adventure and outdoor sports, plays a part in providing for the health and wellbeing of people in relation to the natural world. From a human perspective, health involves more than managing disease: it includes the potential for optimum wellbeing and flourishing. Globally, there are still challenges that require focused attention. For example, in 2010, mental illness and substance abuse combined were the leading cause of non-fatal illness worldwide, and the fifth-biggest cause of death and disease. In September 2015, the United Nations recognised mental health and wellbeing as priorities within the global development agenda. The natural environment has been presented as an important aspect of the global health improvement plan. The last two decades have witnessed a plethora of research from a vast array of fields—including public health, ecology, geography, forestry, psychology, education, sport science and psychiatry—suggesting that physical activity in nature and a feeling of being part of nature enhance health and wellbeing. The relationship between being in nature and good health and wellbeing is recognised anecdotally, and research evidence on outcomes is growing. However, theoretical approaches that can support the interpretation of findings and the design of interventions and experiences are still developing. Research is beginning to consider the importance of individual differences, such as in feelings of connection to nature and the person–environment relationship. Outdoor and adventure sports and activities (from forest schools to extreme sports and more) are, potentially, ideal examples of physical activity in nature, and are perhaps best placed to reconnect people to the natural world. For this manuscript, we adopted a broad definition of sport, including the dimensions of self-development and recreation. Specifically, sports are considered to be multi-faceted, boundary-crossing activities, which do not necessarily involve structured competitive activity, regulated performance environments, rules or institutions. This manuscript brings together cutting-edge research and thought on the role of outdoor and adventure activities in enhancing mental health and psychological wellbeing. We are very grateful for the foresight of Mark Robinson and Carnegie Great Outdoors for their support in ensuring the publication of this collection.

Eric Brymer, John Allan, Ashley Hardwell, Suzanne Peacock, Melissa Hart, Chris Kay, Michelle Dillon

Special Issue Editors

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Editorial

Health and Wellbeing in an Outdoor and Adventure Sports Context

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Abstract: Outdoor and adventure sports (OAS) have been linked to positive health and wellbeing outcomes. This Special Edition brings together cutting-edge research and thought on the implications of this link. An analysis of the papers in this Special Edition reveals important insights into (i) the diverse and powerful outcomes derived from adventure experiences, (ii) how adventure experiences facilitate these outcomes, (iii) how best to design outdoor and adventure experiences. The evidence in this edition indicates a need for a more systematic approach to the inclusion of OAS as important to good health and wellbeing. OAS should be included as part of education, health, policy and planning.

Keywords: wellbeing; outdoor and adventure sports

1. Introduction

The World Health Organisation defines health as a "state of complete physical, mental, and social wellbeing, and not merely the absence of disease or infirmity." [1] While in general, health is improving globally, there are still challenges. For example, in 2010, mental illness and substance abuse combined were the leading cause of non-fatal illness and the fifth leading cause of death and disease worldwide. In September 2015, the United Nations recognised mental health and wellbeing as priorities within the global development agenda. The natural environment has been presented as an important aspect of the global health improvement plan [2,3]. For instance, in 2017, the UK government published their 25-year environment plan [4] which emphasized helping people improve their health and wellbeing by using green space. The last two decades have been witness to a plethora of research from a vast array of fields, such as public health, ecology, geography, forestry, psychology, education, sport science and psychiatry, suggesting that physical activity in the presence of nature enhances health and wellbeing. For the most part, research has established that natural environments (i) enhance the impact of physical activity by increasing motivation, enabling emotional regulation, brain growth, recovery capability and protection from disease; and (ii) possess unique qualities unrelated to physical activity, such as restorative capabilities and stress-reduction which directly impact on health and wellbeing.

Outdoor and adventure sports (OAS) provide opportunities for generating physical and psychological benefits, whilst also delivering unique qualities unrelated to physical activity in nature. For example, immersion in nature provides the unique opportunity to relax and gain perspective on life. Furthermore, experiential learning processes have been linked to enhanced wellbeing outcomes beyond the impact of physical activity, nature and adventure. Programmed OAS are most often

underpinned by an experiential learning framework combined with physical activity, immersion in nature and adventure. Therefore, OAS have the potential to directly impact on the health and wellbeing of participants and provide ideal interventions for mental health outcomes.

OAS differ from traditional notions of sport for a number of reasons. First, the term 'sport', often viewed as synonymous with structured competition, has a wider meaning which is reflective of the original etymological perspective. The English word 'sport', derived from old French word 'desport' originally referred to a 'pastime'. This broad definition included the dimensions of self-development and recreation. This original notion means sports are considered to be multi-faceted, boundary-crossing activities, which do not necessarily involve structured competitive activity. Second, traditional sports are most often associated with structured rules and regulations allowing consistency in the competitive context and for measurement of what constitutes success. In most cases, OAS contexts are non-competitive and are therefore not bound by external rules and regulations. Furthermore, the notion of success in OAS is continually evolving and is not necessarily determined by factors such as speed, height, distance and so forth. Third, traditional sports most often take part in highly structured performance settings. Playing fields and sporting stadiums are marked out and measured to strict, often international, standards. OAS contexts are not defined in this way. The environment is invariably non-uniform and not structured to fit the sport; instead, the sport is often about adapting to environmental constraints.

While research on the outcomes of OAS has been growing over the last three decades, our understanding of how they enhance health and wellbeing still needs development. Traditional theoretical notions typically used to interpret findings are being questioned (Brymer, Davids, and Mallabon, 2014; Karmanov and Hamel, 2008; Keniger, Gaston, Irvine, and Fuller, 2013; Kjellgren and Buhrkall; Yeh et al., 2016). Research is also beginning to consider the importance of individual differences in OAS, such as feelings of connection to nature, and the person-environment relationship (Freeman, Akhurst, Bannigan and James, 2016; Freeman and Akhurst, 2015). Generally, research undertaken in OAS has focused on traditional activities such as walking and running undertaken in outdoor environments. However, outdoor and adventurous activities, from forest schools to extreme sports and beyond, are potentially more nuanced examples of physical activity in nature allowing focus on reconnecting people to the natural world. The articles in this submission use a wide-ranging spectrum of innovative methodologies to investigate the many issues concerning the impact of OAS on health and wellbeing, adding to our understanding of (i) the diverse and powerful outcomes derived from adventure experiences (e.g., Peacock et al.; Slee and Allan), (ii) how adventure experiences facilitate these outcomes (e.g., Hart; King et al.), and (iii) how best to design outdoor and adventure experiences (e.g., Schwenk; Shanahan et al.) if health and wellbeing is the program aim.

2. Outcomes from Outdoor and Adventure Experiences

Articles in this Special Edition highlight that health and wellbeing outcomes are available across multiple participant groups. Hart outlines how adventure facilitated a journey of self-awareness through the process of cognitive dissonance. Glover and Polley suggest that adventure contexts enhance the take up and adherence to physical activity, enabling the mental wellbeing of unfit young adults. Peacock, McKenna, Carless and Cooke demonstrate how adapted adventure has multiple benefits for the short-term recovery of military personnel. Their work with the Battle Back program facilitated by Carnegie Great Outdoors at Leeds Beckett University reports that mental wellbeing and self-determination outcomes were achieved far more rapidly than equivalent interventions. OAS programs were also beneficial for schoolchildren and university students, positively impacting on transitional stress, personal, social competencies and academic outcomes (Slee and Allan; Allan and McKenna).

3. How Adventure Experiences Facilitate the Outcomes

Submissions pointing to a deeper, more nuanced understanding of how adventure facilitates the positive outcomes warrant serious consideration. For example, the work by Hart surprisingly, and perhaps differently to other interventions, indicates that psychological discomfort and vulnerability triggered by adverse and difficult physical challenges might be an important stimulus for wellbeing outcomes. In a similar manner, the idea of adventure facilitating an embodied experience coupled with reflective processing was key to the therapeutic focus proposed by Schwenk. Further, it seems that the learning from adventure experience is directly attributable to individual capacities to continue to adapt to everyday life when interventions are applied to a military context (Kaiseler, Kay and McKenna).

4. How Best to Design Outdoor and Adventure Experiences

Designing adventure experiences to facilitate health and wellbeing outcomes requires different underlying principles than planning for other outcomes such as skill development. Various papers within this special edition point to a more informed understanding of the principles involved. One important message evidenced across a number of submissions (Shanahan et al.; Peacock et al.; Slee and Allan; Allan and McKenna; Kaiseler et al.; King et al.) is that intervention design must be deliberately intended to impact on everyday life, be developmentally appropriate, progressively adaptable and be evidence-based. A sound theoretical framework that justifies and supports this process is vital. Self-determination theory features prominently in many of the studies, providing a valid theoretical and applied framework for measuring and understanding intrinsic motivation in the adventure learning context. However, Shanahan et al. also provide an insight into a variety of potentially useful frameworks for nature-based health interventions depending on the intended outcome and the target beneficiaries. Underlying many of the papers, and most specifically highlighted by Farkic and Taylor's slow adventure, was a call to design interventions that facilitated immersive, optimal, integrated and meaningful experiences rather than short, disconnected interventions. Webber and Hardwell add to this notion, showing how an integrated and embedded approach to adventure education within school curriculum is likely to have profound outcomes for learners and teachers. King et al.'s paper proposes an interactive structure that would be useful to program designers as a theoretical frame to guide the design of interventions intended to facilitate health and wellbeing outcomes.

Key points from this Special Edition need to be highlighted for the interest of program designers, policy makers and broader society:

- OAS are powerful facilitators of health and wellbeing outcomes. However, they become even more meaningful to people when deliberately designed for such outcomes.
- Unique aspects of OAS activities and programs exist, such as the role of discomfort, immersion in nature, progressive adaptability and physical challenge, that cannot be replicated by similar activities (for example traditional sports) which are directly linked to the development of enhanced health and wellbeing outcomes.
- The design of OAS programs needs to consider the intended outcomes, active ingredients of potential change, the group/individual characteristics, the environment and the activities. One size does not fit all, and it is not ideal to use generic 'off the shelf' program designs.
- Health and wellbeing outcomes from adventure experiences have a long-term positive impact on everyday life.

5. Conclusions

Interventions designed to enhance health and wellbeing are becoming more important. In recent years, OAS have been promoted as being ideal mediums for many health and wellbeing outcomes. This Special Edition highlights many of the broad opportunities OAS afford. Evidence presented in this edition supports the call for a more systematic approach to accepting OAS as important inclusions

in the attempts to facilitate good health and wellbeing. OAS should be considered a fundamental part of the fabric of everyday life and included as part of education, health, policy and planning.

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Article

Exploring Cognitive Dissonance on a Ski Mountaineering Traverse: A Personal Narrative of an Expedition to ISHINCA (5530 m) in PERU

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Abstract: Through a personal narrative account, this paper explores the nature of the author's cognitive dissonance experienced during a traverse of a high-altitude ski mountaineering objective (Nevado Ishinca 5530 m) in Peru's Cordillera Blanca. The author experienced psychological discomfort in the ascent and a role of self in determining a continued commitment with the ski mountaineering challenge. Distraction, trivialization, act rationalization and finally attitude change were all used in attempt to reduce negative levels of cognitive dissonance. The lack of consonant cognitions to support abandoning the climb, the notion of free choice, the role of self-concept and self-esteem values motivated continued commitment until the negative levels of arousal subsided. Through a challenging mountaineering experience, I developed a greater self-awareness of the role of commitment to an objective which could be applied to other life events and experiences.

Keywords: cognitive dissonance; strategies of dissonance reduction; characteristics of dissonance arousal and modes of reduction; consonant cognitions; attitude and behaviour change; autophenomenology

1. Introduction

High motivation, commitment and effort are required to achieve a mountaineering objective [1–6]. However, investigation into the process of continued engagement with, and maintenance of commitment to, a mountaineering objective is less widely investigated. In analysis of mountaineering autobiographies, the role of cognitive dissonance is considered in the construction of self and retrospective self-justifications for actions or decisions made whilst climbing mountains. Cognitive dissonance is experienced by a person when they have internal mental inconsistency of beliefs, values, goals or knowledge about the world [7]. As a result of the inconsistent nature of two or more pieces of related knowledge a person holds, individuals suffer from a form of mental discomfort or negative arousal. However, it is not clear how and why this is the case [7]. In order to rectify mental discomfort experienced as a result knowledge inconsistency, a person is motivated to make changes [7] to either justify a set of thoughts or actions or avoid situations that increase levels of discomfort. Broadly changes are therefore either attitudinal [8,9] or behavioural. In some previous studies the level of dissonance experienced is claimed to determine whether an attitude or behaviour change is likely [9]. However, it is difficult to consider mental and behavioural changes as separate or distinct as they are inextricably linked and form part of one another within a person. In addition, complex motivational and emotional traits influence decision making in the process of dissonance reduction suggesting it is not just a case of attitudinal or behavioural change [10].

Whilst most studies agree that the motivation for dissonance reduction is directly proportional to the level of discomfort experienced [11], 'no research has unambiguously demonstrated the direction of this motivation—whether it is approach or avoidance orientated' ([12], p. 1) Therefore, an action-based model of dissonance was proposed [13] 'perceptions and cognitions can serve as action tendencies'

and decisions are made according to an approach-related process, so that thoughts are brought in line with goal-directed behaviours ([13], p. 36). However paradoxically, effective action can be interrupted by inconsistent cognitions, suggesting that sometimes thoughts cannot be brought into line with goal-directed behaviours [13]. In addition, the action-based model [14] is aligned to work on behavioural commitment [15], suggesting that people are approach-motivated to behave congruently (in actions and mindset) to a given commitment or goal and that this then reduces levels of dissonance. However, this does assume all people, in all contexts, would desire a reduction in dissonance.

The motivation to think or act differently may persist to reduce the levels discomfort associated with cognitive dissonance but the strategy of change is also important in understanding the process. There are several possible mental and behavioural approaches or strategies (in action or mindset) that could be used to reduce cognitive dissonance. Two reviews of other studies on dissonance [10,11] determine the types of strategies that may be adopted in cognitive dissonance reduction. These cognitive dissonance reducing strategies can be seen in the model in Figure 1.

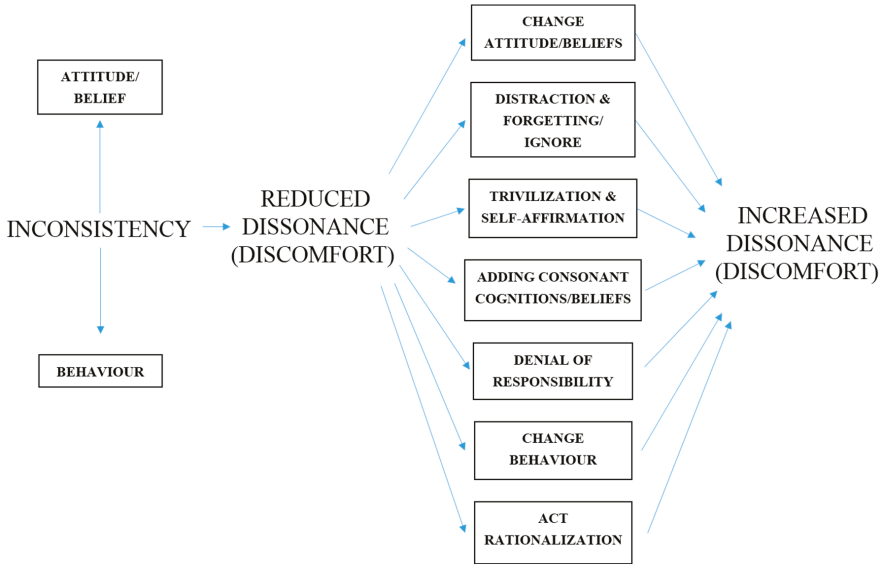

Figure 1. Dissonance reducing strategies.

Research in dissonance reducing strategies has focused on attitude change [8,9] and behaviour change [16,17], but neither considers the use of multi-strategies [11]. In addition, the simple strategies of distraction or forgetting [18] may be more efficient than attitude change [11], and trivializing the dissonant cognition though increasing salient values or self-affirmation [19] may reduce dissonant cognitions. However, if responsibility is needed for dissonance to develop [11], then a denial of responsibility [20] can be more effective than trivialization for reducing negative sensations. From a behaviour perspective, rationalizing inconsistent behaviour by adding consonant cognitions that support continued behaviour [21,22], or choosing action that is closer to the aspiring behaviour in a form of act rationalization [15], can reduce dissonance. However, the choice of strategy to reduce dissonance is difficult to predict [23], and there are limited studies into the state of emotional dissonance as opposed to the process of reduction and the role of attitude importance and trivialization [10,11,14,17,24]. Therefore, more contextually based study is required.

Based on other studies [11], some characteristics of dissonance arousal and the mode of reduction proposed may help to predict and analyse the process of dissonance reduction. Firstly, the magnitude of experienced dissonance is important in determining the nature of the mental or behavioural response,

as well as secondly whether the dissonant inducting scenario it is freely chosen or requires compliance and finally the associated effort involved for completion [7,10,24]. In addition, the availability of a possible mode of dissonance reduction [11], and secondly the likelihood of success in achieving dissonance reduction [7], are factors affecting people's choice of strategy. But none of the studies explain how individuals determine the effort required for dissonance reduction nor the chance of success. The effort required [7,9] can also limit possible change in attitude [8,9] or behaviour [16,17]. If the current behaviour is satisfying [7] then habits formed over a long period of time can be resistant to change [25]. 'Studies have yet to compare how these paradigms potentially differ in (a) the level of dissonance magnitude aroused and (b) the selection of dissonance reduction modes' [11:11], hence the need for further contextual studies. In addition, the impact of the affective emotional state of the individual [26] and whether it is a reoccurring level of discomfort [27] and the nature of the context [23] in which dissonance occurs, may influence the adoption of a mode of reduction [11].

2. Background

In 2018, following two winters living and skiing in the French Alps, I decided to travel to and complete a ski mountaineering expedition to the Cordillera Blanca, Peru with one climbing partner. The Cordillera Blanca is the most western part of the Peruvian Andes, north of the Peruvian Capital Lima. One of our ski mountaineering objectives was Nevado Ishinca (5530 m). Climbing Ishinca involves a day's trek to its respective base camp. We used an Arriero (a person who transports goods using animals) and his two donkeys to carry our equipment to the basecamp. After at least a day of rest and a reconnaissance along the start of the route, an early start of 01:00 for Nevado Ishnica was required. A traverse of Ishinca was completed in 13 h. During the initial part of the ascent, I experienced periods of cognitive dissonance in starting and continuing with the climb. It is this initial commitment to the objective which is of interest as opposed to whether the summit was achieved. The strategies of dissonance reduction adopted along with the nature of dissonance arousal and modes of reduction are explored in this study.

3. Methodology

This broadly phenomenological [28] study uses autobiographical memory [29] to construct narratives (presented as vignettes) to explore a personal experience of cognitive dissonance and associated strategies of reduction in a specific ski mountaineering context. Not surprisingly, autobiographical memories have previously been used in analysis of high-altitude mountaineering studies or other outdoor activities to analyse actions and decision making, relationships with risk and other related psychological, social or environmental elements [1,5,6,30–34]. However, many of these examples involve analyses of others, as opposed to personal, experiences. Whilst readers may make some inherent comparison with other mountaineering stories, primarily I do not aim to situate personal experiences ethnographically within a culture of mountaineers. Instead these 'recollections of specific, personal events' ([35], p. 17) and the associated cognitive dissonance experienced are used by those that they pertain to in meaning making and construction of self [36], to understand acceptance of, and commitment to, experiences as they unfold. The context of a ski mountaineering experience stands as a metaphor for challenging life events and the successful completion of the objective is not important in the study. Hence, the research is autophenomenographical [37] in that it studies the phenomena of cognitive dissonance and associated strategies of reduction of the author as first participant rather than a cultural place or group, but with the added benefit of an understanding of cultural norms. It 'is the study of the lived experience from the unique position of the individual that is engaged in the experience' ([37], p. 3).

Two important phenomenological properties of autobiographical memory are 'the sense of recollection and the belief that autobiographical memories are accurate', both of which are heightened the more vivid the visual imagery in the remembered event ([38], pp. 79–80). There is high visual imagery in these autobiographical memories which also refer to specific places, times and events.

However, they are also constructed within a discourse of other memories of similar events and life experiences, so memory boundaries and content are fluid. Whilst these autobiographical memories are long term, accessed from mental stores of information, they still involve significant assigned emotional and personal importance [35,39]. Emotions can change over time, through personal reflection [40], they can still exhibit stability over longer amounts of time [41] and this gives value for personal learning. In addition, as actor, agent and author [36], there are benefits of being able to see and feel the event as well as try to make sense of it that is not possible from the study of biographical accounts [42]. 'Our stories are left incomplete if we omit the metaphoric and symbolic codes we use in narrating our subjective and personal realities' ([43], p. 498). But this also means I am both a storyteller and a story analyst concurrently, as the narrative is constructed, the sequence and consequence offering an insight into my experiences [44] of cognitive dissonance in a specific ski mountaineering event. Informed consent was gained from my climbing partner to include their presence in my autobiographical memories. I used dissonance reduction strategies, characteristics of dissonance arousal and mode of reduction [11] as a framework for analysis.

4. Narrative Findings and Discussion

The negative psychological discomfort associated with cognitive dissonance [1], involves feelings of unease or tension [7,8,20]. However, there are few studies exploring the nature of dissonance arousal [1] or the characteristics of reduction [11]. In my ski mountaineering ascent of Ishinca (5530 m), I experienced a period of increasing cognitive dissonance before it abruptly dispersed. The greatest emotional discomfort was experienced in the first hour of the ascent after leaving the camp. However, prior to this the nature and magnitude of cognitive dissonance built as I prepared mentally and physically for the day ahead [7,10,24]:

> *I wake to hear other climbers passing the tent. It is about midnight. They are reasonably quiet, but my sleep is light and disturbed due to the knowledge that I must get up soon. My mind is already disturbed. Our alarm is set for 1am. I hate these early starts. I do not know if I hate them because it is early, and I must leave a warm sleeping bag to venture outside, or if I hate the uncertainty of what comes next. It is as if starting is the greatest problem.*

'Fear of the unknown' is defined as 'an individual's propensity to experience fear caused by the perceived absence of information at any level of consciousness or point of processing' ([45], p. 39). Intolerance of that uncertainty [46] can create cognitive, emotional and behavioural reaction, suggesting that cognitive dissonance could also be created by a *lack* of one set of information as opposed to inconsistency between sets of information [7]. However, the first hour of the climb had been completed the previous day, as a reconnaissance to a lunch spot, before returning to camp. Therefore, the first part of the ascent was '*known*', even if the rest of the climb was not, further complicating analysis. A reaction to the cognitive dissonance might be to avoid the situation or ruminate [45], with a focus on both in this context. My attitude was focused around the uncertainty of what came next, the physical discomfort of lack of sleep, the context of an early start and venturing into the cold; attempting to accumulate cognitive reasons that would be consonant with not starting the climb [21,22,47]. Yet these consonant cognitions [21,22] were not salient enough in that moment to warrant abandoning the climb or even to voice concerns with my climbing partner.

My attitude was negative [10], which is a personal habit of recurring dissonance [25] in relation to mountain climbing objectives. Throughout all aspects of my life, I have regularly chosen to initiate new challenging objectives, but paradoxically I find committing to the actual start of some difficult to achieve. At the beginning of this ski mountaineering objective my level of cognitive dissonance was present but relatively low in magnitude [11], perhaps because I felt I was still able to make a choice about whether to commit [47]. I struggle with decision making in general, always wanting to keep options open or stop and think about it, and this manifests as greater cognitive dissonance in the mountaineering context given the requirement for immediacy of decisions. Within the simplicity

of mountaineering context, the available choice of behaviour is often very limited—try to ascend or retreat, even if the nature of completing those actions is more complex. Paradoxically, therefore the limited choice of associated behaviour or available actions could create some greater levels of cognitive dissonance in my case, given my desire for lots of options. Yet the simplicity and adversity created by the mountaineering context does allow the opportunity to challenge self and transition through periods of cognitive dissonance which is often touted as a benefit for personal development and mental restoration [48]. Although, mental restoration had to wait as my cognitions were focused on mountain preparation in a somewhat anxious manner:

> *I want to sleep as I need the rest before the huge physical effort but it is limited in this situation as my mind is busy with checking and changing what has already been decided and considering every eventuality – have I packed the right equipment, what clothes will be best to wear, what will the ascent be like? I wonder how I was going to manage the ascent with ski boots on my feet and skis on my back. I think about the risk of falling somewhere on the climb, which has always been my main source of concern.*

The dissonant condition is greater when real-life consequences exist to counter attitudinal behaviour [49]. In that sense the behaviour of carrying on with the climb is potentially counter attitudinal to a sense of survival and gives specific focus for further rumination [45] about risk levels, equipment and clothing. However, in the reconnaissance to a lunch spot the day before, I did not experience any environments in which I might fall, so this contextual thought could be trivialized [19]. I also had some confidence from having met others at the base camp and on the mountain—so it felt safer in terms of support or possible rescue. In order to consider whether the level of route was compatible with my ability there was opportunity to examine the appearance and discourse of others' competence and compare it to my own [50] which proved favourable. So, whilst there were consonant cognitions [21,22] for not starting the climb, the magnitude of each was kept low and hence there was likelihood of successful motivating action [7]. I still had no salient nor valued consonant cognitions to provide me with reason to stop climbing, despite trying to find them, as further illuminated by the following narrative:

> *I slowly and methodically get dressed. Once outside the tent I discover it was not too cold. [The temperature did not get very cold till just before dawn when you were on the brink of wondering if you could cope with it and then the sun came up.] My climbing partner already had the stove going—hissing its way towards boiling water for tea and rehydrating breakfast cereals. I consider refusing to go—but I have no reason. I am angry with myself which makes matters worse. I drink and eat in thoughtful silence and busy myself by putting the final equipment in my rucksack. We are off.*

My behaviour now mirrors my attitude to getting up and getting started in a slow procrastinating manner. I did not want to start the effort and was worried about potential risk I might encounter but none of these were salient enough justifications (consonant cognitions) for avoiding the climb [21,22] so any counter attitude was trivialized [19]. Deciding not to climb is the 'easier' physical choice, yet I do not make this easier choice, contrasting with the theory that the attitude [8,9] or behaviour adopted would be the one involving least effort to reduce dissonance [7]. Given my previous mountaineering experiences I had some tolerance to levels of cognitive dissonance [7] built through successful habits [25] of perseverance and resilience in these contexts. I knew I just needed to start. Therefore, I did not change behaviour [16,17] to match the attitude of not having to climb but aligned it to a more salient value, despite it giving me increased emotional discomfort [10]. The salient value for me is to persevere and the importance of this attitude [24] is great in the mountaineering context [2] but also secondly to reduce any negative emotional effects of *not* climbing.

I have implicit belief that whilst I do not want to start the climb, that any other behaviour would cause disappointment, regret and paradoxically resultant negative dissonance. Dissonance usually emerges when individuals perceive that they are free to engage in or refuse the counter-attitudinal

behaviour and feel responsible for the negative consequences of their behaviour [10]. In this sense the decision to ascend is one of free will giving a counter attitudinal behaviour to the one requiring least effort. Having a high level of choice means attitudes are more likely to be consistent with behaviour [12]. Therefore, I avoided the potential negative dissonance by *not climbing* through taking responsibility for myself and my actions, indicating both a level of self-awareness and perhaps self-accountability in behaviour and attitudinal response [9]. In this sense my cognitions and behaviour are compatible, yet the mental tension remains which seems to oppose the traditional thinking on cognitive dissonance [7] or imply that there is greater complexity in the number and magnitude of inconsistent cognitions and behaviours occurring in this context. The nature of the number and salient value of these inconsistent cognitions (involving conflict with self) and behaviour increased the levels of cognitive discomfort as the following narrative illustrates:

> *The first hour was hard. I struggled to commit to and accept the objective, the action, the involvement. I knew it was about an hour to the place where we had had lunch the day before. This felt like a significant point in my mind, but I do not know why. I knew I had to just keep going to this place – literally one foot in front of the other. My head banged with the desire to stop, but not because I was finding it particularly hard work physically. I also did not really try to stop the thoughts but somewhat wallowed in the self-pity, and the perceived pain. I felt like an angry teenager, who could not explain or understand this sense of self. I was frustrated by my own thoughts and behaviour. But I could at least move my body forward at a consistent and even pace, although my head throbbed with negative black thoughts. I am not sure if my thoughts affected the nature of my pace, but I just wanted to get to that lunch spot.*

It has been suggested that the magnitude of dissonance is related to the number of discrepant cognitions and the degree of importance of the cognitive elements [7,11,24]. Therefore, I was experiencing multiple inconsistent cognitions, they were of high importance, or both elements contributed to heightened negative arousal. This was our first ski mountaineering objective in Peru, which was less challenging in terms of height and difficulty of access and climb than other planned objectives. Yet I did not relish the easier challenge and perhaps put more cognitive pressure on myself to complete it successfully in order to boost self-affirmation [19]. In this sense the decision to ascend or retreat was further complicated by the resultant sense of self I would experience. It is therefore not just about committing to and accepting the objective but also about accepting self. As the level of emotional discomfort was so high, the magnitude of attitude change required was comparable [10] and so acted as a barrier to reducing the dissonance.

I attempted to strategically distract myself [18] and reduce the emotional discomfort associated with high levels of cognitive dissonance, through a form of 'act rationalization' [15]. I supported the conduct of physically moving, in order to create the most likely continued behaviour once past the lunch spot. I may have chosen *action* because similar actions have been successful in the past–a recurring habit which successfully reduced cognitive dissonance as a positive force, as opposed to a habit which is resistance to attitude change [25]. I find moving the body is something I can do when my mind is turbulent, especially if the action is simple and methodical. It is almost a release from the cognitive dissonance. It is meditative and calming. The repetition gives my body something to do, it occupies it, so I have space and time to think. I know I find swimming, running and walking all helpful in this manner. In addition, I acknowledge that the physical act was not as difficult as the mental act or attitude alignment. In that sense, the physical behaviour of starting the climb required the least effort so the counter attitudinal behaviour was not that negative after all [49]. Yet I experienced cognitive dissonance of extremely high magnitude at the time and theoretically responded by trying to reduce dissonance [10]. However, I experienced continued, if not increased dissonance, contrasting with dissonance theory [7], or showing a greater complexity to the process. It seemed that was sensed by my climbing partner:

> *Maybe my climbing partner sensed my emotional discomfort, as he asked if I was ok. I did not need or want his questions and that made matters worse! I could not stop the thoughts or put them to rest (although I did not particularly try any mindful techniques or meditative exercises). It made me irritated that he thought I was not ok, although I did not actually know if this was what he was thinking. His questions made me think he questioned my strength, my ability to manage and achieve the goal. Did I question these things about myself? I tried to explain the struggle to him and the need to just keep going for now.*

Sometimes I consider mountaineering objectives to be the ambition of other climbers more than mine, perceiving a lack of free choice [47] and thereby inhibiting attitude alignment with behaviour. In addition, if I perceive a partners' ease with the objective, as I struggle with my inconsistent cognitions, the greater my emotional discomfort, 'your gain is my pain' [50]. If I perceive I am subjected to some climbing partners' assessment and critique, my emotional discomfort is further increased. And whilst I am struggling with my inconsistent cognitions, if I perceive their disappointment with me, in addition to my own, then my negative arousal escalates. Prosocial behaviour is correlated with comfort [49] and the increased social turmoil, even if it was just perceived by myself, contributed further to the magnitude of my cognitive dissonance, into feelings of anger, frustration and resentment.

However, anger and frustration can lead to increases in effort [26] which had a positive motivating effect in changing my attitude in this context [10]. Dissonance and motivation occur in the same brain zone and could explain the connection [12]. In this context, the cognitive dissonance contributed to an increased sense of stimulated alertness with a sense of associated increased energy which was paradoxically focused initially on further negative arousal rather than action. In addition, the heightened emotions and sense of arousal is a learned habit [25], making the goal physically and emotionally more rewarding if the cognitive dissonance is extreme and overcome. The high level of negative arousal in both personal and social aspects when combined with resilient action and the reaching of the previous lunch spot location led to a 'bursting' of tensions:

> *Once we were at the lunch stop from the day before the pain, anger and struggle strangely subsided, it disappeared suddenly. The dark crushing thoughts lifted spontaneously. I could now accept the challenge and started the ascent properly. Why did I have to go through this process of resistance of fighting with myself? What a waste of energy. Why was the first part the climb the hardest to achieve or was it passing this known line that I had to do to start for real? I had to keep going until I surrendered to the moment. I did not resist the task at this point, I accepted it.*

Whilst self-concept or self-esteem may moderate dissonance processes, they may not cause dissonance [13]. Yet my sense of self was clearer, more motivated and self-esteem enhanced once I had arrived and passed the lunch spot, implying that whilst I had made the decision to physically move, I had not made the decision to emotionally commit to the climb until that point. 'Once the individual decides on a course of action or makes a behavioural commitment, it enhances the value of the chosen course of action and reduces the value of the rejected course of action' ([51], p. 36). Therefore, in contrast to some research [13] my attitude had to align to behaviour more than behaviour aligning to attitude, in order to create abrupt conflict resolution [52]. Viewing the course of action in a more positive manner will help the individual align action more effectively [51], which occurred here. The free choice paradigm in combination with act rationalization [15] processes emerged in a quick and almost automatic manner in this context [49]. However, I find it hard to explain why the lunch spot was key to the change in attitude and commitment to the climb, other than perhaps being the 'true' start to the unknown elements of the climb and any uncertainty induced fear [45]. The ski mountaineering objective did not start till we had moved beyond this location and it was where the negative arousal dispersed. Therefore, I would also argue that the nature of commitment and any associated action are fluid and not as simplistic as theoretical models [7,51] would suggest.

The original cognitive dissonance model [7] did not explain why cognitive discrepancy caused a negative emotive state [51] and the negative state I experienced was not easily explained by two

opposing or contrasting cognitions. I experienced multiple inconsistent cognitions and attitudes to the knowledge, as well as behavioural actions at one time giving complexity to the cognitive dissonance. Like this context, individuals rarely just have just two inconsistent cognitions at one time, and it is more complex pattern than the original dissonance model [7] envisages. But what is interesting is the abrupt nature of attitude change I experienced and perhaps the energising force that was redirected from negative attitude to positive behaviour [10]. This implies the mountain environment can generate a context for life-affirming events that are congruent with personal change, resultant positive self-image and health.

Finally, the original cognitive dissonance theory [7] implies that behaviour and attitude are separate and can be changed independently from one another. Whilst my attitude to climbing did eventually become congruent with my behaviour and values, the notion that attitudes can be inferred from behaviour as consistent with self-perception theory [46] is too simplistic to explain my experiences in this context. Attitude is continually shifting according to context and so the importance of an attitude is only relevant at that one time and probably explains why the results of studying post dissonance attitudes have been contradictory [24]. Any attitude or behavioural change [16,17] as a result of reducing cognitive dissonance are dependent on the availability of new information (e.g., change in mountain weather, difficulty of the climb, or physical tiredness of the participant in this context) and the attitude salience [24]. Although post event analysis has enabled a greater self-awareness and understanding of my salient attitudes, the exact relationship between attitude and behaviour to reduce cognitive dissonance remains difficult to separate out and ascertain.

5. Conclusions

In the expedition to make a ski mountaineering traverse of Ishinca (5530 m) I experienced a range of cognitive dissonance reducing strategies: distraction [18], trivialization [19], act rationalization [15], and finally attitude change [8,9]. However, there was less behaviour change. My behaviour appeared more learned, stable and constant [38] than my attitude. Therefore, in contrast to some findings [13] attitudinal change aligned to behaviour. The lack of consonant cognitions [21,22] for abandoning the climb meant that negative cognitive arousal increased as the climb started. Yet even in the simplicity of the mountain environment, there was more than two inconsistent cognitions, so it is difficult to assess how attitudes and behaviour change as a result of one specific conflict. Attitudes are multidimensional and have affective, cognitive and behavioural dimensions [10].

In terms of the characteristics of dissonance, arousal, and modes of reduction, a variety of outcomes were experienced and explored. Firstly, the magnitude of dissonance arousal experienced during the ascent increased to a high point before abruptly disappearing altogether [49]. It is difficult to ascertain whether the negative arousal experienced was habitual, as a form of recurring dissonance, or to what extent the final attitude change played a part in the ultimate successes on the mountain. Could I have continued to climb with the same level of negative arousal? Affective state, through feelings of anger and frustration, was found to have a motivating role [26,49,52], although paradoxically the energy focused on negative arousal would have been more beneficial if it was directed at completing the climb itself. Reflection on previous experience (as a result of a recurring dissonance) allowed the author to use and build habitual behavioural strategies [25] which whilst offering some distraction paradoxically increased the levels of negative cognitive arousal experienced. My behaviour aligned to the salient values of tolerance and perseverance increasing the likelihood of a successful outcome. Thereby removing negative arousal associated with abandoning the climb and allowing self-affirmation [19]. However, less experienced mountaineers or individuals in similar dissonant contexts may not be able to draw upon reflective, stable and rational behaviour approaches [15] that operate in a contradictory manner to cognitions.

Whilst the notion of free choice in whether to climb had a role in attitude response, the contextual experiences alluded to a real complexity in how choice is perceived and acted upon. Attitudes, behaviours, social background, and values all affect how we see freedom of choice that is specific to

contextual elements and the individual involved. So, it is difficult to ascertain the exact role of free choice in dissonance arousal or reduction in this case. However, the reduced decision-making choices or lack of available options that come from the simplicity experienced in a mountain context allows for individuals to reflect, examine and develop greater self-awareness to use in related experiences. Although in my case, the lack of available options might cause greater emotional discomfort. Paradoxically, the behaviour chosen was not the one requiring least effort, which further magnified cognitive dissonance. This suggests that neither attitude nor behaviour simply changes to reduce negative cognitive arousal.

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Article

Outdoor Therapy: An Interpretative Phenomenological Analysis Examining the Lived-Experience, Embodied, and Therapeutic Process through Interpersonal Process Recall

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Abstract: This research explores an innovative methodology for understanding the process and practice of UK-based outdoor therapists. Recent studies address the need to expand circles of knowledge, and capture the lived-experience of outdoor practitioners to examine the 'altered' therapeutic process and frame. Interpersonal process recall (IPR) methodology offers a nuanced and contextualised lived-experience of outdoor therapists. IPR includes three phases: (1) initial-interview; (2) post-session-reflective-recording; and (3) an IPR-interview to replay and explore the participants' recorded reflections of the outdoor therapy session. The sample included three UK-based outdoor therapists. Interpretative phenomenological analysis was used to qualitatively analyze the data. The study presents the theme of 'transitional landscapes—transitional thinking', which explores the embodied experience, the parallel process between the client and therapist, and watching for drift. The findings provide insight for training and supervision and generates constructive dialogue amongst outdoor therapists. The research supports IPR as a methodology offering participant and researcher experiential and reflective positions. Parallels are drawn in relation to existing research, literature, and contemporary professional issues surrounding outdoor therapy as a mental health treatment.

Keywords: outdoor therapy; phenomenology; therapeutic process; embodiment; lived-experience

1. Outdoor Therapy

The search for common meaning in outdoor therapy has proven to be challenging [1]. Discussions across the world have sought, and continue to seek, a mutual definition for outdoor therapy [2,3]. Whilst acknowledging the multiple definitions and forms of practice in the UK, this study attempts to narrow the focus to outdoor therapy, which includes a range of constructs relating to natural and wild places. This encompasses a variety of outdoor activities and therapeutic modalities to integrate a three-way relationship between the client, practitioner, and the environment. Johnson [4] (p. 72) suggests a definition of outdoor therapy in the UK based on a multidisciplinary forum held in 2006 by the University of Central Lancashire, which invited the British Association for Counselling and Psychotherapy (BACP), the United Kingdom Council for Psychotherapy (UKCP), and the Institute for Outdoor Learning (IOL). Johnson [4] (p. 72) states that outdoor therapy:

> "(1) Uses a process of supported self-discovery to promote wellbeing and change.
>
> (2) Has some experience that takes place out-of-doors (recognition of interconnection to the environment and other themes).
>
> (3) Recognizes the outdoor place is an active component in the therapeutic process and that the process involves other components such as place, experience and reflection.

(4) Understands that reflection (not reviewing) for the therapist and client is an integral part of the process and that these reflective processes include what is happening for both the therapist/practitioner and the client and their relationship to the outdoor place."

1.1. The Role of the Therapist

Outdoor therapy brings together the intrinsic benefit received from outdoor environments with an intentional therapeutic approach. Nature-based interventions are emerging, offering health benefits and well-being outcomes, at the same time as cost effective alternative psychological therapies are being explored. "There are now numerous local and national organisations offering a range of nature-based interventions as specifically designed and structured health or social care treatment interventions" [5] (p. vi). Despite the growing demand and provision, there is limited literature surrounding the process of working with nature in therapy [6], the therapeutic frame, and practice issues [3]. The literature lacks an understanding of the role of the outdoors, looking at nature as a place to be utilized rather than central to the therapeutic process [7].

Outdoor therapy alters the therapeutic alliance (professional relationship) between the client and the therapist. In outdoor therapy, the outdoors is described as an intimate other within the counselling relationship; a third entity which provides a dyadic encounter, embodied, multi-sensory, here-and-now experience that differs to traditional therapy within a consultation room [8]. As such, outdoor therapy shifts the professional role of the therapist, allowing them to experience a new, revitalized definition of themselves with clients, which is more collaborative, dynamic, and emergent. McKinney [9] suggests the neutral and shared outdoor space and use of physical activities encourages a collaborative framework of practice. Therapists become responsive to the client's needs, promoting empowerment, equality, and client-centred practice [1]. The therapeutic space "collaboratively emerges, is constantly negotiated and is unique with each client" [1] (p. 10). McKinney [9] suggests that working in this way can speed up the pace at which the client and therapist begin to engage with presenting issues. However, there remains a lack of contextualized accounts explaining this process and its impact on intimacy and the therapeutic relationship. Whilst previous studies have contributed to understanding the altered client–therapist dynamic [3,7,9,10], there remains scope to understand the lived-experience of these encounters in greater depth and gain nuanced accounts from practitioners [6]. Similarly, Revell and McLeod [1] encourage researchers to investigate an accurate perception of both positive and negative accounts from practice to further discussion around best-practice.

An understanding of outdoor therapy approaches depends on in-depth analysis of present approaches and processes in action. The therapeutic process has multiple meanings; the process of change, the ingredients that contribute to outcomes, the abstraction and conceptualization of experience, and applied skills in context [11]. Bragg and Atkins [5] advocate that the knowledge of process is vitally important as the outdoor therapy field strives to become recognized as a viable therapeutic treatment and alternative to mainstream therapies. Understanding the process is essential for gaining funding [11], and for offering clear training, guidance, supervision, and discussion for practitioners using the outdoors [1]. Crucially, it is important to offer transparency and clarity to clients about the outdoor therapy approach [11].

1.2. The Outdoor Environment: Figure or Ground?

Within the field of outdoor therapy, the outdoor environment has a wide range of applications. There is some debate on whether outdoor therapy is a modality of its own or an integrative approach, combining theories and practices from multiple modalities [1,9], and whether outdoor therapy is used as a task, goal, or method within the therapeutic process. As an idiosyncratic field, the application of outdoor therapy seems to depend on the practitioner's personal background, training, and discipline. Berger and McLeod [12] advise therapists consider the role of nature; whether they are working in the foreground; adaptively as an active part of the process, the backdrop; space to journey within the therapeutic relationship; or using nature as a container, witness, or mediator. They suggest

it is possible to shift between these uses of the outdoors as appropriate to the client's needs [12], and understand the evolving interplay between the outdoor environment, therapist, and client. Within gestalt psychotherapy, the therapist responds to both the figure (background and context of the client) and ground (presenting issues that emerge) to focus the work whilst being mindful of the whole [13,14]. With outdoor therapies, the figure and ground take on new meaning and become experiential, metaphorical, and industrious [15]. As such, a "tripartite therapeutic partnership" is formed between the client, nature, and therapist whereby each can be affected by the others [6] (p. 66).

Outdoor therapists can help clients access an embodied experience, where sensual and cognitive epistemologies can be explored [16]. "To 'walk-and-talk' is to harness an interplay between physical movement and therapeutic conversation in the outdoors that results in an integration of space, place and embodied experiencing" [17] (p. 10). The altered physicality of working outdoors offers nonverbal synchronicity between the client and therapist [1], contributes to a greater abstract conceptualisation [18,19], increases thought processes which can loosen stuck thinking and forge new connections between different concepts [20], and can exaggerate passions, mystical experiences, and sensory appreciation [21]. From a cognitive perspective, Gibbs et al. [22] suggest embodied experiences can alter the clients use of language and allow them to articulate affective and metaphoric connections which were previously inaccessible. Physical movement can facilitate a transition from the internal stuck place as it encourages creative freedom [1]. Central to the therapeutic process are the aspects of change within the modality and the therapist's ability to use these elements in-the-moment. These aspects can range dramatically, such as adventure therapy, which emphasizes adventurous activities as the stimulus for change, compared to wilderness therapy, which favors solo time for reflection [1]. Conversely, some outdoor therapies, such as nature-based therapy, ecotherapy, and nature therapy, consider the natural environment as fundamental within the therapeutic process [1]. In most cases, the therapist's modality reflects the benefits they see in the use of landscapes [23]. Whilst a pluralistic view might consider, "clients benefit from different things at different stages in their therapy" [17], it is noted the word 'things' in the field of outdoor therapy has a broad interpretation.

Taking therapy outside can introduce an unpredictability and uncertainty within the therapeutic experience and is likely to alter the therapeutic frame [24]. Nature can be used as a container and safe place for the process to unfold [3] and can help the client find connection with their body, soul, and the land [25]. Harris [23] notes conflict between authors surrounding the importance of traditional therapeutic boundaries, as Totton [26] claims boundaries might interfere with the therapeutic relationship, compared with McKinney [9], who holds value in these structures. McMullan [27] considers nature's rules demand the therapist and client to play by a new rulebook, which cannot always be controlled. For McKinney [9], nature's control does not affect the rules transferred from traditional therapy, although it presents an ability to be casual and offer a less intimidating form of therapy. The therapist can adapt therapeutic activities in new contexts and re-configure their role, skills, and abilities. Conversely, some write of the mutual benefit of restoration and nurture in outdoor practices, allowing the therapist to remain separated from client material and avoid burnout [1].

This research investigates the therapeutic use of 'the outdoors' within outdoor therapy by exploring the process and embodiment in relation to other psychotherapeutic practices. Further, the study seeks to extend IPR methodology to gain an in-depth account of the lived-experience of UK-based outdoor therapy practitioners.

2. Methods

2.1. Interpersonal Process Recall

A process-focused interview technique, interpersonal process recall (IPR), was used to collect data. This unique methodology was applied to gain an in-depth and contextualized account of the practitioner's reflections of an outdoor therapy session. IPR allows the inquirer (researcher) and recaller (participant) to come to a common understanding about the recaller's experience [28]. Created for

corporate use, Kagan [29] developed IPR to understand professional responses for training purposes. Inskipp [30] later introduced IPR for counselling training, which has led to its application in reflective practice and studying therapeutic interactions [31]. Although IPR has been reported as an effective means of investigating therapeutic processes, there is limited research applying its methodology [32]. Brown et al. [33] advocate IPR as a person-centered design that increases the participant's reflection and involvement. Kettley et al.'s [28] account of IPR offers a rationale for its philosophical congruence with phenomenological and person-centered approaches, with a particular emphasis on enabling participant-led research.

IPR captures a qualitative-rich, in-the-moment, and specific account of interactions and processes [34]. McLeod [35] (p. ix) relates qualitative research to psychotherapy, which gains "holistic, nuanced, personal, contextualised, incomplete" data. IPR assumes that within the moment, multiple thoughts, feelings, and sensations are experienced but not necessarily recognized [36]. Whilst Macaskie et al. [37] note IPR recalls individual's conscious but often unprocessed thoughts, Finlay [38] (p. 10) recognizes "sometimes it languages things we already know tacitly but have not articulated in depth. At other times, quite surprising insights reveal themselves." A recent study found IPR allowed the researcher and participant to actively share the meaning-making process and co-construct research conversations [37]. The process-focused interview extracts insights through observation and direct questioning as the recollections unfold, paying close attention to context [34]. Kettley et al. [28] note the parallels between phenomenological studies which seek transparency and person-centered practices, which advocate congruence. IPR could offer new ground to explore a practitioner account that is embodied, nuanced, and contextualized and a method which engages the participant to become actively curious and reflective of their personal practice.

2.2. Sample

Phenomenological studies use small homogenous samples to examine convergence and divergence [39]. Purposive sampling allowed for three participants to be selected for their suitability [40]. All participants were registered or accredited counsellors of a Professional Standards Authority with between 7 and 20 years of experience as practitioners:

Participant A: Works with individuals indoors and outdoors with a person-centered modality and uses various outdoor sites from local parks to mountainous regions (male).
Participant B: Works with individuals indoors and outdoors following a person-centered modality within a pluralistic agency, using woodlands, parks, and fells (male).
Participant C: Works with groups and individuals in indoor and outdoor venues, using an integrative approach combining Gestalt, Jungian, transactional analysis, and person-centered theory and aspects of coaching and wilderness therapy (male).

2.3. Informed Consent

Participants received information regarding the process, aims, contribution to research, and right to withdraw [41]. Within a very small industry of outdoor therapists within the UK, participants were warned that despite the appropriate use of pseudonyms and the removal of sensitive and place-specific data, they may be recognizable through their narrative.

Bond [42] warns researchers in counselling and psychotherapy that client confidentiality could be compromised with in-depth data. As a result, the research participants were briefed to maintain client anonymity and given the opportunity to read and censor sensitive data from the transcripts as encouraged by Henry and Fetters [43]. "Honouring any promises about confidentiality carries special ethical weight because this is central to practitioner and researcher trustworthiness in this field of work" [42] (p. 7).

2.4. Procedure

To respect client confidentiality and avoid interference to the client's therapy, this research focused on the therapist. Data collection involved a three-step procedure:

Step 1: A face-to-face initial-interview: To gain background and contextual data on the participant's practice and philosophy of outdoor therapy. Digitally recorded and transcribed (45 to 60 min).

Step 2: Post-session-reflective-recording: Using a semi-structured list of reflective questions, participants remotely recorded their immediate reflections after an outdoor therapy session to gain an uninhibited account of the participant's lived-experience. Recorded (participant's smart-phones) and transcribed (30-minutes).

Step 3: Face-face IPR-Interview: The participant and researcher listened to the post-session-reflective-recording together at the participant's working location. The researcher and participant were able to pause the recording at points of interest to gain depth, perspective, and insight (60 to 90 min).

In IPR, "Interviewees are cued to remember various reactions and ideas that occurred during the session but might not readily come to mind unassisted" [34] (p. 1). "The IPR process slows down the interview conversation, giving interviewees time to meditate on and verbalize complex experiences" [34] (p. 3). Similar to Brown et al.'s [33] study, the post-session-reflective-recording was used as a stimulus for reflection, to replay and invite participants to pause and recall thoughts and feelings not commented upon within the original recording. This allowed for a deeper understanding of the subjective experience, a point of reference to gain perspective upon, and gave voice to participants to re-encounter their account. This multi-layered approach offers a unique methodology of examining the phenomenon.

2.5. Ethical Considerations

Ethical approval was granted by the University of Worcester [44] and reflects the British Association for Counselling and Psychotherapy's research ethical guidelines [45] and the Economic and Social Research Council's [46] ethical guidance framework.

2.6. Researcher Bias

Whilst psychology is concerned with the unavoidable presence and meaning systems inherent to the researcher, IPA embraces the relationship between researcher and subject matter [39]. The researcher's personal bias stems from involvement as an outdoor educator, integrative counsellor, and individual using the outdoors restoratively.

2.7. Analysis

Interpretative phenomenological analysis (IPA) offers a qualitative approach to investigate participants' experiences, examining how people make sense and understand the experience in its own terms [47]. As such, IPA is often used alongside interviews to "recall the parts and their connections and discover this common meaning" [39]. This experiential approach invites the researcher to engage creatively with the participants' reflections [39]. Considering the interdisciplinary theories related to outdoor therapy, the ideographic nature of IPA is called upon to understand "what the experience for this person is like, what sense this particular person is making of what is happening to them" [39] (p. 3). This appears appropriate for outdoor therapy as "services in this field (are) using different language to describe their activity and benefits, operating different delivery models and using different measurements of impact" [5] (p. vi). Whilst this research favors a qualitative in-depth methodology to explore outdoor therapy practice, Smith et al. [39] warn exploratory and interpretative research findings should not be regarded as exhaustive but can generate new areas for inquiry. IPA involves iterative analysis, moving back and forth at different ways of looking at data, rather than sequentially [48]. A major principle of phenomenology is to move past taken for granted assumptions and discover the essence of experience [49,50]. Like many strands of humanistic counselling, phenomenology regards

participants as the expert of their experience and warns researchers not to re-word or label extracts [49]. Allen-Collinson [49] advises researchers to include original extracts to speak for themselves, record researcher conceptualizations, and use triangulation to validate findings. This research follows Smith et al.'s [39] (p. 84) guidelines, dissecting the transcript using:

> "Descriptive comments focused on describing the content of what the participant has said, the subject of the talk within the transcript . . . Linguistic comments focused upon exploring the specific use of language by the participant . . . Conceptual comments focused on engaging at a more interrogative and conceptual level".

From these descriptive, linguistic, and conceptual comments, emergent themes were generated before examining the cases and searching for connections across themes and abstracting patterns across cases to form super-ordinate themes [39,51]. Owing to the multi-layered analysis, the research was manually coded as the researcher's preferred coding method. The researcher had previous experience of IPA as a post-graduate student. This process involved reading, re-reading, familiarization, immersion, and incubation through continued engagement with the recordings and transcripts [52]. The researcher made notes of codes and then themes through abstraction; putting like with like, subsumption; identifying a theme which acts as a magnet to other themes, and polarisation; focusing on the difference between themes rather than similarities [39]. Whilst this process provided opportunity to engage with data in different forms, Smith et al. [39] recognize the researcher often moves into deeper stages of interpretation, whereby they begin to understand the data. The super-ordinate themes arrived at offer a compromise between a systematic and intuitive analysis process, which reflects not only the participants' lived-experience but also the researcher's interpretation [39,53].

3. Results

The original research submitted to the University of Worcester included five themes. This paper presents one theme: 'Transitional landscapes—transitional thinking'. This theme was chosen as it best demonstrates the application of interpersonal process recall in gaining an in-depth and nuanced understanding of the environment within the session. The theme is broken into subthemes including; the embodied experience, parallel processing, and watching for drift.

3.1. Transitional Landscapes; Transitional Thinking

Outdoor therapy can be direct (working outdoors from the start), planned (starting indoors with a plan to move outside), combined (using indoor and outdoor spaces on alternate or particular sessions), or emergent (finding opportunity for the work to progress to an outside space). Emergent opportunities arise where the client learns and becomes interested in an outdoor approach or where the practitioner gets a sense that working outside might be safe and beneficial to the client. As with traditional counselling, the initial sessions are important for establishing the therapeutic relationship, ensuring there are clear and contracted boundaries of practice and establishing the focus of the work and whether the practitioner's modality will suit the client.

Compared to indoor counselling that is often assisted with a clear transition from the waiting room to the contained counselling room, in a direct approach, where the client and practitioner meet and start working outside from the beginning, there is a less clearly defined transition. Participant C describes one approach using the environment and assisting the client to make a transition between landscapes and beginning the therapy session.

> "We'd get to the bridge at the head of the lake . . . that's like a passage and I'd say to people . . . when we come off the tarmac road I'd invite them to think about their leaving one kind of environment and going into somewhere else". (Participant C)

This approach uses a land feature to symbolize the transition into the therapeutic session. It indicates that for participant C, the session offers an escape from everyday life and a passage into an

alternative space. The journey becomes metaphoric as well as physical as the participant transitions from one space to another. Conversely, participant B describes a combined approach whereby the outdoors is used as an experiential space to explore the therapeutic work.

> "He chose a route through some paths, woodland paths and ended up going off track and over walls … it was almost quite playful, and quite a sense of lostness and re-emerging and all that kind of stuff he was experiencing which mirrored some of our indoor sessions, literally as opposed to metaphorically". (Participant B)

In this example, the client is able to actively experience some of the metaphoric content of an indoor session, the metaphors of being lost and finding themselves are given a literal meaning as the client navigates through the forest. A combined approach allows for the client and practitioner to work with the presenting issue through rational, reflective and abstract forms.

As the sessions progress, the client may become more confident to work with the practitioner and the outdoor approach. The sessions transition from beginnings (getting comfortable with the approach) to middles (utilizing the approach to explore the presenting issue). Participant B describes a client's integration of the natural environment within the session. The client starts to experience an embodied agency within the outdoor environment.

> "He was moving along, like in the same way that his emotions were moving … feeling very lost, very confused … what mirrored that process was walking along in the light, a light airy space for a little bit and then going through the woods as per his direction, and getting very lost and weaving our way through these little paths". (Participant B)

Here, the therapeutic process emerges with, and is guided by the natural environment; as the client and practitioner talk, the client is able to move into spaces of shade or light, clear pathways, or trickier terrain. The terrain affects the conversation as the natural environment stimulates the therapeutic process, providing dynamic material within the session. Equally, the client can affect the terrain by changing the path they choose; thus, enabling an embodied expression to emerge. The practitioner observes the client shifting between affecting and being affected by the environment. The practitioner's role shifts, allowing room for the natural world to interact within the therapeutic relationship.

> "Just at the point where we were more tangled was when we could actually start to see the sky through the trees again … and then saw the hope, the light through the trees and that seemed to help facilitate him getting back to himself, answering his question about the here-and-now". (Participant B)

Whilst the client can dictate the path, they are also in a dynamic and emergent terrain. After leading the way into a thick mass of trees, the environment offers a natural window and sense of perspective. The light through the trees offered a symbol of hope and provided light to the situation that shifts the client's thinking process. This is experienced physically, emotionally, and cognitively as the client finds patches of clarity within an enclosed forest. The client is able to discern the figure from the ground and return to the present moment.

> "That for me is like the holy grail, when the experience of the session and the experiencing of it feels as real as what's going on internally, we hit those moments throughout that journey because the client is picking the route in tune with the content of their session". (Participant B)

The practitioner's likening of an embodied session (synchronicity between mind and body) to the holy grail indicates a sense of actualization, flow, or epiphany that is deep and powerful. To the practitioner, the client's ability to work in this way and encounter such a state of mind indicated that the session was meaningful. The practitioner's role is to dynamically facilitate this engagement with the natural environment and work with the client to offer awareness.

Being with the client outside allows other-than-spoken processes to emerge. Participant A explains that silently walking with the client was equally as useful. The session takes a different pace and allows the process of walking to hold the space between conversations.

> "I think walking gave us an opportunity to share times of stillness and silence which were sometimes necessary for my client to be able to process what was going on and to find the words to say what he wanted to say". (Participant A)

Transitions in outdoor therapy take many forms. These transitions include the intentional shift from an indoor to outdoor space, the client's attunement and integration of the approach, and the shift of the practitioner to provide space for the natural environment to interact and be an active component of the work.

3.2. The Embodied Process

Outdoor therapy reframes the therapeutic relationship and offers both the client and therapist a different experience of one another. This reframe symbolically alters the perception of the role and context of the professional. The therapeutic work becomes defined, negotiated, and maintained within the context of the outdoor environment. The therapeutic process takes on additional dimensions as the client and therapist move through and engage with the environment. Participants noticed that working outdoors impacted their experience of the client:

> "You feel kind of more what they're feeling and their kind of anger can become perhaps more understandable or certainly experienced anyway!". (Participant A)

Outdoor therapy offers a holistic approach. Whilst indoor counselling works mainly with the cognitive and emotional, outdoor therapy involves an active element that invites clients to be present with their emotions, thoughts, and actions. The immersive experience can impact the practitioner's ability to experience the client authentically.

> "In a therapy room . . . they can see the clock . . . but in nature when they've been walking around in the woods and they don't really know where they are, old worries and anxieties and things may well resurface but they may be reflecting the real person rather than the person they try to be". (Participant C)

Participant C explains that outdoor therapy allows clients to become immersed in the moment, and in doing so, they might forget about how they are trying to portray themselves and start being authentic. Participant C suggests this process may lead to worries and anxieties resurfacing, which offer a more genuine experience of the client. Working with the client in an experiential way enables the therapist to observe and experience the client's way of being in real situations rather than through the client's self-reflection. This allows the therapist to engage with the client's authentic self and provides an opportunity to experiment with coping-mechanisms.

> "If they don't look after themselves physically in that environment, then what does that say about them emotionally? Are they able to take care themselves?". (Participant C)

Outdoor therapy alters what it is to engage in therapy and for participant A, reframes the purpose of therapeutic encounters from clinical to organic.

> "Stillness's and silences can seem a very natural part of the process of walking, whereas in a counselling room, sometimes those dark silences can seem very, yeah unbearable almost". (Participant A)

In this example, the participant reflects upon the meaning implied by stillness and silence. He suggests the tone of silence is altered when walking to resemble a natural pause, whereas within a counselling room, the tone can feel imposing and stifled. Equally, participant A reports an ability to experience their client's disconnect, their discomfort and vulnerability, and the impact of this on their work.

> "One particular client . . . it was very obvious there was not psychological contact between him and his surroundings . . . within about ten-fifteen minutes I had this most enormous headache . . . it was really frustrating because I was really feeling that sense of complete disconnection with where I was . . . I was in his world, I'd kind of lost a sense of me as a counsellor . . . I was as disembodied as he was". (Participant A)

Participant A details a disconnect between the client and their surroundings, which in turn affects the practitioner's ability to connect with their environment. This disembodiment affects the practitioner's sense of self. Whilst the practitioner uses the natural environment to remain grounded and focused on the client, here, the practitioner is unable to make psychological contact between nature–practitioner–client.

When removed from the traditional context of counselling and engaging experientially in outdoor therapy, the practitioner must be cautious to remain focused, rational, and professional and avoid getting lost in the experience:

> "The risk is you have a genuine relationship with somebody . . . then you actually feel their pain and their sorrow and their sadness". (Participant A)

Participant A considers the risk of intimacy on professionalism. He suggests practitioners working outdoors might have an altered perception of the role of intimacy in the therapeutic relationship and be more inclined to experience their clients authentically. This suggests that for participant A, the risk of intimacy is not that professional boundaries will be compromised, but that the practitioner may begin to feel their client's emotions.

> "I think that's one of the reasons why counsellors are very reluctant to work outdoors because . . . strangely . . . it seems paradoxical because what you want is intimacy, I think often counsellors are actually very scared of true intimacy". (Participant A)

Participant A identifies a paradox whereby on the one hand the work between the client and practitioner fosters intimacy within the working relationship and on the other, professional boundaries imply that true intimacy is to be un-boundried or step over the professional boundary of practice. For participant A, professional boundaries do not restrict intimacy, nor does intimacy restrict professionalism. There is an indication that counsellors may be restricting their work through limiting the intimacy within the working relationship and that by situating work too squarely within professional boundaries, the innate human connection is lost. Despite this, participant A acknowledges that intimacy must be managed with care.

> "I think trusting relationships can develop very quickly, that can also be a problem too in the sense that sometimes people might be working quicker than they actually feel comfortable with". (Participant A)

Here, the participant explains that intimacy takes time to develop between the client and practitioner. The pace, intimacy, and depth of the work are managed in the altered context. The practitioner must consider the duty of care to the client and decide what is appropriate and best for the client within the scope of the approach.

3.3. Parallel Processing

The outdoor environment provides a dynamic element affecting both the client and practitioner. The participants expressed a motivation and passion for outdoor environments as a place of self-care. These places become a working environment offering a symbiotic relationship and providing restorative conditions for both the therapist and client and a sense of rejuvenation to the therapeutic work:

> "I notice that when I'm outside I can be more immediate with what is going on in the moment, I can be more focused, perhaps more available for the client … that has an impact in terms of holding from a person-centered point of view … holding of the necessary and sufficient conditions". (Participant A)

Participant A describes a sense of attunement to the client within the natural environment. The participant describes a sense of seeing more within the moment and being grounded in the present here-and-now in which the client is the center of attention. Here, the person-centered core conditions (empathy, congruence, and unconditional positive regard) flow naturally between nature–practitioner and practitioner–client to provide the conditions for therapeutic change. Not only is the client held, nurtured, and contained, but the practitioner too. However, the therapist must be aware of their own processes and motives within the session, putting aside their 'stuff' to be present with the client.

> "My feeling is joy, I'm finally in a new place, there's a new lostness; I love exploring so for me there's an adventurous side, I love that feeling. But I love it so much that I've had to learn how to not let that get in the way of how the client is feeling … this has taken a long time … to both feel that excitement that I'm having in the moment … but to be with the client and how they're experiencing that moment". (Participant B)

Participant B describes his emotional response to the sense of lostness within the session. He acknowledges his inner-reaction and sense of adventure which is parked to remain present and attuned to the client's experience. Participant B indicates a journey of realization and training that he has taken to remain present with the client and to sustain focus during the session.

Equally, the process of joining with the client and remaining responsive to the terrain and safety elements requires the therapist to dynamically examine their anxieties and intrinsic response to the land in relation to the context of the work and their code of practice;

> "I keep feeling naughty about that … like little school boys playing … we were in this deep process literally a moment ago, but it got really steep and really windy, I had this feeling like 'we shouldn't be here' … and I just have to let it go because I'm looking at the client just carrying on talking but he's weaving through". (Participant B)

Participant B's use of the words 'naughty' and 'school boys' indicates a more playful dynamic between the client and practitioner. The participant uses 'we', suggesting that the moment was a shared experience and state of being. The practitioner notes the change in the terrain and its impact on their movement. Here, the practitioner takes a moment to check-in and acknowledge his sense of discomfort with the situation before considering its impact on the client's safety and process. The practitioner is able to focus on the client and reserves his doubts to allow the client's process to continue. As a person-centered counsellor attuned to following the client, participant B explains the practitioner must recognize and hold their own agentic response to nature. Dissonance can emerge between the client's and the practitioner's experience.

> "For me it was divine, it was heavenly, but for my client it who was feeling very suicidal at the time, he just had this deep feeling of foreboding because it was just too much". (Participant A)

Participant B offers another example, whereby their passion and motivation for the outdoors was not reflected by the client. In this case, the practitioner was forced to consider the intention behind the approach and who was benefiting from the approach.

> "I was expecting them to have the same relationship to nature as I did. Which was enthusiastic, love, joy, it was amazing the best thing in the world and the first person I took outside hated it . . . I was really disappointed". (Participant B)

Participant B reflects upon how he has attempted to narrow the gap between his personal experience and the client's experience using a process of intentional disorientation, within a safe and confined boundary, to become more equal, avoid complacency, and better understand the here-and-now experience.

> "I didn't realize until I did this on reflecting on this . . . I'm aiming for this ideal kind of equality with the client and the session . . . to mirror what I'm actually doing indoors . . . I wanted to actually go somewhere I hadn't been before, so that it did feel more like it does in a normal session which is new territory, new ground". (Participant B)

Taking therapy outside requires the practitioner to be comfortable and aware of their own relationship with outdoor and natural spaces. Their competence and comfort in these environments allow them to be present with their client's experience. Staying in tune with their own response, the practitioners internally supervise the session, considering the client's wellbeing and the therapeutic work aside the landscape and terrain.

3.4. Watching for Drift

Working with the client's response to nature requires and invites the therapist to experience additional roles and blurs the boundaries of the traditional therapeutic hour. This offers multiple elements for the practitioner to balance and manage simultaneously. Participant A describes the importance of finding safe conditions for the session to emerge. Where the conditions are not suitable, the practitioner adapts accordingly until conditions are met.

> "Walking to the park, we would have general sort of chit-chat but we wouldn't be doing sort of deep work because I'd end up walking into a car". (Participant A)

Once safe conditions are found, the practitioner can settle into the session. Whilst the practitioner continues to dynamically assess safety, participant B describes an experience of becoming immersed in the session with the client, presenting a risk of drift from the presenting issue to the experience itself.

> "I'm almost giggling here actually because I remember . . . there was a part where the alliance was as if we were being a bit naughty like here we are doing a counselling session, talking about all these things and then we find ourselves weaving up, weaving up quite a steep track, not even a track, a steep wall with no track". (Participant B)

This can alter the therapeutic alliance, whereby the client and practitioner experience each other differently.

> "That pretense goes, you just lose yourself . . . we shared in those moments so that our eye contact was more and we were having fun". (Participant B)

The therapist shifts focus with the terrain of the session. Whilst managing safety, the therapeutic work, the client's experience, and the environment, the outdoor therapist must also follow their navigational location. Participant B describes a moment where he did not know their exact location and considers the impact of this on the client.

> "I didn't know that was the way out, he did actually find it . . . he thought I was pretending . . . that I did really know where I was . . . and I didn't. And that was really levelling". (Participant B)

This can alter, shake or destabilize the client's view of the therapist and the perceived competence, safety, and professionalism bestowed upon the practitioner.

Watching for drift requires the practitioner to juggle the different hats that they must wear to work as competent lone-practitioners. Whilst working in line with their ethical framework and seeking supervision to review their work, practitioners must be mindful of the heightened duty of care they have for clients whilst outdoors.

4. Discussion

This study adopted an interpretative phenomenological analysis to explore the participants' lived-experiences of outdoor therapy sessions. The theme presented reflects upon the use of an environment which is intrinsically therapeutic and which can lead to transitional thinking [54], and the multiphasic nature in which cognitive and psychological states ebb and flow throughout the encounter [55]. This research supports links between internal and external landscapes [56], symbolism between nature and the therapeutic alliance [12], the other-than-human-world and the reflective process within the session [25,26], and the impact of sharing external landscapes upon the therapeutic relationship [26]. There is also support that the mechanism of change depends on the therapeutic modality of the therapist [23].

This research builds upon Revell and McLeod's [1] account that the altered physicality and embodied relating between the client–practitioner/client–nature/mind–body can create opportunities for synchronicity, metaphors, and transitional experiences to emerge. There becomes a balance, whereby the practitioner must step back to let the client lead whilst containing the safety, focus, and depth of the session. The practitioner holds the process, noticing the client's physical and verbal expression, transition between states, and interaction with surroundings. Further, the practitioner notes whether the client is affecting or affected by the environment and helps to explore the links between the internal and external, delicately managing the figure and ground. The figure and ground present "ambivalent and nuanced spaces [with] many shades of meanings . . . perceived as healthy and unhealthy at the same time" [57] (p. 261). The natural world provides texture, context, and stimuli to explore the figure and ground through physical, cognitive, and emotional modes.

In a process of multi-sensory involvement, the therapist becomes part of the experience, moving between witness and companion within the client's process. The therapist watches for drift from the presenting issue, aware of experiences which might become un-boundried or destabilize the process. As Baer and Gesler [58] advocate, the therapeutic potential of environments changes over time and therapists must assess the validity of the landscape on the healing process. This was confirmed as participants explained the selection, evolution, and therapeutic use of sites.

This theme builds upon previous literature, which identified the positive effect on therapists' personal psyche and ability to prevent burnout [1]. The altered therapeutic relationship is examined in relation to the impact of experiencing the client; Revell and McLeod [1] identify a process of bodily empathy, whereby therapists experience their clients more holistically. Whilst Revell and McLeod [1] note a freer and less inhibited relationship that emerges, altering the dynamic as the client and therapist move from face-to-face to side-by-side, the findings suggest the therapist is not completely uninhibited and care-free and works alongside a complex process of providing an appropriate therapeutic relationship, maintaining flexible boundaries, and being able to separate and hold their own 'stuff' apart from the client.

Like Jordan and Marshal [24], the study found the neutral space allows the therapist to be more real within a natural setting and provides deepened intimacy, although they caution that intimacy must be handled carefully. This offers an opportunity to experience the client in real time and witness the client's disconnect, discomfort, and vulnerability. This can widen the gap between the client and therapist's experience, allowing the therapist to work with the client through the issue or alter the therapeutic experience as necessary. Jordan and Marshall [24] note the ability for the experience to provide immediacy for both the client and therapist. The findings support an altered therapeutic

alliance and therapeutic role in terms of bringing more of themselves into the relationship and loosening their professional role [1]. Berger and McLeod [12] (pp. 87–88) identify the role of the therapist as "witness, container, and mediator" shifting in relation to the client's engagement with nature. In this case, it appears the therapist can also become a 'partner' with the client, experiencing together. In many cases, participants detail processes which are adapted from indoor counselling. This appears to align with McMullan's [27] considerations that the alliance is removed from traditional rules of therapy, instead locating and obliging nature's rules. However, as Harris [23] warns, participants equally detail the ability for the alliance to become destabilized based on the client's expectations of the therapist not being met or due to lacking boundaries.

4.1. Limitations and Reflexivity

The sample inclusion and exclusion parameters had specific demands of the research participants. Whilst these were upheld, an unexpected element was the scope of participants' work and range of sessions, which presented within the post-session-reflective-recordings. Such diversity is echoed in Harris's [23] research, which underestimated the range and complexity of cases presented. The diversity of cases proved difficult to hold amongst one another. For example, holding group work amongst one-to-one therapy or overnight sessions amongst 50-minute sessions. An implication for future IPR research is to specify both participant and post-session-reflective-recording parameters.

In accordance with a phenomenological approach, this research explored the thing itself, applying IPR research methodology providing a reflective stance for the participant and researcher and generating practitioner knowledge. Each stage in the IPR procedure allowed a different layer of depth to be explored and highlighted different aspects of the lived-experience. Whilst it might be argued that the findings lack generalizability, this research questions the extent to which generalized findings would benefit the field of outdoor therapy and considers it critical to know more about specific practices.

4.2. Implications

An alternative view of the therapeutic alliance was encountered whereby the practitioner and client become partners and can reveal their authentic selves. The therapist is both a participant in the experience and holds responsibility for the therapeutic encounter. The relational dynamic appears complex and needs to be considered from the client's perspective.

In addition to the many positive accounts of outdoor therapy, investigation needs to explore the experiences which drift from the therapeutic aim, distract from the goal, or destabilize the therapeutic process and the implications of such occurrences. In view of physical and emotional risk, and the reporting culture of the counselling and outdoor industries, further research might investigate the provision of support extended to lone-practitioners.

5. Conclusions

This research offers insight into outdoor therapists' lived-experience and practitioner knowledge within a specific outdoor therapy session. At the outset, the research intended to understand both the embodied experience and therapeutic process. What emerged was a detailed account of the synchronicity between the two as the therapist receives and seeks input from the natural surroundings. The findings progress from the therapist's philosophical stance, motivation, and theoretical position to a contextualized and practical understanding of the process. The data reveals the therapist's choice of therapeutic sites, impact of physicality on the dialogue, and use of the outdoor context. The IPR-interview distinguishes the therapist's perceptions for their clients and their own lived-experience and how these states are altered in transitional landscapes. These findings highlight the significance of an altered therapeutic partnership and the impact of parallel experiencing upon the therapeutic encounter. These factors were considered in relation to the therapeutic frame and the practicalities and difference of working outdoors.

Whilst acknowledging limitations presented by a diverse sample, IPR offers a tool for future research, enabling both the participant and researcher an experiential and reflective stance. Further research is needed on the client's lived-experience, and an understanding of the process and embodied-experience. An understanding of positive and negative experiences could inform practice, and offer insights for appropriate training and supervision, and generate constructive dialogue amongst outdoor therapists.

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Article

GOING GREEN: The Effectiveness of a 40-Day Green Exercise Intervention for Insufficiently Active Adults

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Abstract: Increasing physical activity and reducing sedentary behavior is an economic and health priority. This Green Exercise (GEx) study reports on a 40-day physical activity intervention to increase physical activity that primarily used outdoor recreation activities. Adherence, compliance, blood pressure (BP), total cholesterol, anthropometry, strength, dynamic stability, and cardiovascular fitness were assessed 1 week prior and immediately following the 40-day intervention. The results then were compared with a larger study that used the same methodologies but for the exception of primarily indoor physical activities. Results from this study showed similar improvements in health measures to the comparative indoor-based physical activity program with increased adherence and compliance. Improvements in wellbeing were also noted. This GEx study suggests that exercise programs that seek to increase physical activity levels of insufficiently active adults may benefit from including outdoor recreation activities within the program and may also increase participant mental health and general well-being.

Keywords: green exercise; adherence; compliance; health; outdoor and adventure activities

1. Introduction

Western societies are much less physically active than our pre-industrial forebears and far less active than the humans who were our ancient ancestors [1]. Technological advances have resulted in changes to the way we live following the onset of the agricultural and industrial revolutions and the digital age [2]. These changes now mean that we are less likely to be engaging in physically active behaviors as we spend more time in built environments and less time in agrarian or natural environments.

Physical Inactivity is thought to be the fourth leading risk factor for global mortality (following high blood pressure, smoking and diabetes) and is the main cause of 21–25% of breast and colon cancers, 27% of diabetes and 30% of ischemic heart disease [3]. Physical inactivity, along with unhealthy diet, tobacco use, and excess alcohol consumption is a key contributor to 28 million deaths from non-communicable diseases [3]. Increasing physical activity (PA), eating well and reducing smoking is thought to have the potential to prevent 80% of premature heart disease, 80% of type 2 diabetes and 40% of cancers [3]. Physical activity is also known to positively affect mental health [4] with depression now the leading cause of disability world-wide, affecting an estimated 350 million people [5]. Despite positive benefits of PA, estimates from Australian state and territory surveys suggest that less than 50% adults are achieving sufficient levels for health [6].

Addressing sedentary behavior is now a global health challenge [7]. Direct PA interventions have been shown to positively affect behavioral change in terms of participants' adherence and compliance to exercise following a program [8,9]. Recent systematic reviews provide some direction for PA interventions to be more successful in promoting adherence (the extent to which participants continue in a program to its conclusion) and compliance (generally defined as the extent to which participants

meet a prescription of PA) [8–10]. Intervention strategies that engage participants in PA behaviors were more likely to be effective than cognitive variants [11]. Group-based and educational interventions were found to be more effective in the short-term when compared to home-based strategies [12]. Long-term interventions were found to be more effective for older (compared to middle-aged) populations and when using booster strategies such as providing educational materials [9]. The use of monitoring devices [13] shows promise for increasing adherence and compliance for those with identified conditions [13,14].

Barton and Pretty [15] theorized that PA in outdoor and natural environments provides increased benefits compared with exercise in indoor environments. A recent term, 'Green Exercise' (GEx) was coined and defined somewhat broadly as exercise in the presence of nature [15]. Supporting this theory, a small number of studies comparing PA in 'non-green' and 'green' spaces suggest that natural views and natural environments may increase PA participation [16], intensity levels [17,18], physical health [10,18–27], and mental health benefits [10,17,18,25–35].

No studies were found prior to this intervention that assessed comparative adherence or compliance rates as part of intervention programs for insufficiently active adults; therefore, any beneficial effect GEx might have on increasing levels of PA has not previously been tested in this population.

Withdrawal from PA interventions and general exercise programs is a recognized problem [36–39]. It is theorized that adherence is affected in part by the environment in which people exercise [10,33] and that GEx might positively influence adherence [30,40–42]. Nearly half of indoor sports participants drop out within the initial 6 months, whereas it has been reported that walking outdoors is a preferred form of exercise to maintain adherence [43].

Theories about possible increases in exercise adherence and compliance with GEx include attention distraction [30], costs associated with exercise [33] and the biophilia hypothesis proposed by Kellert and Wilson [44] suggesting humans have an innate attraction to nature. Mackay and Neill [32] theorized that the greater the 'greenness' of an environment, the greater the potential benefit to those immersed in it.

To investigate the comparative role of GEx with other exercise interventions in promoting adherence and compliance, a previously successful larger scale 40-day PA intervention by Norton et al. [45] that primarily used indoor environments [45] was replicated in structure, with the exception of the group activities that replaced indoor-based with outdoor-based pursuits. Norton and colleagues' [45] study incorporated three intervention arms: (1) a pedometer-based group with no direct facilitation (n = 251); (2) an active control group consisting of sufficiently active subjects continuing to meet recommended weekly requirements for PA (>150 min/week; n = 135); and (3) an instructor-led cohort utilizing group-based and individual exercise sessions, largely indoors (n = 148). Results from Norton and colleagues' [45] study indicated that this latter intervention arm was most successful at improving PA participation and associated health measures, and therefore, was modelled for this study, but with a GEx focus.

The primary aims of this study were to measure program adherence and exercise compliance among participants undertaking a 40-day daily PA intervention based on GEx. Secondary aims included to determine the changes in a range of physical, physiological and psychological variables following the intervention and to compare the changes in the GEx intervention with those previously reported by Norton et al. [45]

2. Materials and Methods

Recruitment for the 40-day GEx Intervention occurred through numerous mechanisms: Firstly, via email throughout the University of South Australia and a number of South Australian government departments; secondly, through a news story in a local newspaper; and thirdly, via recruitment posters placed around the University City East campus.

Inclusion criteria for both studies was insufficiently active (<150 min/week of moderate-to-vigorous PA assessed using the Active Australia Survey [46]); otherwise healthy; 18–60 years of age; available

for a 40-day PA program. The structure included three instructor-led group sessions per week, being 19 group sessions in total over the 40 days. Group sessions ran for a minimum of 30 min and were planned to progressively increase participants' energy expenditure (EE) requirement each session. On non-group days, participants were asked to undertake their own exercise session for a minimum of 30 min, totaling 21 of the 40 sessions. The program ran throughout April, being autumn in the southern hemisphere. Norton's [45] study had 11 indoor sessions undertaking training activities that included circuit training with weights, stair climbing, stretching and resistance activities, aerobics, and spin-cycling classes. Six activities took place at nearby city parks (jogging, soccer, stretching), with two group sessions planned to take place in more natural environments. The program ran during autumn, winter and spring. By comparison, this program of GEx (Table 1) included only outdoor recreation activities in local, easily accessible green spaces, using the criteria outlined by Mackay and Neill [32].

The settings included places such as parklands, riverside settings, conservation parks, and marine and coastal environments (Figure 1). Activities included walking, low organization team games, challenge activities, yoga, kayaking, cycling, rock-climbing, and orienteering all conducted in an outdoor environment. The program itinerary used freely available and conveniently located (near-city) public green spaces with the intention to introduce participants to a diverse range of recreational activities that could be undertaken beyond the program (Table 1).

Participants attended the group sessions three times per week (Tuesdays, Thursdays and Sundays) for activities conducted by trained instructors and undertook an activity of their own choice on alternate days (Table 3). The activity sessions were designed to expend approximately 800 kJ in the first week increasing by approximately 200 kJ in each subsequent week. All sessions included a 10-min warm-up and cool-down with a stretching period. Weekday sessions lasted 60 min and Sunday sessions around 90 min. Where possible, the core of the session had subjects working between 60–80% of age-predicted HR_{max} (220-age in years). This was not always attainable due to the nature of the activities, for example rock climbing which requires bouts of intense activity interspersed by rest.

Table 1. Itinerary for the 40-day GEx Program Commencing 30 April.

Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Week 1 800 kJ *		**WALK** Easy grade walk at River Torrens Linear Park; Includes ice-breakers	Individual	**GAITs** Group initiative challenges in Victoria Park	Individual	Individual	**KAYAK** Introductory Kayaking session at Garden Island
Week 2 1000 kJ *	Individual	**CYCLING** Introductory cycling session at linear park	Individual	**STRENGTH & STRETCH** Low impact strength exercises, stretching & yoga at Victoria Park	Individual	Individual	**CYCLING** Introductory trail riding at Brownhill Creek
Week 3 1200 kJ *	Individual	**WALK** Moderate grade walk at River Torrens Linear Park	Individual	**TEAM GAMES** soccer at Victoria Park	Individual	Individual	**WALK** Moderate walk at Marino Rocks
Week 4 1400 kJ *	Individual	**WALK** Moderate/challenging walk at River Torrens Linear Park	Individual	**CIRCUIT** Sweat track circuit in Victoria Park	Individual	Individual	**EXPLORING MORIALTA** Hike to the waterfalls; rock climbing and abseiling at Morialta CP
Week 5 1600 kJ *	Individual	**ORIENTEERING** Orienteering session in North Adelaide	Individual	**STRENGTH & STRETCH** Strength, stretching & yoga at Victoria Park	Individual	Individual	**ORIENTEERING** Orienteering session at Belair National Park
Week 6 1800 kJ *	Individual	**WALK** Challenging walk on Torrens Linear Park	Individual	**GAITs** Group initiative challenges in Victoria Park	Individual	Individual	

* Target daily energy expenditure.

Figure 1. Samples of group exercise sessions and locations around Adelaide, SA. (**a**) Walking along River Torrens Linear Park; (**b**) orienteering in Belair National Park; (**c**) team games at Victoria Park; (**d**) kayaking at the Adelaide Dolphin Sanctuary, Port River; (**e**) walking the Marion Coastal Walking Trail, Marino; (**f**) rock climbing in Morialta Conservation Park; (**g**) cycling in Brownhill Creek Recreation Park; and (**h**) sweat-track workouts at Victoria Park.

Using Norton's [45] study as the baseline, a sample size of 19 was required to detect changes at $\alpha = 0.5$ and power = 0.8. Although 23 participants commenced the program, only 17 achieved full participation with pre- and post-intervention testing.

As with Norton's [45] study, participants were tested 1 week immediately pre- and 1 week post-study using the same protocols for a range of physical health variables.

Psychological variables were also assessed for this GEx intervention, although not in the Norton [45] study.

The major variables assessed included: blood pressure (BP), measured according to the technique recommended by the American Heart Association [47]; height was measured with the subject in light clothing and bare feet using the stretch stature method [48]; weight where subjects were weighed in minimal clothing, following an 8 hour fast and after voiding; body mass index (BMI) was then derived from the height and weight measures; girth was taken at the level of the narrowest point between the lower rib and the iliac crest when viewed from the front; hip girth was taken at the level of the greatest posterior protuberance of the buttocks; the waist–hip ratio (WHR) of subjects was determined by dividing the waist girth by the hip girth; grip strength using an isometric dynamometer (Takei Kiki, Tokyo, Japan); total cholesterol was measured using finger-tip blood samples from 8-hour fasted patients; aerobic fitness ($mL{\cdot}kg^{-1}{\cdot}min^{-1}$) was predicted using a non-gas analyzed sub-maximal test conducted on an electroncally braked cycle ergometer (Ergoselect 200). The average heart rate (HR) in the final 15 s of each workload was used to construct a regression line for each person. The regression line was extrapolated mathematically to their age-predicted maximal HR (HR_{max}). On this basis, an estimate was made of the power output (W_{max}) they would have achieved at HR_{max}, and the corresponding oxygen uptake was calculated using: $VO2_{max}$ ($mL{\cdot}kg^{-1}{\cdot}min^{-1}$) = ([$W_{max}$/9.81] × 60 × 2 + [3.5 × Weight])/Weight. Prior to testing, the validity and reliability of tests were assessed using 5–7 repeated tests on the same subject (Table A1, Appendix A).

To assess that sufficient levels of PA were achieved, Polar brand HR monitor watches were used, supplemented by self-reported ratings of perceived exertion [49] and activity diaries. Participants were instructed to program measured $VO2_{max}$ and HR_{max} values into the Polar S610 watch [50]. The watch uses this data and with its proprietary software estimates EE, accounting for subject gender. Crouter and colleagues [51] found that using actual measured values for VO_{2max} and HR_{max} resulted in a 4% error (SD ± 10%) in EE.

Instructors provided leadership, instruction, feedback, and guidance during the critical early phase of the activities where participants are more likely to drop out [52]. Many of the outdoor and recreational activities were such that participants were undertaking them for the first time or had not undertaken them since childhood.

The psychological assessment for wellbeing was measured using the self-administered questionnaire: Personal Wellbeing Index—Adult (PWI-A [53]). Self-efficacy was measured using the questionnaire: The Physical Exercise Self-Efficacy Scale [54]. Participants' depression, anxiety and stress were measured using the DASS21 questionnaire [55].

Participants in this study met the criteria for classification as insufficiently active (PA level < 150 min/week) by completing one Active Australia Survey [46], a 7-day recall questionnaire. It is recommended by the Department of Health [56] that adults 'accumulate 150 to 300 min (2 $\frac{1}{2}$ to 5 h) of moderate intensity PA or 75 to 150 min (1 $\frac{1}{4}$ to 2 $\frac{1}{2}$ h) of vigorous intensity PA, or an equivalent combination of both moderate and vigorous activities, each week.' National and state-level surveys have consistently found that approximately half of all adults in Australia do not meet the minimum guidelines [57].

Participants' pre-intervention PA level averaged 84 min/week (range 0–148 min/week). This placed them in a risk factor category for low PA patterns being, on average, in about the lowest third of PA levels among adult South Australians [58]. Participants were mostly aged in their 40s or 50s (48.3 ± 10.2 years) and had poor cardiorespiratory fitness (mean ± SD, VO_{2max} = 25.4 ± 10.6 mL/kg/min),

with many showing other risk factors such as hypertension (29%) and high cholesterol (47%; including those on prescription cholesterol-reducing medication).

Average BMI for participants was 30.2 kg·m^{-2} pre-intervention (range 23.1–46.2 kg·m^{-2}). Low levels of PA and high body fatness levels significantly increase the risk for chronic conditions such as diabetes and metabolic syndrome, and developing coronary heart disease [59].

Descriptive information was calculated for all variables measured. Pre- and post-comparisons within the GEx sample group were made using paired *t*-tests, and those reaching significance ($p < 0.05$) were reported. The original dataset ($n = 622$) for Norton's [45] intervention was used in the analysis of the significance of the pre-post changes in the current cohort. Comparisons with those results were made using repeated measures analysis of variance (ANOVA). Chi squared analysis was used to compare rates of adherence and compliance within and between interventions.

Ethics approval for this project (Ethics Protocol P017-06) was gained from the University of South Australia Human Research Ethics Committee.

3. Results

3.1. Participants

Participant pre-intervention data for those that completed the program are shown in Table 2. Mean ages of participants were 48.8 years for males and 47.8 years for females; the youngest and oldest within both groups being 28 and 59 years respectively. The numbers of males ($n = 8$) and females ($n = 9$) in the finishing group were relatively even.

Table 2. Participant information pre-intervention.

Variable	Mean	SD	Range
Males ($n = 8$)			
Age (years)	48.8	9.9	28.7–59.3
Height (cm)	178.2	5.0	167.5–183.4
Weight (kg)	93.3	16.9	71.0–120.5
Unweighted PA (min/week)	69	34	30–125
Females ($n = 9$)			
Age (years)	47.8	11.0	28.4–59.1
Height (cm)	161.3	4.4	153.2–168.4
Weight (kg)	80.5	17.7	60.7–117.6
Unweighted PA (min/week)	73	44	0–134
All participants ($n = 17$)			
Age (years)	48.3	10.2	28.4–59.3
Height (cm)	169.2	9.8	153.2–183.4
Weight (kg)	86.5	18.0	60.7–120.5
Unweighted PA (min/week)	71	38	0–134

Mean, standard deviation (SD) and range are shown.

3.2. Adherence and Compliance

Inquiries were fielded from 197 members of the public with the offer of either a group-focused (a concurrent study not reported here) or outdoor-focused exercise program. Twenty-six screened participants were assigned the outdoor-focused exercise group, with the first exercise session commencing with 22 participants, of which 17 participants (77% adherence) completed the program and returned for post-intervention testing. Withdrawals were due to reported unrelated medical issues, family circumstances and employment commitments.

Data collected from the Polar Heart Rate Monitors (HRMs) were used to assess daily compliance rates, confirmed by PA Diaries and group session attendance records. Of a possible total of 680 participant-days, there were 397 (58%) recorded on the HRMs, being the days on which participants complied with the requirements of the intervention (≥30 min/day of recorded PA). This is a conservative calculation because attendance records showed numerous instances where participants attended the group sessions but either forgot to record the session on their HRM or had technical problems and no recordings were present when downloaded. Using individuals' PA diary records as well as HRM and attendance data resulted in a final compliance rate of 74%.

There was a gradual decrease in compliance for both group and individual days across the first 3 weeks, and compliance was lowest in week 5 (group 59%; individual 29%). The mean rate of compliance on group days was 77%, which was higher than on individual days (46%). Chi squared analysis determined that compliance on group exercise days was higher than expected, but lower than expected on individual exercise days. The difference in compliance between group and individual exercise days was significant ($p < 0.0001$).

Using a second measure of compliance, it was found that of the participants who completed the program, there were 16 (94%) who achieved sufficient levels of PA (≥150 min/week) at post-testing.

3.3. Physical Activity

Figure 2 shows the daily recorded mean values for exercise heart rate (HR) and estimated energy expenditure (EE) matched to the corresponding group session or day of individual exercise. Mean HR values ranged from 102 to 138 on individual exercise days and from 103 to 134 on group exercise days. The mean energy expenditure (EE) on individual exercise days was 1076 kJ and ranged from 707 kJ to 1531 kJ. On group exercise days, the mean EE was 1539 kJ and ranged from 1088 kJ to 2470 kJ. Values for each session are shown in Table 3.

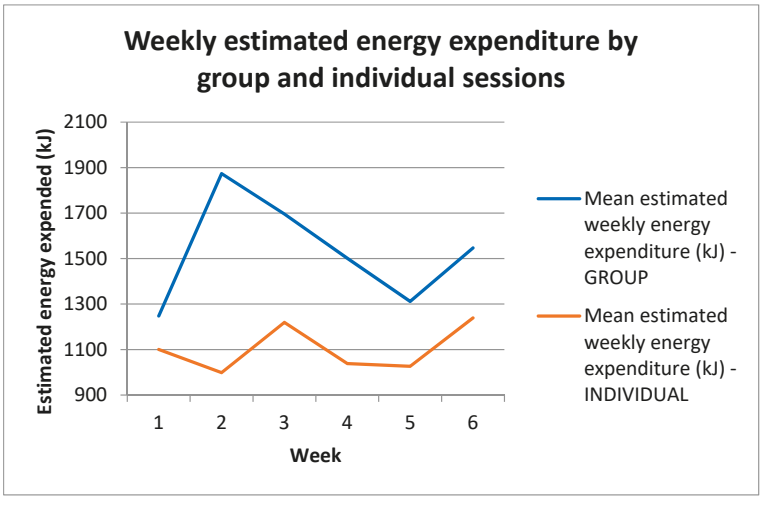

Figure 2. Weekly estimated energy expenditure by group and individual sessions. Estimated energy expenditure measured in kJ recorded during each PA session and averaged for each week of the intervention. Individual and group training days are shown separately. On average, estimated energy expenditure was significantly higher on group training days ($p = 0.0016$). kJ = kilojoules; $n = 17$.

Table 3. Program of daily activities.

Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	Pre-program	**WALK**	Individual Day	**INITIATIVE TASKS**	Individual Day	Individual Day	**KAYAK**
		HR119 1088 kJ	HR115 938 kJ	HR126 1410 kJ	HR123 1184 kJ	HR125 1135 kJ	HR112 1256 kJ
2	Individual Day	**CYCLING**	Individual Day	**STRENGTH & STRETCH**	Individual Day	Individual Day	**CYCLING**
	HR 120 1033 kJ	HR128 1649 kJ	HR138 1094 kJ	HR109 1949 kJ	HR121 915 kJ	HR118 875 kJ	HR128 2066 kJ
3	Individual Day	**WALK**	Individual Day	**TEAM GAMES**	Individual Day	Individual Day	**COASTAL WALK**
	HR 111 1049 kJ	HR119 1565 kJ	HR115 1213 kJ	HR119 1123 kJ	HR115 922 kJ	HR128 1513 kJ	HR132 2470 kJ
4	Individual Day	**WALK**	Individual Day	**CIRCUIT**	Individual Day	Individual Day	**EXPLORING MORIALTA**
	HR 121 1181 kJ	HR119 1296 kJ	HR131 874 kJ	HR134 1368 kJ	HR114 958 kJ	HR114 1100 kJ	HR109 1886 kJ
5	Individual Day	**ORIENTEERING**	Individual Day	**STRENGTH & STRETCH**	Individual Day	Individual Day	**ORIENTEERING**
	HR 121 1225 kJ	HR110 1299 kJ	HR114 792 kJ	HR103 1366 kJ	HR102 707 kJ	HR113 1129 kJ	HR124 1256 kJ
6	Individual Day	**WALK**	Individual Day	**INITIATIVE TASKS**	Individual Day	Individual Day	Post-program
	HR 122 1068 kJ	HR115 1334 kJ	HR122 991 kJ	HR122 1776 kJ	HR123 1501 kJ	HR124 1351 kJ	

Mean HR and estimated EE (shown in kJ) recorded for group and individual exercise sessions across the 40-day outdoor PA intervention. HR = heart rate; kJ = kilojoules. n = 17.

3.4. Changes to Physical and Physiological Health Following the Intervention

Changes to values for health and well-being are shown in Table 4. Small (but not significant) absolute decreases were found for weight, BMI and waist.

Table 4. Significant changes in pre- and post-intervention measures ($p < 0.05$).

Variable	n	Pre Mean	Pre SD	Post Mean	Post SD	p (Paired t-Test)
Anthropometric						
Hip girth (cm)	17	110.2	14.3	109.2	14.3	0.036
Cardio-Metabolic						
Total cholesterol (mmol/L)	17	5.0	1.2	4.7	1.1	0.026
Fitness						
Aerobic fitness ($mL \cdot kg^{-1} \cdot min^{-1}$)	17	25.4	10.6	30.8	13.3	0.002
Dynamic stability [#]	17	2.7	1.5	3.1	1.6	0.038
Physical Activity						
Moderate PA (min/week)	17	55	45	266	132	<0.001
Vigorous PA (min/week)	17	13	20	179	150	<0.001
Weighted PA (min/week)	17	84	43	624	367	<0.001
Psychological [#]						
Well-being	14 [‡]	6.9	2.1	8.1	2.4	<0.001
Depression	17	8.1	7.2	2.8	3.7	<0.001
Anxiety	17	4.4	3.3	2.5	3.0	0.042
Stress	17	10.6	5.8	6.0	3.9	0.004

Means and standard deviations (SD) are shown. [#] Determined by Wilcoxon Signed-Ranks test. [‡] Some results are not included as questionnaires were incomplete.

The change for hip reached statistical significance ($p = 0.036$). Further significant changes were seen for total cholesterol ($p = 0.026$), aerobic fitness ($p = 0.002$), dynamic stability ($p = 0.038$) and all categories of PA minutes ($p < 0.001$). No adverse changes to variables of any category were observed.

Results of the outdoor PA intervention were compared to those of the Norton [45] study using repeat-measures ANOVA to check for any significant intervention x time interaction differences in a range of variables. There were no significant differences between the intervention changes in all but two categories, meaning that the GEx intervention resulted in improvements of a similar nature to those seen following the indoor-based intervention for almost all variables (except grip strength and vigorous PA minutes).

3.5. Changes to Mental Health and Well-Being Following the Intervention

Although not investigated in Norton's [45] study, of interest for the GEx study was the potential for changes in participant mental health and well-being. This additional investigation was conducted using Personal Wellbeing Index—Adult [53], The Physical Exercise Self-Efficacy Scale [54] and the DASS 21 questionnaire [60]. The GEx intervention enhanced outcomes for four of the five psychological variables, with significantly improved mean scores for well-being ($p < 0.001$), depression ($p < 0.001$), anxiety ($p = 0.042$) and stress ($p = 0.004$). Raw scores for self-efficacy also increased but not to statistical significance (Table 4).

Figure 3a plots the mean changes for well-being and self-efficacy from pre- to post-intervention. Improvements are represented by increased scores. Figure 3b plots the mean changes for depression, anxiety and stress from pre- to post-intervention. Improvements are represented by decreased scores.

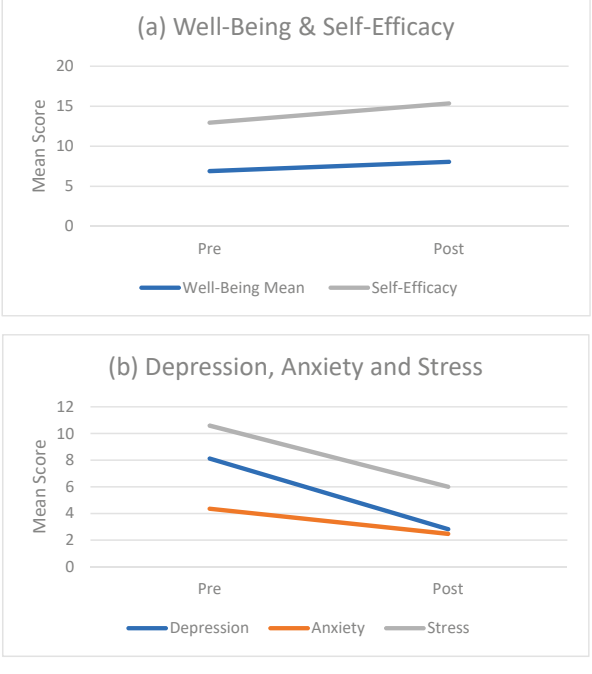

Figure 3. Changes in participant psychological scores pre- and post-GEx intervention. Chart (**a**) shows pre and post changes in well-being (using the Personal Wellbeing Index—Adult; $n = 14$) and self-efficacy (using The Physical Exercise Self-Efficacy Scale; $n = 17$) where improvements are represented by increased scores; chart (**b**) shows pre-post changes in depression, anxiety and stress (using the DASS21 questionnaire $n = 17$) where improvements are represented by decreased scores.

Although well-being increased significantly ($p < 0.001$) across the outdoor PA intervention (Table 4), no significant intervention x time relationship was detected. Significant relationships were detected between the starting value and the change in value for self-efficacy ($p < 0.001$), depression ($p < 0.001$), anxiety ($p = 0.007$), and stress ($p = 0.003$). This effectively means that the lower a starting score for self-efficacy (or the higher a starting score for depression, anxiety or stress), the greater the likelihood a positive change will occur.

4. Discussion

This intervention study sought primarily to measure adherence and compliance to a GEx-based program of PA. Secondary aims were to improve the health and well-being of participants and to compare the extent of change against a program that utilized primarily traditional, indoor-based physical activities.

Physical activity interventions may only be successful if participants comply with protocols and adhere to a program. Encouragingly, this GEx intervention recorded similar (77%) adherence when compared with the indoor program (84%), suggesting the potential for strong participant retention with PA programs in green spaces. Adherence is likely to vary with climate and other setting-specific factors; for example, warmer weather and longer daylight hours in an aesthetically pleasing setting may strengthen participation and should be considered when setting a program.

Compliance was also comparable between the GEx (58.1%) and indoor (62.6%) programs. Findings from both interventions suggested future PA interventions might benefit from including more group-based sessions where higher compliance was recorded, compared with individual sessions of exercise. For this study, weekly compliance (≥150 min/week) could be reached by attending the three group sessions only, which may have acted to demotivate participation in individual sessions where compliance was much lower, for example week five (29%).

Further results indicate that similar outcomes (10 of 12) were achieved for the physical and physiological measures. This result would indicate that beneficial PA can be achieved without the need for costly, tailored indoor spaces and equipment, as the majority of the GEx program was conducted in public green spaces, with little or no equipment. Further benefits to participants were reported in the form of psychological measures, all showing an improvement pre- to post-intervention, four of five being significant. Although these results did not have a direct comparator, they would appear to support the growing number of studies [10,15,17,18,32,61–65] showing the potential for GEx programs to improve the health and well-being of participants across a range of measures.

Limitations to this study must be acknowledged, particularly related to sample size. The number of participants was modest (and not to the statistical power calculation) where a larger sample would increase the confidence that the results reflected potential changes in the broader population. Moreover, the mean age of these participants (48 years) was much higher than for the comparative group (35 years). This age difference is likely to influence participants in many ways, such as time availability, motivation, physical and mental condition, and other life circumstances. Additionally, a control group would have improved study design and allowed for direct comparison for the assessments undertaken. A final limitation to acknowledge is that disparate compliance rates (between individuals, or by individuals from week-to-week or in group versus individual sessions) are likely to have resulted in varied impacts on the health and well-being outcomes recorded. Greater consistency in compliance rates among individuals and by individual participants across the program would allow for more confident conclusions to be drawn on the effectiveness of GEx to improve health and well-being.

An informal follow-up at 12 months provided a lot of anecdotal evidence to indicate that some participants had continued to be active in small groups, for example with "weekly outdoor exercise excursions" (email correspondence, 8 April 2013). Participants also reportedly continued to receive the GEx "benefit . . . that is both physical and emotional/mental" (email correspondence, 8 April 2013).

5. Conclusions

In conclusion, with the considerable limitations in mind, this study would appear to support GEx as a viable alternative to other programs by offering the potential for similar health and well-being results when compared with indoor exercise programs. Further, for those seeking psychological benefits from exercise, GEx has provided positive outcomes for almost all participants of this study.

For some, GEx may be a preferred form of activity, particularly for those who have an aversion to joining gyms or clubs, have financial constraints, or have issues with accessing traditional facilities. Green spaces are generally free to use and prevalent in developed cities; however, this is not always the case. A lack of access or other factors such as a real or perceived lack of safety may be a deterrent to participation. A focus by government on creating and maintaining natural outdoor spaces may provide the impetus for people to engage in GEx, a low-cost and effective means of improving physiological and psychological health and well-being when compared with indoor exercise requiring specific facilities and equipment.

It is recommended that further research into GEx be undertaken, particularly to follow up its potential to enhance mental health and well-being and the associated effects on adherence and compliance to PA programs.

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. The reliability of the health and fitness tests as determined by 5–7 repeated measures on the same subjects. Means, standard deviations (SD) and percentage Technical Error of Measurement (%TEM) are shown.

Physiological Variable	Mean	SD	%TEM
SBP (mmHg)	119	3	3.1
DBP (mmHg)	75	2	4.1
Height (cm)	180.9	0	0.0
Weight (kg)	86.1	0	0.0
Hip girth (cm)	105.5	0.5	0.4
Waist girth (cm)	88.3	0.5	0.6
Mean grip strength left (kg)	47.5	1	3.6
Mean grip strength right (kg)	50.5	1.5	3.5
Total cholesterol (mmol/L)	4.38	0.08	2.3
VO_{2max} ($mL \cdot kg^{-1} \cdot min^{-1}$)	40.9	3.8	10.8

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Article

Nature–Based Interventions for Improving Health and Wellbeing: The Purpose, the People and the Outcomes

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Abstract: Engagement with nature is an important part of many people's lives, and the health and wellbeing benefits of nature–based activities are becoming increasingly recognised across disciplines from city planning to medicine. Despite this, urbanisation, challenges of modern life and

environmental degradation are leading to a reduction in both the quantity and the quality of nature experiences. Nature–based health interventions (NBIs) can facilitate behavioural change through a somewhat structured promotion of nature–based experiences and, in doing so, promote improved physical, mental and social health and wellbeing. We conducted a Delphi expert elicitation process with 19 experts from seven countries (all named authors on this paper) to identify the different forms that such interventions take, the potential health outcomes and the target beneficiaries. In total, 27 NBIs were identified, aiming to prevent illness, promote wellbeing and treat specific physical, mental or social health and wellbeing conditions. These interventions were broadly categorized into those that change the environment in which people live, work, learn, recreate or heal (for example, the provision of gardens in hospitals or parks in cities) and those that change behaviour (for example, engaging people through organized programmes or other activities). We also noted the range of factors (such as socioeconomic variation) that will inevitably influence the extent to which these interventions succeed. We conclude with a call for research to identify the drivers influencing the effectiveness of NBIs in enhancing health and wellbeing.

Keywords: Nature–based health interventions; green prescriptions; wilderness therapy; forest schools; green exercise

1. Introduction

There are many pressing public health and environmental challenges associated with modern living, with rapidly growing levels of chronic, non–communicable physical and mental health conditions [1–4] and global recognition of serious health risks posed by stressful living conditions [5]. Engagement with nature is a common pursuit in cities [6] and it is becoming increasingly recognised as a means to alleviate many of these challenges. Evidence now points to benefits for physical health (e.g., lower prevalence of high blood pressure and allergies) [7,8], mental health (e.g., lower prevalence of depression and anxiety) [8–11] and social wellbeing outcomes [8] for people who spend time in nature. Moreover, there is evidence that the magnitude of such benefits can increase with the dose of nature [9]. It is thus of significant concern that urbanisation and the challenges of modern life are leading to reduced engagement with the natural environment [12].

To counter this development, nature–based health interventions (NBIs) can facilitate change through a somewhat structured promotion of nature–based experiences. NBIs are programmes, activities or strategies that aim to engage people in nature–based experiences with the specific goal of achieving improved health and wellbeing. For example, environmental manipulations where green and blue spaces are incorporated into cities can have positive outcomes associated with the management of habitats and flow of ecosystem services to people [13,14], but there is also a growing body of evidence highlighting the potential of green space for the treatment and prevention of physical, mental and social health and wellbeing challenges [8,15–19]. This recognition that experiences of nature can provide benefits for people represents a major shift in public health thinking for both the prevention and the treatment of health issues, beyond considering nature solely as a risk–factor (e.g., through the transmission of insect–borne diseases [20–23]).

Reflecting the growing body of research demonstrating a link between interactions with nature and health, many governments, non–government organisations, public and private stakeholders are now beginning to consider these potential benefits in their policy and planning frameworks [24–27]. Indeed, across the world, many NBIs are being implemented. These include, for example, minimum area targets for public green space [28] and 'nature prescriptions', where doctors or other health practitioners prescribe nature–based experiences for patients living with specific health conditions [29–32]. However, despite this growing movement, there is a dearth of guidance as to what NBIs are available and what specific health outcomes they might achieve and for whom. This can only limit the potential leveraging

of natural settings to improve health and wellbeing outcomes for individuals and communities, potentially leading to inefficient and ill–targeted investment decisions.

Here, we used expert elicitation to identify a range of NBIs that have been examined in the peer–reviewed scientific literature. This list of interventions is intended to provide a resource for decision–makers in government, non–government organisations, and other interested groups by outlining possible interventions, the potential health outcomes, and the target beneficiaries.

2. Materials and Methods

We used a Delphi expert elicitation process [33] to develop and then to refine and improve a list of NBIs that have received attention in the peer–reviewed scientific literature to date (Figure 1). The Delphi technique is an iterative method for building consensus. In this case, it was based on three rounds of questionnaires. Before the rounds of questions began, D.F.S. carried out a broad–reaching Web of Science literature search (initial search terms including 'nature AND health OR wellbeing', 'nature–based health interventions', 'nature interventions'). The goal of this search was not a comprehensive review, but to develop a list of interventions—that is, programmes, activities or strategies that aim to engage people in nature experiences with the specific intention of improving health and wellbeing outcomes. The articles identified through the initial search were assessed, and NBIs identified where possible; further articles were found through the reference lists within the initial article set.

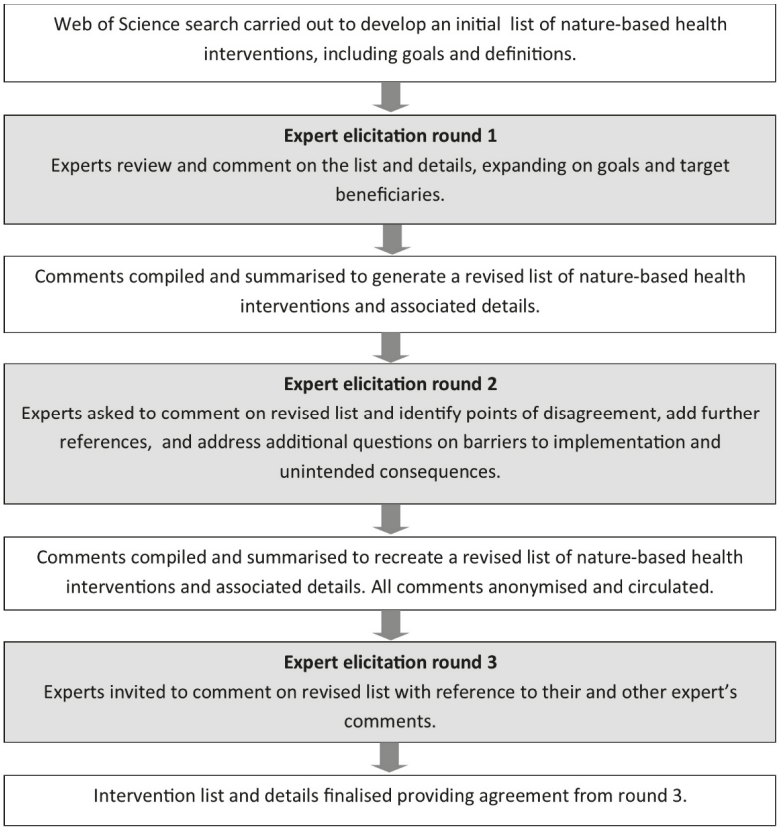

Figure 1. The Delphi expert elicitation process followed in this study. Tasks in boxes with no shading were carried out by D.F.S., those in shaded boxes involved all experts.

Round 1. In the first round, experts were asked to review and refine the list of interventions to ensure that those with similar methods but different names were removed. Experts were also invited to add intervention types and provide example references. Experts also commented on the definition, goals, and target beneficiaries of each intervention and identified further relevant literature. Thirty experts were invited to contribute. All are scientists and/or health practitioners actively publishing peer–reviewed research on the connection between people, nature and health and wellbeing. Nineteen participated.

Round 2. Following the initial review process, the comments were compiled and summarised by D.F.S. This involved the revision of text to improve accuracy and incorporate new information from experts. This revised list was recirculated to all 19 experts, and they were invited to agree or disagree with the content. The experts were also provided with their own original comments during this step. At this point, the experts were also invited to answer further questions on four specific intervention types for which a significant body of literature was available and for which the panel of experts had specific expertise. The questions focused on the reach of the interventions, barriers to individuals and organisations in implementing the interventions and potential unintended negative consequences.

Round 3. The intervention list was again revised by D.F.S. on the basis of all comments made, involving addition of detail and refinement of definitions and other text. Some experts provided significant in–depth detail that went beyond the scope of this study, and in these instances, the detail was summarised. All responses from round 2 were anonymised and recirculated to all 19 experts again to review their own answers on reflection of other expert's answers and ensure that the revision conducted by D.F.S. accurately reflected their views and that a consensus had been reached. They were also invited to add final thoughts triggered by the comments that had been put forward by their peers.

All comments were synthesised to produce the final list presented in this article.

3. Results

Nineteen of 30 invited experts who were identified from across the world actively engaged with a Delphi expert elicitation process to review a compilation of NBIs identified through a literature search conducted by D.F.S. The 19 experts who participated in the review are all named authors on this paper. They represent a diversity of disciplines and areas of expertise relevant to the broad field of nature and health. Geographically, representation in the panel was particularly good from the United Kingdom and Oceania, while there were gaps in representation from Europe, Asia, Africa and the Americas. This was in part related to the availability of the identified experts to participate and in part, to difficulties in identifying experts who do not publish in English–language peer–review journals. The representation of national/cultural contexts in the literature reviewed, however, extended beyond those in which the 19 experts are situated.

Twenty–seven distinct NBIs that have received some peer–reviewed research attention were summarised using the expert elicitation process (Tables 1 and 2). Interventions were excluded from the list where health and wellbeing outcomes were not explicit goals (e.g., programmes that solely aimed to connect people with nature without the intention of also delivering health and wellbeing benefits).

The intended outcomes and target beneficiaries varied widely across interventions, from the promotion of wellbeing and the prevention of chronic or lifestyle–based health conditions (e.g., through the provision of public parks) to targeted treatments for people living with specific health conditions (e.g., nature prescriptions for reducing high blood pressure). A categorisation of the different interventions is given in Figure 2; some aim to *change the environment* in which people live (e.g., providing new or better quality public green spaces [18,28,34]; Table 1) and work (e.g., hospital, workplace), and others aim to *change people's behaviour* and their interactions with nature (e.g., nature play/wild play programmes [35]; Table 2 and Figure 2). There was some overlap in these categories where people engaged in nature–based activities through interventions that also involved enhancing the environment (e.g., 'green gyms' or environmental volunteering; Table 2).

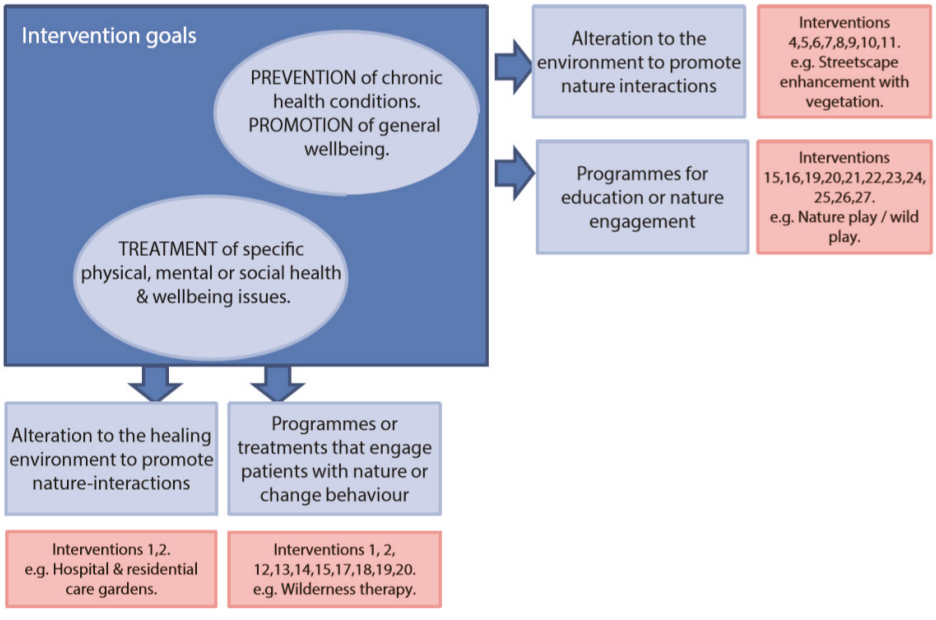

Figure 2. A categorisation schematic of the nature–based health interventions identified in an expert elicitation process. Numbers refer to interventions identified in Tables 1 and 2.

A closer investigation of barriers and potential negative implications for four intervention types was carried out, specifically, green prescriptions, wilderness therapy, green gyms and outdoor exercise groups (Table 2). There were a number of commonalities in the barriers, which included knowledge of health practitioners and lack of access to the intervention (especially where it relied on having transport or could not be completed independently as it relied on a specific organised programme). There were also some potential unanticipated negative implications, with risks of physical injury a common theme.

Table 1. Nature–based health and wellbeing treatment (T) or prevention (P) interventions that change environments.

Intervention	Description	T/P	Intervention Goals, and Intended Health or Wellbeing Outcome	Target Beneficiaries	Example References
1. Provision of gardens in hospitals or residential care homes (sometimes referred to as healing gardens).	The provision of gardens that can either be viewed from hospital rooms or accessed by patients and families (can include green walls).	T	Reduce pain and stress, potentially leading to improved healing time and mental health, quality of life, wellbeing, reduced agitation for patients with dementia.	Hospital or residential care patients, their families and friends, staff. Can have targeted groups in some circumstances, e.g., hospitals for patients living with dementia.	[36–44]
2. Provision of nature within rooms in healing environments.	The provision of nature that can be viewed or experienced from a person's room and/or in shared areas (e.g., the view from a window, or indoor plants, flowers, garden, green walls).	T	Reduce pain and stress, potentially leading to improved healing time and mental health, social contacts, quality of life, wellbeing.	Hospital or residential care patients, their families and friends, staff.	[40–42,45–51]
3. Indoor plants in workplaces or other non–healing indoor environments such as shopping centres.	Organisations shape policies and make provisions for indoor plants.	P	Enhance creativity, improve productivity, reduce absenteeism at work, improve mental wellbeing, improve air quality.	Those using indoor environments.	[52–54]
4. Increased provision of public urban parks and gardens.	Additional new parks are provided.	P	Parks are provided to encourage outdoor leisure, engagement with nature, increase neighbourhood walkability and physical activity, with some of the cited health benefits including the physical benefits from exercise, enhanced social cohesion, mental wellbeing and quality of life outcomes.	Neighborhoods or entire towns.	[18,26,34,55–58]
5. Improvement of urban public parks and gardens.	Improvement could include: (i) better public access to existing parks, including public transport provision and accessibility for those with disabilities, and improved equality in access across socioeconomic gradients; (ii) better street lighting and passive surveillance to reduce fear of crime; (iii) traffic reduction measures to reduce pollution and noise; (iv) enhancement of biodiversity within parks.	P	Improvement of parks to enhance community engagement with under–utilised parks and improve biodiversity to enhance the restorative benefits received. Some of the cited health benefits of parks include exercise, enhanced social cohesion and mental wellbeing and quality of life outcomes.	Neighborhoods or entire towns.	[59–64]
6. Provision of walking or bike paths, or other shared use paths/trails.	Areas designed specifically for walking or biking. Includes paths through parks or natural areas that facilitate active travel.	P	Provide a facility that encourages physical activity, delivers the associated benefits, and improves general wellbeing.	General population in an area.	[65–75]
7. Streetscape enhancement/green corridors along streets.	Councils plant vegetation along streets and support the efforts of residents to plant vegetation in their private or community gardens (includes both native and non–native species).	P	Enhance the environment for attention restoration, in part by improving the view from people's homes. Indirect health benefits include better air quality, reduced heat island effects.	Neighborhoods or entire towns.	[76–78]
8. Community gardens/allotments.	Gardens in accessible locations for community members to encourage engagement in growing one's own food and to provide food education involving fruit and vegetables.	P	Improve nutrition, social connections and psychological benefits (e.g., confidence, psychological restoration).	Neighbourhoods or entire towns, sometimes with specific intended beneficiaries (e.g., age groups).	[79–86]
9. Greening childcare or school grounds.	Increase amount and quality of natural elements, including around classrooms and play areas.	P	Increase physical activity, increase imaginative play, development of positive relationships, place of learning, attention restoration, overall improvement in health.	Children using the facility.	[87–90]
10. Outdoor gym equipment.	Provide alternative exercise facilities, specifically outdoor versions of traditional gym equipment.	P	Encourage physical activity and promote the associated benefits and increased wellbeing in those reluctant to use traditional gyms or more motivated by being outdoors.	Neighbourhoods or entire towns, those reluctant to go to indoor gyms.	[91,92]
11. Provision of accessible natural environments.	Location and spatial planning of accessible natural environments, with paths. Infrastructure created or improved in local woodlands, and a programme of social engagement.	P	Increase use of natural environments for health, recreation, leisure, etc. to facilitate health and wellbeing outcomes such as reduced stress, improvements in mood.	Local residents and wider populations.	[93–96]

Table 2. Nature–based health and wellbeing treatment (T) or prevention (P) interventions that aim to change the behaviour in individuals or groups with specific physical, mental or social health and wellbeing issues. ADHD: attention–deficit/hyperactivity disorder.

Intervention	Description	T/P	Intervention Goals (i.e. Health Outcome)	Target Beneficiaries	Barriers to Implementation, Unintended Negative Impacts	Example References
12. Green/nature/park/garden prescriptions.	Doctors (or other professionals) 'prescribe' or refer patients/clients to outdoor activities (often walks).	P/T	Increase exercise and the associated benefits, stress reduction, reduce blood pressure, improve healing times, reduce depression, increase resilience and other mental health benefits. Some are targeted towards children for purposes such as prevention or treatment of obesity, cancer and diabetes. Some also target quality of life, wellbeing and social support.	Individual patients or groups with a range of conditions.	*Individual-level barriers:* Geographic accessibility and availability of facilities (e.g., green spaces), affordability of the activity, social acceptability, physical and cognitive capability of individuals, perceived issues such as danger. *Organisation-level barriers:* Acceptability by and lack of knowledge of medical professionals, difficulty in changing behaviours of medical professionals. *Potential unintended impacts:* Could present risks for people with some conditions.	[31,32,97–104]
13. Care–farming or farm therapy, including horticulture and animal–assisted therapy.	Therapeutic use of commercial farms and agricultural landscapes as a base for promoting mental and physical health, through normal farming activity or horticulture.	T	Mental health promotion and to reduce distress in people with dementia. Reduce social isolation.	Youth at risk; youth with special needs (e.g., autism); cancer survivors; mental disorders; people with lost functionality; people recovering from serious illness.	Not assessed in this study.	[83,105–114]
14. Residential retreats.	Multi–modal therapies delivered in a removed natural setting.	T	Holistic wellbeing: physical, but primarily psychological (coping), social, spiritual.	Patients with chronic conditions such as cancer or cardiovascular disease.	Not assessed in this study.	[115]
15. Wilderness therapy.	Structured nature–based activities and programmes in 'wilder' environments for 'at risk' groups or those recuperating or in recovery	P / T	Address social and psychological issues through a range of pathways, including by facilitating positive human–nature interactions, building self–esteem and fostering social connections.	People with severe mental health issues; youth at risk of involvement in crime; individuals who are imprisoned or on probation from crime; ex–offenders; victims of crime; children with ADHD; those living with or recovering from a range of mental and physical conditions; people with post–traumatic stress disorder.	*Individual-level barriers:* Geographic accessibility and availability of facilities (e.g., green spaces), affordability of the activity, social acceptability, some people may not appreciate the group context, physical ability, time (several days often required). *Organisational level barriers:* Poor system support, lack of financial resources to support the activities. *Potential unintended impacts:* Mental distress and physical injury in poorly managed activities, poor follow–on care. Often offered as a once–in–a–lifetime developmental boost, and they may be required more often.	[111,116–125]
16. Wilderness programmes.	Programmes designed to challenge participants in natural environments.	P	Personal growth, social skills.	Often youth, but also targeting any interested people and groups.	Not assessed in this study.	[126,127]
17. Ecotherapy.	Treatment modalities that include the natural world in relationships of mutual healing and growth, and as such are a form of applied ecopsychology.	T	Positive effects on psychological wellbeing, fitness and self–reported health.	People with symptoms of stress, or other mental health and wellbeing issues.	Not assessed in this study.	[128–131]
18. Pet therapy, or pet–assisted therapy.	Use of pets, especially in hospitals to benefit patients.	T	Psychological wellbeing; social wellbeing.	Hospital inpatients; other vulnerable groups.	Not assessed in this study.	[132–134]
19. Forest bathing.	Practice of spending time in forest settings, often with emphasis on attention to breathing and other meditative techniques	P / T	Improved physical and mental wellbeing.	People referred to the program or voluntary participation.	Not assessed in this study.	[95,96,100,135,136]

Table 2. *Cont.*

Intervention	Description	T/P Intervention Goals (i.e. Health Outcome)	Target Beneficiaries	Barriers to Implementation, Unintended Negative Impacts	Example References
20. Green gyms or environmental volunteering.	Active work in an outdoor environment, often with a focused conservation outcome.	P/T Provide diverse benefits including physical activity, mental wellbeing, social connection/(re)integration.	People referred to the program or voluntary participation.	*Individual-level barriers:* Geographic accessibility (including transport) and availability of facilities (e.g., green spaces), affordability of the activity, social acceptability, availability of the programmes. *Organisation-level barriers:* Lack of financial resources, acceptability by and lack of knowledge of health professionals, difficulty in changing behaviours of health professionals. *Potential unintended impacts:* Chance of injuries and risk of other negative impacts of nature (e.g., insect bites, allergic responses), conflict in management of green spaces. Limited knowledge by host organisations of how to supervise people with physical or mental impairment.	[137–144]
21. Outdoor exercise groups.	Groups with the specific aim of exercising in nature (most commonly walking) for health benefits.	P/T Improve physical, psychological, social and spiritual wellbeing, including better cardio–vascular health, psychological wellbeing.	Local interested residents, or people referred to the program with a specific health condition, or voluntary participation.	*Individual-level barriers:* Geographic accessibility and availability of facilities (e.g., green spaces), affordability of the activity, social acceptability, concerns about, e.g., getting muddy or other issues, unfamiliarity with using non–urban environments, personality (e.g., introverts may elect out), mobility issues. *Organisational*-level barriers: Lack of financial resources or certainty, communication preferences for older individuals (e.g., social media). *Potential unintended impacts:* Chance of physical injury, group setting may engender negative feelings and interactions.	[72,128,145–150]
22. Nature play/wild play.	Structured programmes designed to facilitate children's play in natural environments.	P Enhance child health and development through provision of social programmes and physical environments that promote varied play opportunities, improved attention and learning, physical activity, mental health.	Children (general).	Not assessed in this study.	[151–157]
23. Forest Schools/outdoor classrooms/learning environment.	Programme of education in the outdoors (rather than about the outdoors). Typically children spend a period of their schooling (ranging from a couple of hours a week to all their time) undertaking outdoor activities. Forest school is both a pedagogy and a physical entity, with the use often being interchanged.	P Provide alternative (and sometimes improved) learning environment, increase physical activity and the associated benefits.	Typically children, but has been used with adults and people with special needs.	Not assessed in this study.	[158–161]
24. Children's kitchen gardens.	Gardens in schools and kindergartens to encourage engagement in growing one's own food and to increase access to fruit and vegetables	P Improve nutrition, social connections and psychological benefits (e.g., confidence, team work skills), physical activity, educational outcomes, school–based quality of life.	Children in childcare, nurseries and schools.	Not assessed in this study.	[162–171]

Table 2. *Cont.*

Intervention	Description	T/P	Intervention Goals (i.e. Health Outcome)	Target Beneficiaries	Barriers to Implementation, Unintended Negative Impacts	Example References
25. Outdoor education schemes.	Schemes designed to introduce children/adults to nature with the purpose of altering their knowledge about, attitudes toward and contact with nature.	P	Increase confidence to use natural environments for physical activity and recreation and promote the health and wellbeing benefits associated with this and increased nature exposure.	Largely children, but also aimed at adults from vulnerable groups (e.g., rehabilitation) and others.	Not assessed in this study.	[172]
26. Promotion and facilitation campaigns.	Promotional campaigns (e.g., via media) to highlight and encourage engagement with natural environments and potential health benefits.	P	Increase awareness, engagement, use and experience of natural environments.	General population, but often targeted at specific groups such as different age groups.	Not assessed in this study.	[128,173]
27. Blue gym.	Water– or shoreline–based activities.	P	Improve mental wellbeing.	General population.	Not assessed in this study.	[174]

4. Discussion

The scientific literature includes studies on a diverse suite of nature–based interventions through which ill health might be prevented, health and wellbeing can be promoted, and/or specific illnesses might be treated. These interventions could provide a useful tool for enabling and encouraging people to engage with nature and, in doing so, potentially receive a multitude of physical, mental and social health benefits. Broadly speaking, the interventions identified in this study can be grouped into actions that change the environment in which people live, work, learn, recreate or heal, and those that change people's behaviour through programs or other means. Because of this, the scale of impact varies from the population to the individual level and in the level of effort needed to achieve outcomes [175]. Consequently, the selection of one intervention over another or the composition of a suite of interventions, must reflect the capacity and skills of the administering organisations, the goals of the activity or activities, as well as the needs of the population or the individual.

A key feature of nature–based health interventions is that a single intervention can affect people in multiple ways and, therefore, potentially improve wellbeing across a range of domains [15,17,176]. For example, nature prescriptions can both promote physical activity leading to many positive health outcomes, while also providing patients with the mentally restorative effects of natural spaces [32,98,99,177]. Thus, investment in interventions can achieve significant outcomes across multiple domains [17] and, when scaled up, could have significant and cost–effective implications for population health. Furthermore, nature can be pro–actively planned into city development activities to provide a protective factor against many health conditions [15,177]. Research into the extent and magnitude of these outcomes is critical to assist decision–makers (such as hospital or care–home managers and urban planners) in weighing up the costs and benefits of investing in the various options, identifying ways to coordinate efforts (e.g., with regard to the siting of health care facilities) and ultimately supporting 'prevent–to–save' initiatives [178].

As with other public health interventions, there are many factors that influence both the effectiveness and the success of NBIs. For example, the accessibility of public parks will inevitably influence their use by communities, and a number of studies have found people are more likely to exercise in neighborhoods with greater levels of park availability [11,59,179–185]. There are also social equity issues at play. For example, disadvantaged neighborhoods have been repeatedly found to have less vegetation cover, fewer public parks and fewer street trees; additionally, organised user–pays programmes may be inaccessible for some disadvantaged sectors of society [186–189]. Furthermore, the physical and mental capability of participants is a potential barrier to accessing some intervention types, as identified in this expert elicitation study. Social factors, such as acceptability of the intervention to local communities, are also likely to have an important influence on the uptake of nature–based health interventions; for example, several studies have now found that cultural differences have a critical influence on the use of public green spaces [190–192]. Finally, an individual's age, gender and other factors will play a role, as will perceptions of nature and the appropriateness of the nature setting in its wider context (e.g., ecological characteristics of the nature setting, facilities and infrastructure, programmed activities and experiences of social inclusion in the setting) [193–195].

As NBIs are not yet mainstream within the health care community, practitioner buy–in and knowledge was identified as a particular challenge in this study. Further knowledge and communication about the effectiveness of interventions gained from rigorous research is therefore likely to be an important precursor for their use, including understanding the limitations or barriers to success and accounting for local contexts. Active evaluation and communication of findings from relevant studies is needed to build more solid foundations for decision–making that will help improve health and narrow health inequities. This said, much is already known about the potential benefits and how they are realised, and public appreciation for parks and other NBIs has such long–standing support that many generations of urban residents have already been able to benefit from their availability.

In this study, we used an expert elicitation process to compile a list of the nature–based health interventions that have received some research attention. This process is not without its limitations.

Most notably, some interventions may have been overlooked, and the list was subject to a consensus on grouping and categorisation that others may have done in a different way. Furthermore, this study has thus not systematically addressed issues of intervention efficacy, effectiveness, and efficiency. While systematic analyses of efficacy and efficiency are as yet not possible for many intervention types because of a high level of variation in the methods used, outcomes measured within the literature to date (but see, e.g., [51]), and co–benefits realised by indirect means (e.g., parks along rivers may support nature experiences and also protect homes from flooding), such evaluations will be important avenues for future research. Finally, it bears mentioning that the recognition of the possibilities with nature–based interventions is engendering considerable innovation, as with the development of therapeutic gardens for new client groups (e.g., war veterans [196]) and the use of nature experience to support the acquisition of mindfulness meditation techniques [197,198].

5. Conclusions

We have identified a suite of NBIs that can be used to improve population health and wellbeing, and to address specific physical, mental and social health issues. The identified interventions broadly fall into two categories: those that change the environment, and those that change behaviours. The selection of an intervention will require the consideration of a range of factors, including cost, likely benefit, accessibility (including availability and social acceptability) and the capacity of the organisation to deliver it. Most importantly, however, the needs of the community or the individual and the goals of the intervention must be considered. To integrate nature–based health interventions into public health and planning policy, strong evidence for their effectiveness is important, and thus evaluation should be carefully built into new interventions.

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Article

Outcomes from a One-Week Adapted Sport and Adapted Adventure Recovery Programme for Military Personnel

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Abstract: Background: The Battle Back Centre offers a bespoke, Self Determination Theory-oriented adapted sport and adventurous training programme centred on experiential learning and reflection to support the recovery of military personnel. Aim: To identify the short-term impact of participation in the programme on positive mental health and psychological need satisfaction. Method: Participants were 978 wounded, injured and sick (WIS) personnel classified as: Wounded (battle casualties), Injured (non-battle casualties) and Sick (mental/physical illness). Participants completed the Basic Need Satisfaction in General Scale (Gagné, 2003) and Warwick and Edinburgh Mental Well Being Scale (Tennant et al. 2006) on arrival and course completion. Results: All measures of positive mental health and psychological need satisfaction showed statistically significant increases, with a large effect size, from baseline to course completion (mean ± SD change in positive mental health, competence, autonomy and relatedness were 7.19 ± 9.61, 0.46 ± 0.9, 0.27 ± 0.84, 0.26 ± 0.86, respectively, $p < 0.05$). While the average magnitude of the intervention effect for positive mental health (16%) is comparable or greater than other reported interventions, changes were achieved in a shorter time. Conclusion: Findings highlight the positive short-term effect adapted sport and adventurous activities have for WIS personnel. Declaration of interest: Work supported by The Royal British Legion.

Keywords: adventure; armed forces; mental health; physical activity; recovery; soldiers

1. Introduction

Deployment to a war zone places military personnel in highly stressful and dangerous situations, which can have significant consequences. Since 2006, more than 2200 UK Service personnel have been wounded in action in Afghanistan, returning home with severe wounds, illnesses, and/or disabilities [1]. Equally, almost 3000 deployed personnel were assessed as having a mental health disorder in 2014/15 [2], with as many as 13% meeting the criteria for post-traumatic stress disorder (PTSD) [3–5].

Although the experiences of deployed personnel are challenging and unique, there is also a health need among military personnel who are not battle casualties. For instance, more than 5500 UK personnel have sustained non-battle related injuries and diseases in Afghanistan since 2006 [1] the rate of mental health problems among non-deployed personnel has increased by 63% since 2007 [2]. Further, although rates of PTSD and adjustment disorders are higher for deployed personnel, rates of mood disorders are significantly higher in non-deployed personnel [2]. The challenges faced by these individuals are extensive and diverse, with recovery often being associated with a sense of helplessness and loss of self-identity [6,7] less satisfaction with life [8], reduced psychological need satisfaction [9,10], increased aggression [11] and difficulties with post-deployment social functioning and transitioning into civilian living [12,13]. Consequently, the after care of Service personnel is of

great interest and importance to the Armed Forces, Mental Health Services and Service Charities because personnel who leave the Armed Forces symptomatic generally remain symptomatic and are at greater risk of social exclusion and hardship [14]. Further, upon medical discharge, the responsibility for health care is passed to the National Health Service (NHS) and Service Charities. However, NHS treatment compares unfavourably with treatment in the US' and the appropriateness of the treatment for ex-Service personnel has been questioned [15].

Extensive efforts are being made to support the recovery of Service personnel. However, while interventions focus on prevention, identification and management of injury and illness, there remains limited evidence of programme outcomes [16]. Moreover, clinical models of recovery dominate military rehabilitation, focussing on symptom reduction and physical functioning [17,18]. Although this approach is necessary and can be enhanced by technological and medical advancements, this approach alone is questionable for two reasons.

First, clinical approaches often do not offer a holistic approach to recovery. In contrast, patient-centred models of rehabilitation recognise that Service personnel are trying to make sense of, and search for meaning within, their individual circumstances. Frequently, individuals are attempting to establish a new (often non-military) identity within their post-injured/ill body and integrating this into their lives [18]. This is reflected in the complete mental health model [19], which proposes mental illness and well-being are distinct, with recovery being possible amidst on-going symptoms. Second, clinical approaches to recovery can create stigmatisation. Within the UK militaries, fear of being perceived as 'weak' continues to be the most common stigmatising belief across time [20], with personnel preferring to 'handle it on my own' than seek help [21]. Instead, personnel favoured informal support, with the majority seeking help through a spouse, friend, chaplain, or internet search [22]. In light of the dominance of clinical approaches and the associated stigmatisation, Dustin and colleagues [23] (p. 329) highlight the need to explore alternative approaches to recovery outside conventional practice which 'are not associated with hospitals, rehabilitation centres, or other clinical settings'. One area which has attracted recent attention is sport and adventurous physical activity, which is thought to compliment mainstream practices by 'facilitating a faster return to healthy levels of psychological functioning' [24].

There are a number of initiatives which currently use sport and physical activity as a tool for recovery in the USA (Wounded Warriors Programme, Disabled Sports USA), Canada (Soldier On), Australia (Australian Defence Force Paralympic Sport Program) and the UK (Battle Back Programme). However, little evidence has been generated to document programme outcomes and the impact on mental health and recovery. Moreover, existing research has mostly focussed on US populations and primarily considers combat-veterans, with small samples. In the first systematic review of its kind, Caddick and Smith [25] highlighted the therapeutic value of sport and physical activity on the subjective and psychological well-being of combat-veterans. In addition to generating positive emotions, the researchers concluded that sport and/or physical activity has the potential to shape the personal growth of combat veterans following acquisition of a disability or psychological trauma.

Therefore, recognising (i) the need to treat mental health problems during Service; (ii) the stigmatisation associated with professional medical help and preference to seek informal sources of support; (iii) the recommendation to use holistic, non-clinical approaches to recovery; (v) the role of sport and outdoor pyshical activity in recovery; (v) the dominance of US combat veterans in samples and; (vi) the need to rigorously document programme outcomes, the current study explores the role of a five-day adaptive sport and adventurous training (AS & AAT) programme in the recovery of UK wounded, injured and sick (WIS) in-Service personnel.

2. Method

2.1. Setting: The Battle Back Centre

Established in 2011, the Battle Back Centre (BBC) aims to assist the recovery of UK wounded (battle casualties), injured (non-battle causalities) and sick (mental/physical illness) (WIS) in-Service personnel. To achieve this, civilian coaches deliver the Multi Activity Course (MAC); a five-day bespoke, Self Determination Theory (SDT)-oriented programme (Ryan & Deci, 2000), using AS & AAT as a vehicle for personal development. Providing 24× MAC per year, the facility operates on a participant:coach ratio of 3:1, with each course offering space to 22 Service personnel across the three Services.

Following an optional morning walk and breakfast, each day opens with a daily brief where personnel are informally introduced to various psychological concepts or strategies (e.g., motivation, attitude, goal setting). Following this, personnel participate in a variety of AAT (e.g., indoor rock climbing, mountain biking, kayaking) and AS (e.g., archery, wheelchair basketball, seated volleyball, indoor bowling) activities. The presence of a full-time Technical Advisor and an extensive array of bespoke adaptive equipment facilitates enables all participants, regardless of individual circumstance, to participate in activities and experience success. Each day concludes with a review that encourages personal reflection and discussion at a group and individual level. This process encourages individuals to extract meaning from their experience and apply their learning to other life domains. Following a communal meal, social activities are held in the evening to promote social interaction and integration, including a cinema trip, quiz night, interest talks and evening walks.

2.2. Participants and Recruitment

Participants were WIS personnel directed to attend the BBC by their chain of command. Formal inclusion criteria are that participants will be (i) male and female UK Service personnel (British Army, Naval Service, Royal Air Force), including mobilised reserves; (ii) either wounded, injured and/or sick and; (ii) be independently mobile and self-medicating. Due to the nature of the participants and the sensitivities within this population, the researchers were advised to reduce participant burden and increase participant anonymity. To achieve this, we were recommended to avoid the disclosure of personal information that could lead to non-participation. Therefore, specific demographic and background information is not reported. However, in line with the demographic profile of the Armed Forces (Defence Analytical Services and Advice [DASA], 2014), the sample was dominated by white male Army personnel under the age of 25 years. Although attendance at the BBC is mandatory for Army personnel and recommended for the Royal Air Force and Naval Service, participation in the evaluation was voluntary. On arrival at the Centre, personnel were introduced to the aims of the evaluation and invited to participate. Voluntary written consent was then collected.

2.3. Data Collection

Approved by the Leeds Beckett University Ethics Committee, a formative service evaluation has documented the Centre's development across the 11 Pilots and its progression into full operational capacity. Initial qualitative, open-ended feedback from those attending the pilot courses suggested that the programme generated experiences, reflection and learning that were consistent with mechanisms of change associated with the Self-Determination Theory [26]. Therefore, Pilot 10 marked a change in the evaluation strategy with the initiation of a pre–post assessment using validated questionnaires, which explored possible changes to the elements of self-determination and psychological wellbeing. Specifically, volunteers completed two self-report measures on arrival and completion of the BBC Course. This study focusses on data collected during 69 MACs over a 25-month period between March 2012 and April 2015.

2.4. Measurements

Psychological Needs Satisfaction. The Basic Psychological Needs Scale is a family of scales which measure need satisfaction in specific domains (i.e., work, interpersonal relations, physical education) and life as a whole. The 21-item Basic Need Satisfaction in General Scale (BNSG-S) [27] was included as a measure of both outcome and of treatment fidelity, and was purposefully selected for this population because it is context-free and addresses WIS personnel's need for autonomy (7 items; e.g., 'I feel like I am free to decide for myself how to live my life'), need for competence (6 items; 'Often, I do not feel very competent' reversed) and need relatedness (8 items; 'I get along with people I come into contact with') within life in general. This approach is thought to provide insight into the general recovery of this military population. Responses were based on a 7-point Likert scale ranging from 1 ('not all true') to 7 ('very true'). After reversing the scores of nine negatively worded items, average scores for the three sub-scales were calculated, with high scores representing greater need satisfaction. The scale has reported Cronbach alpha coefficients of 0.69, 0.71, and 0.86 for the autonomy, competence, and relatedness scores, respectively [27].

Positive Mental Health. The Warwick–Edinburgh Mental Well-Being Scale (WEMWBS) was developed from the Affectometer-2 [28] and covers two dimensions of wellbeing: (i) hedonic perspective and (ii) eudaimonic perspective. The 14-items represent the only valid, positively worded scale to measure positive mental health. Responses are based on a 5-point Likert scale ranging from 1 ('none of the time') to 5 ('all of the time'). Answers are summed to provide an overall score, ranging from 14 (minimum) to 70 (maximum). The scale is a user-friendly and psychometrically sound measure of mental wellbeing, providing high internal consistency ($\alpha = 0.89$) and good reliability [29]. It provides a normal distribution with no floor or ceiling effects [30] and is responsive to change [31], making it an appropriate tool for monitoring mental wellbeing in population samples. Furthermore, it is suitable for individuals aged 13+ years [30], making it appropriate for the current setting where average reading ages are low [32].

2.5. Data Analysis

Data analysis was conducted using the IBM SPSS Statistics 22 package (Version 22, IBP Corporation, Armonk, NY, USA). All data were cleaned, screened for missing values and assessed for normality. With instances of missing values, the baseline score was brought forward [33,34], thus representing no change to psychological wellbeing. This conservative approach assumed a neutral intervention effect of the BBC.

Descriptive statistics, together with changes in scores and significance values were identified. To assess the impact of participation in the MAC, paired sample *t*-tests were conducted on each of the dependent variables (positive mental health, autonomy, competence and relatedness). The significance level was set at 0.05. However, because statistical significance is likely to be achieved due to the large sample size [35], the effect size will also be presented to establish the magnitude of the intervention effect [36]. This will be reported through Cohen's d, with 0.2 representing a small effect, 0.5 representing a moderate effect and 0.8 representing a large effect [37].

3. Results

In total, 1020 WIS Service personnel attended 69 MACs across a 25-month period. Of these, 96% ($n = 978$) volunteered to participate in the research. From this group, 971 participants completed the WEMWBS, with 15% of these ($n = 177$) providing WEMWBS data at only one time point. A total of 957 participants completed the BNSG-S, with 21% ($n = 200$) of these participants providing BNSG-S data at only one time point.

Overall Changes to Positive Mental Health and Psychological Need Satisfaction

Descriptive statistics, together with changes in scores and significance values are presented in Table 1. All measures of positive mental health and psychological need satisfaction showed statistically significant increases from baseline to course completion, each with a large or moderate effect size (Table 1). The largest increase was shown in positive mental health, 16% (7.19 ± 9.61, t (970) = −23.332, $p < 0.0005$, two-tailed, eta = 0.44). Of the psychological needs met during the week, competence increased the most, increasing by 11%, followed by a 6% rise in autonomy and a 5% rise in relatedness.

Table 1. Descriptive statistics, reliability coefficients and change in scores of positive mental health and basic psychological need satisfaction.

		Time 1		Time 2		Change in Score				
Measure and Variable	***n***	**Mean (SD)**	**α**	**Mean (SD)**	**α**	**Mean (SD)**	**%**	**95% CI**	***p* value**	**Cohen's d (Effect Size)**
Positive Mental Health	971	45.05 (11.37)	0.95	52.24 (10.3)	0.95	7.19 (9.61)	15.9	−7.8 to −6.59	0.000	1.5 (large)
Autonomy	957	4.41 (0.98)	0.72	4.63 (0.93)	0.72	0.27 (0.84)	6.1	−0.32 to −0.22	0.000	0.67 (large)
Competence	957	4.26 (.97)	0.65	4.73 (.96)	0.68	0.46 (0.90)	10.87	−0.53 to −0.41	0.000	1.03 (large)
Relatedness	957	4.93 (1.03)	0.67	5.19 (0.97)	0.66	0.26 (0.86)	5.27	−0.21 to −0.20	0.000	0.59 (moderate)

4. Discussion

Responding to the need for military recovery interventions to document programme outcomes [16], the present study evaluated the impact of a bespoke five-day AS & AAT programme on the well-being of in-Service UK WIS personnel. Moreover, this study moves beyond research addressing combat veterans with small sample sizes (e.g., Caddick & Smith [25]) and explores the health needs among a very large military sample that includes all categories of in-Service WIS personnel: the full panoply of Service employees. Findings suggest the innovative, SDT-orientated programme produced significant positive changes. Personnel reported significant increases to positive mental health and satisfaction of three core psychological needs.

While the WEMWBS is commonly used as a measurement of positive mental health at the population level [30] and has been used extensively in interventions with the general population that often last 4–12 weeks [38–42], this study marks the introduction of the WEMWBS as viable outcome measures for military interventions. While the scale of the effect of the current programme is comparable to or greater than existing interventions, it was achieved in a much shorter time frame (only five days). With more than a quarter of UK Service personnel experiencing common mental health disorders [3,4], the development of positive mental health within this population is essential because it embraces more than the absence of ill-health. Embracing the idea that positive mental health is 'a state of complete physical, mental and social well-being', suggests that WIS personnel experience mental well-being even alongside mental illness.

Underpinning the facilitation of these positive mental health experiences is the Self-Determination Theory (SDT) [26]. SDT suggests that optimal psychological functioning, growth and integrity are only achieved with the satisfaction of innate psychological needs for (i) autonomy, (ii) competence and (iii) relatedness. Even though performance outcomes are not the primary focus of delivery, perceived competence experienced the largest significant increase (11%). While military life is underpinned by physical activity, recovery is often associated with prolonged periods of (frequently enforced) inactivity following injury/illness [43]. Moreover, this is often accompanied by reduced perceived competence and belief in personal capability [8,44–46]. Therefore, the flexible physicality of the programme seemed to appeal to many participants, perhaps leading to this increased competence outcome. Previously, the MAC was shown to provide personnel the opportunity to 'do things again' and promotes participation

in both familiar and new sporting activities [44–46]. A similar notion of 'discovery' was reported by four injured combat veterans following a nine-day climbing expedition of Mount Kilimanjaro [24].

A further explanation for the rise in competence score may be due to the combined effects of completing a physical challenge during the day, followed by the retelling of the experience during end-of-day reflections and being encouraged to consider how these (re)discoveries could apply to daily life. Experiencing success, in addition to participating alongside other WIS personnel, enabled MAC participants to reappraise and develop an accurate representation of their physical ability following injury [43]. These findings are consistent with previous research, which emphasised both focussing on ability, rather than disability, and providing opportunities for comparison and reappraisal. Both featured during (i) a National Veterans Wheelchair Games (NVWG) and Winter Sports Clinic (WSC) [47]; (ii) a climbing expedition to Mount Kilimanjaro for injured combat veterans [24]; and (iii) three-day U.S. Paralympic Military Sport Camp (USPMSC) [48].

Autonomy also increased significantly, rising by 6%. Within a military context, this development is particularly significant because the Armed Forces have been described as a 'dependency culture' [49]. However, while sport has been suggested to enhance autonomy by assisting combat veterans to cope with the psychological consequence of acquiring a disability [24], or to take control of their behaviour [50], developments to autonomy are only occasionally recorded. For instance, although competence and relatedness were facilitated during a three-day USPMSC, expressions of autonomy were limited [48]. Accounting for this, Hawkins et al. suggested that the limited evidence for autonomy was most likely due to attendance being recommended or required by their chain of command. However, this was also true for MAC participants. Therefore, recognising the importance of an autonomy-supportive environment for predicting psychological need satisfaction [51], it could be argued that course content and delivery facilitated enhanced autonomy. While Hawkins et al., did not detail programme delivery, the MAC operates on the ethos 'challenge-by-choice', which encourages individuals to take charge of their BBC experience. This ownership may be influential in the development of overall autonomy scores.

Finally, relatedness also increased significantly, rising by 5%. Three explanations might account for this rise. First, is the occurrence of a positive reappraisal of existing relationships that occurred during the course. Previous research has documented how some personnel came to value relationships with their families and/or partners as a result of reflection that took place during the course [45]. Second, is the shared experience of military culture. Military culture is distinctly different from civilian organisations or institutions, with its own language, humour, rituals and beliefs [52]. Personnel often believe civilians do not and cannot understand their military experiences [3,53]. However, the MAC has previously demonstrated its ability to enable personnel to unite through a shared military experience and rekindle elements of the military culture which were often lost as a result of the isolation associated with injury and/or illness [43].

Third, is the shared experience of injury, illness and/or recovery. Recognising that personnel can often feel unique, embarrassed and/or isolated with their injury/illness [44], the MAC may offer a normalising and reassuring experience. Previous research conducted at the Centre suggests personnel can easily interact with and observe other WIS participants at varying stages of their recovery process and compare themselves and offer support [43]. This process enables participants to share similar authentic and first-hand experiences, and offer support, insight and suggestions to other group members, while also providing perspective, hope and inspiration [54]. Of 11 studies which were included in a systematic review, eight acknowledged the role of sport and physical activity in the facilitation of social well-being [25]. For instance, consistent with outcomes from the MAC, participation in a three-day military sport camp also enhanced relatedness through the shared experience of the military and traumatic injury [48].

Moving beyond the single programme, the findings also have wider implications. Clinical models of rehabilitation dominate military health care, with levels of physical functioning or symptomology often acting as markers of recovery. However, with the appropriateness of current NHS recovery

programmes for veterans being questioned [17,49], alongside the tendency for clinical approaches to predominantly help the minority [55], there is a need to explore alternative avenues for enhancing the recovery of WIS Service personnel. Considering the holistic definition of recovery [56–59] and patient models of rehabilitation [18], an alternative approach could be through sport and/or physical activity. These are perceived as 'normal', 'healthy' behaviours and not accompanied by the stigma or side effects associated with counselling and medication [58]. Furthermore, recognising the ideology of a soldier and the emotional inexpressiveness of some men, it is suggested that these men need assistive activities to stimulate personal exploration and emotional expression [59]. While these findings provide promising evidence to support the role of AS & AAT in the recovery of in-Service UK WIS personnel, further studies are necessary to explore several areas. First, it remains unclear whether attendance at the MAC creates a halo effect, with participants potentially experiencing positive improvement that declines after the course. Changes to positive mental health and psychological need satisfaction require exploration in the weeks, months and years following participation in the programme. Second, it may be useful for future research to collect demographic information (i.e., gender, rank, age) and differentiate between categories of wounded, injured and sick to determine effects across sub-populations. Third, while the magnitude of change is greater than many existing non-military interventions, further studies are needed to determine how the outcomes compare to other existing five-day military residential programmes. Finally, incorporating in-depth qualitative research will add depth to the research, providing detailed insight to 'the Battle Back experience' and the underlying mechanisms which generate the documented changes in wellbeing.

5. Conclusions

This study marks a progression in the recovery literature, documenting the role of a five-day AS & AAT programme in the promotion of well-being in UK in-Service WIS personnel. Findings suggest attendance of the MAC generates statistically significant improvements to positive mental health and satisfaction of psychological needs. Moreover, while the scale of the effect is comparable to, and often greater than, existing interventions, it is achieved in a much shorter time frame. Future research should explore the longer term implications of attending the MAC.

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Article

Purposeful Outdoor Learning Empowers Children to Deal with School Transitions

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Abstract: UK schoolchildren are vulnerable to transitional stress between primary and secondary school, which may impact negatively upon their psychological health and academic achievement. This is experienced most acutely by children from ethnic minorities and lower socio-economic status (SES) households. Outdoor Adventure (OA) residential programmes are purported to develop behavioural adaptations which enable positive educational transitions of children. Personal, social and academic skills (self-reliance, getting along with others, curriculum alignment) may be best acquired through bespoke nature-based residential OA programmes. A mixed methods study evaluated the efficacy of a bespoke OA programme for developing school children's psychological well-being and self-determination during their transition into secondary school. Participants were representantives of ethnic minorities and lower SES groups. A bespoke OA residential programme achieved the strongest scale of change in children's psychological well-being ($F(30,69) = 1.97 < 0.05$) and self-determination (effect size 0.25) compared to a generic OA residential and a non-OA school-based induction programme. Qualitative testimonies illuminated personal experiences and processes underpinning the perceived changes in the self-determination domains of *Autonomy* (the capacity to self-direct learning), *Competence* (the ability to complete tasks) and *Relatedness* (developing connections with others). Providing early opportunities for children to take control for their own learning through nature-based tailored OA programming improves their psychological well-being and adaptability to combat transitional stress.

Keywords: school children; transitions; primary and secondary school; nature; tailored outdoor education programming; individuality; adaptable productive functioning; green spaces; health and psychological well-being; self-determination

1. Introduction

1.1. Transitions into Secondary School

The transition between primary and secondary school represents a significant adjustment for young people both socially and academically. Periods of transition typically necessitate life change which may cause vulnerability to psychological adjustment difficulties [1,2]. Challenges include moving from a small school where lessons take place in a single room with one teacher, to navigating a complex timetable with multiple subjects, locations and teachers. Although many children make successful transitions, this process can impact a significant minority of individuals to such an extent that their level of motivation, psycho-social well-being and subsequent academic attainment is impaired [3–10]. Moreover, the potential harm initiated by school-based educational transitions may be experienced most acutely by children already considered vulnerable to life changes—namely, those from lower socio-economic status (SES) households and ethnic minority groups [11,12].

Given the extent of challenges presented during educational transitions, several studies have aimed to understand factors associated with transitional stress and the successful assimilation of

school children (e.g., [1,13]). Risk factors associated with transition vulnerability include the loss of old friendships, feelings of isolation, and lack of curriculum continuation. Schools that report successful transitions help children to develop new friendships, become more self-reliant, and promote curriculum interest and continuity [14,15]. These practical findings fit well with the strongest contemporary theories about the adaptive capabilities of young people in overcoming problems [16–18]. For example, the Self-Determination Theory (SDT) proposes that conditions which support high levels of autonomy (feelings of independence and control), competence (a sense of accomplishment) and relatedness (ability to get along with others) will help to nurture high-quality forms of motivation, which underpins wellness in that setting [19–21].

To further develop an understanding of school children's prerequisites for successful educational transitions, there have been calls for longitudinal research which reveals the processes which underpin their behavioural adjustment. Longitudinal studies offer opportunities to investigate risk and protective factors that co-occur and affect transition success over time [8]. Such developed insight may help to inform practices which provide young people with a broad set of assets and resources as a focus for positive change alongside skills built for risk avoidance or amelioration.

1.2. Outdoor Adventure (OA) Programming

There has been extensive research implicating OA residential programming for promoting positive behavioural adaptations pertinent for educational transitions. These include short-term and lasting improvements in self-efficacy, social connectedness, problem solving, resilience and academic performance [22–27]. It is claimed outdoor learning generates 'social capital' by boosting self-confidence and creativity [28], fostering pride and a sense of belonging [29,30], and improving cooperation, honesty, trust and compassion [31,32].

OA relies upon the process of experiential learning within a dynamic, natural setting to generate adaptive skill sets for young people. Experiential learning represents a progressively staged mechanism whereby participants learn through direct immersion and reflection of experiences [33,34]. An array of unfamiliar experiences is purported to compel individuals to engage with risk and uncertainty [35]. This helps to create an authentic sense of capability initiated through a supported, controlled disruption of everyday behaviours [21,36].

Additionally, a growing number of studies suggest just being in close proximity to green spaces significantly contributes to improvements in children's mental health and wellbeing [37–40]. Indeed, even short-term doses of nature can make a marked impact upon their mental health in natural settings. Just five minutes of exercise undertaken in an urban green space may be sufficient to boost physical and mental well-being of young people through 'biophilia' [41], described as an innate connection to nature [42,43]. This has particular significance given a growing number of children, particularly from poorer households and ethnic minority groups, have less opportunities to experience natural environments [44,45]. Further, the most recent meta-analysis advocating the health-giving benefits of greenspace exposure recommend policymakers and practitioners create, maintain and improve greenspaces specifically in deprived areas [46].

Because of the perceived benefits associated with OA and young people, schools have deployed a range of OA providers to deliver residential programmes which aim to boost children's capacity to avoid any transition-related problems [47–49]. It is proffered personal and social skills which contribute to the effective transition of school children may be best optimised through carefully constructed residential experiences, incorporating challenges which are shaped to accommodate the specific abilities of participants. This includes purposeful exposure of children to nature-based OA, whereby teachers collaborate with experienced OA providers to shape programming which meets the aims of schools [50].

Irrespective of the apparent success of different forms of OA programming, there is little empirical research to show how OA empowers schoolchildren to cope with educational transitions. It is argued beneficial outcomes emanating from OA may be largely based on intuitive belief systems,

situation-specific novelty or even coercion, rather than an informed understanding of the dynamic nature of processes and outcomes. Therefore, any benefits will remain context-specific [51] and may not readily transfer into everyday behaviours in schools [52–54]. Without evidence of the transitional experiences of schoolchildren, coupled with the processes within OA programming which influence changes in young people (i.e., facilitation techniques, group dynamics), OA practitioners and schools are unlikely to make judgements about the validity of OA programmes to meet school aims. Addressing this shortcoming may ensure that provision meets the needs of particular groups, such as pupils newly transiting into secondary school.

1.3. Research Aim and Objectives

The aim of this study was to investigate the efficacy of three contrasting induction programmes for facilitating improvements in children's psychological well-being and self-determination during their transition into secondary school.

Objectives:

(i) Evaluate the psychological well-being of schoolchildren pre- and post-induction programmes in three conditions: Tailored OA, School-based non-OA and Generic OA programmes.
(ii) Evaluate the self-determination of schoolchildren pre- and post-induction programmes in three conditions Tailored OA, School-based non-OA and Generic OA programmes.
(iii) Investigate the processes associated with schoolchildren's learning within a tailored OA programme.
(iv) Evaluate the sustainability of the tailored OA programme four months later.

2. Methods

2.1. Study Overview

Partnerships between educational providers and outdoor practitioners are deemed critical for educating children through OA [55]. Therefore, this study was a collaborative project between three UK secondary schools, a university and an Adventure Development Unit within a Metropolitan District Council.

2.2. Participants

Following institutional ethical approval, 100 school children, mean (M) age of 11 years (female N = 55/55%), were recruited as a purposive sample of pupils transiting into three inner-city secondary schools in the North of UK. The majority of pupils were representatives of lower SES households (classes 5 and 6) and ethnic minorities.

The sample comprised:

(i) A main 'Tailored OA' group of 60 pupils who attended an OA residential programme specifically designed to promote skills recognised as important for children's school-based transition, (female N = 32/53%).
(ii) A 'School Induction' group of 20 pupils who experienced active, classroom-based activities designed to integrate them into the school system (female N = 11/55%).
(iii) A 'Generic OA' group of 20 pupils who attended a pre-existing generic OA residential (female N = 12/60%). Across all groups, participants were from (SES households and of diverse ethnicity.

Three school teachers, mean (M) age of 26.4 (± SD1.56) of white ethnicity, (female, N = 2, 67%) were sampled to ascertain their perceptions associated with pupils' immersion within the 'Tailored OA' group.

2.3. Procedures and Programme Design

2.3.1. Tailored OA Programme

The Tailored OA group of transiting children participated in a three-day, two-night residential in a local authority OA centre. Emphasis was continually placed on the school's ideology to develop self-determined learners and promote the core values of honesty, integrity, compassion and excellence. These principles equate with recognised qualities needed for transition and are associated with the three underpinning components of the SDT [20]. These components include Competence (the ability to complete tasks), Autonomy (the capacity to self-direct learning) and Relatedness (how well a person can connect with others).

Pupils were empowered to be responsible for planning, organising, executing and reviewing naturally emerging experiences beyond primary-level learning, even when things did not go to plan. For example, this included pupils moving from describing movement and applying basic problem-solving to selecting and appraising different components of physical education across activity areas. While these activities were novel for many pupils, they were not so far removed from every-day school life to make them seem irrelevant and non-transferable. Therefore, within the limits of safety, pupils perceived being directly responsible for shaping their learning outcomes and for the nature and direction of the activities undertaken. This included pupils working collaboratively and in negotiation with facilitators, whether building rafts, organising equipment for journeys or ensuring personal and collective safety.

Further, to bridge to the secondary school curriculum, protocols for OA activities were infused with learning tasks from physical education, numeracy, literacy and information technology Although qualified OA practitioners delivered the technical elements of the programme, 10 undergraduate student volunteers facilitated all other collaborative activities such as a group-planned nature-based journey, housekeeping duties and meal preparation. Most importantly, these university students acted as an interface between school teachers and the children. Throughout, photographic images from previous days' events, written reflections and pictures associated with a range of emotions were displayed; group presentations allowed pupils to present evidence of their learning through role play, songs, poetry, narratives and poster work. Themes emanating from this work included (i) dealing with fear of the unknown, (ii) inclusion, (iii) empathy for others, (iv) sharing, and (v) future desires to go to university.

2.3.2. Comparison Programmes

Intervention studies within education should establish realistic comparisons [56]. To provide suitable comparisons for this programme, two induction programmes aimed at supporting children in their transition were evaluated. The first comparison group experienced an active one-week induction programme delivered in school. Activities focussed on integrating pupils into their new environment, familiarising them with subject areas, and helping them to form friendships. A second comparison group involved children who attended a five-day commercial OA residential programme. This comprised team building challenges, land- and water-based pursuits. There was no attempt to align this programme to the school's educational objectives or aspects of self-determination and general well-being. All activities were delivered by experienced qualified personnel. The characteristics of all programmes are featured in Table 1

Table 1. Programme Characteristics

Characteristics	Tailored OA	School Induction	Generic OA
Participants Sample size School location	Transiting pupils 60 Urban	Transiting pupils 20 Urban	Transiting pupils 20 Urban
Duration	3 days, 2 nights	5 days	5 days, 4 nights
Programme	Bespoke OA Residential programme	Non-residential school programme	OA Residential programme
Activities	A carousel of activities. Team-building challenges, land- and water-based. Strongly linked to the school's core values. Emphasis on helping children to become self-determined. Pupil presentations	Class-based activities subject-specific lessons including ice-breakers, team-building challenges and practical activities	Team-building challenges, land- and water-based. No attempt to tailor programme to the school's educational objectives or aspects of self-determination
Delivery/Staff	OA activities delivered by qualified instructors fully supported by teachers. University students fully immersed in all activities as mentors	Whole programme delivered by teachers	All activities delivered by qualified instructors. Teachers provided pastoral care and evening supervision

2.4. Measures and Data Analyses

2.4.1. Quantitative

Two validated age-appropriate self-report questionnaires were completed by children immediately before and on completion of their respective programme. The 14-item Warwick–Edinburgh Mental Well-being Scale (WEMWBS) [57] provides a single graduated score reflecting pupils' positive thoughts and feelings. The 21-item Basic Psychological Needs Satisfaction in Life Scale (BPNS) [20] depicts pupils' self-determination through three separate subscale scores of autonomy (freedom to express ideas), competence (ability to learn interesting new skills) and relatedness (amount of care received from others). Both the WEMWBS and the BPNS have established age-appropriate validity and reliability, possess positive links to increased psychosocial and academic functioning of pupils in schools [58,59] and relate closely to behaviours needed for successful transition.

2.4.2. Qualitative

This approach enabled qualitative data to strengthen inferences contained in quantitative findings of the Tailored OA programme. Semi-structured interviews and informal discussion took place in groups of five/six children during and following the residential programme (immediately and four months later in school). Children were encouraged to express their thoughts and opinions through open questioning and discussion which allowed clarification and exploration of ideas [60]. Questions were guided by elements which underpin psychological well-being and components of self-determination (Table 2). Teachers took part in the open interviews to share their perceptions of the value of the intervention programme for the schoolchildren's general well-being and their ability to respond to the expectations of the school.

2.4.3. Data Analyses

Quantitative data analyses investigated the magnitude and direction of change to measures of psychological well-being and self-determination immediately following all three induction programmes.

Similarities and differences within and between group (mean) scores for WEMWEBS and BPNS were identified using descriptive and parametric statistical analyses (percentage differences, independent t tests, effect sizes, one-way between-participants analysis of variance). Analyses were conducted using Statistics Package for the Social Sciences (SPSS) Version 24 [61]. In-programme and follow-up qualitative data analyses involved transcription and thematic analysis (a coding technique allowing information to be sorted into distinct frameworks which related to the research aims and objectives).

Table 2. Sample of themed discussion questions

Can you talk about some of the new friends you have made this week ****	Can you explain how you feel about yourself generally, do you feel valued, and close to other people *	How competent do you think you'll be, looking after yourself at school? How will you cope with the timetable and homework? ***	Can you explain how you feel in terms of your energy, and how cheerful, relaxed and positive you are feeling*
Can you tell me what you have learned this week (tell me a story) ***	Please indicate your levels of confidence and how interested you are in new things*	If you have a problem at school can you tell us who you would go to for help? **	Do you feel like you can take on the challenge of being at a new school? Please explain your answer***
How confident are you that you can cope with new subjects you are studying at school? **	How do you think you will relate to your teachers as a result of this induction programme? ****	Can you rate yourself on how clear your thinking is and your ability to solve problems *	How do you think you will you cope with the changes you face in your school schedule?**
What are your main sources of support (who can you talk to) at school, at home, outside? ****	How independent do you feel as a result of your experiences on this programme? ***	Can you talk about something from this week that has challenged you/made you very proud of yourself? **	Can you explain if and how being on residential has helped you to get along with people more effectively? ****

Key: Psychological well-being* & Self-Determination Theory (SDT) subscales of Autonomy** Competence*** & Relatedness****.

3. Results

3.1. Quantitative Data

3.1.1. Psychological Well-Being

A significant difference was observed between the three programmes (Tailored OA, School Induction, Generic OA) on pre- and post-programme differences in psychological well-being $F(30,69) = 1.97 < 0.05$ (Figure 1). The Tailored OA programme achieved the greatest improvement in psychological well-being ('medium' effect size 0.43) compared to the school-based induction, which reported a reduction, and the generic programme, which registered a small improvement.

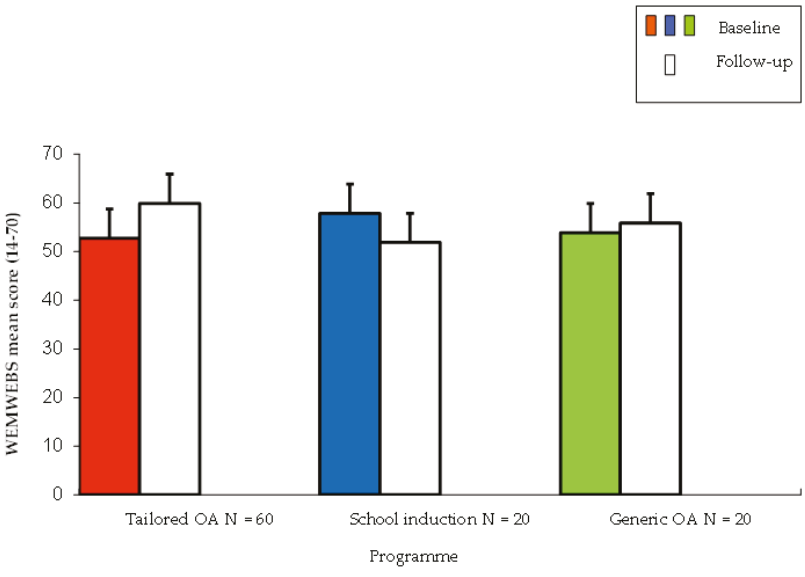

Figure 1. Baseline and follow-up Warwick–Edinburgh Mental Well-being Scale (WEMWBS) score by programme. One way Anova F(30,69) = 1.97 < 0.05 (Tailored OA v School induction and Generic OA) T bar lines on each block depicts the standard deviation of mean scores for each programme.

3.1.2. Self-Determination

Figure 2 highlights the degree of differences in the mean BPNS subscale scores of autonomy, competence and relatedness for each programme. Beneficial increases in each subscale were evident for the Tailored OA residential programme. These subscale increases represented an overall effect size increase of 0.25 for self-determination. In contrast, the school-induction and generic OA programmes recorded decreases in Autonomy and Competence and smaller increases in Relatedness.

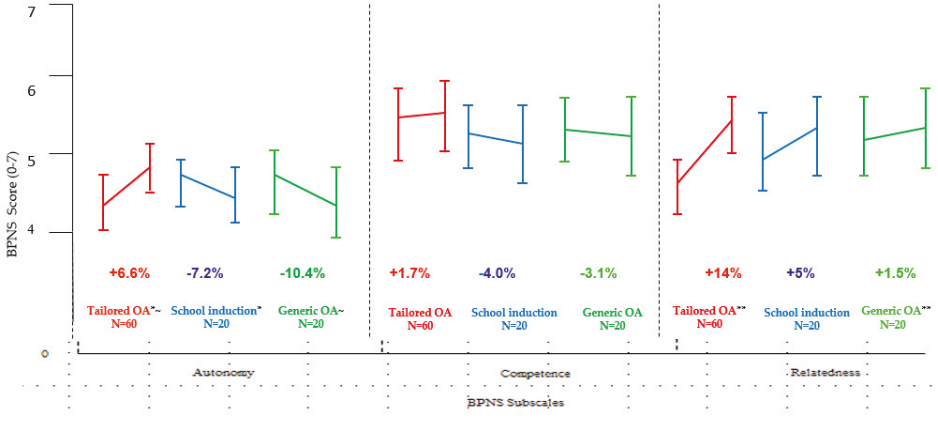

Figure 2. Baseline and follow-up mean difference scores on Basic Needs Satisfaction in Life Scale (BPNS) for Autonomy, Competence and Relatedness by programme. BPNS 0-7 (low-high) standardised scale for each subscale mean score; Independent t tests * Tailored OA v School induction t(78) = 3.04, p = 0.05; ~Tailored OA v Generic OA t(78) = 3.42, p = 0.05; ** Tailored OA v Generic OA t (78) = 2.84, p = 0.05; Lines depict standard deviation.

The tailored OA programme recorded statistically significant differences in Autonomy (effect size increase of 0.25) compared to the school induction programme, t (78) = 3.04, p = 0.05, and the generic OA programme t (78) = 3.42, p = 0.05. The tailored OA programme also increased the Competence of school children (effect size 0.18.) There was a statistically significant difference in Relatedness between the Tailored OA programme (effect size increase of 0.33) and the generic OA programme t (78) = 2.84, p = 0.05.

3.2. Qualitative Data

3.2.1. Psychological Well-Being

Qualitative responses of children attending the tailored OA programme confirmed findings from the WEMWBS measure. Children portrayed confidence in their abilities, contentment and appreciation for others during a programme which emphasised active immersion within nature.

"I was proud of raft building, I kept falling off but learnt how to climb back on"

"I didn't think I was a good leader, leading orienteering"

"I learned that you can show compassion without even realizing it! I know that I can show it my friends now. I feel happier"

"I couldn't believe I was outside so late. I love being outside"

"I enjoyed learning outside because I didn't even think I was learning . . . it's boring in the classroom."

3.2.2. Self-Determination

Children attending the tailored OA programme reflected upon their enhanced self- determination depicted through the three subscales of autonomy, competence and relatedness.

In respect to the development of the subscale of Autonomy, children recognised opportunities for self-reliance through authentic challenges.

"In map reading we found our way back from the river without help from the grown-ups!"

"I felt independent when we had to clean our rooms and make our own sandwiches"

"It didn't matter that we got wet when our raft collapsed, we just re-built it"

Children considered their improvements in the subscale of Competence following successful negotiation of the tasks presented through their perseverance and effort.

"In archery I came first but I didn't think I would, and made me more confident in my ability"

"Having done the residential I think I can cope with this [secondary school] responsibility because I know

I am capable of it"

"My favourite thing was doing a presentation, this made me feel excited to do it again at school and be not

so scared"

"Sky-walking was really scary but I did it with help from my new friends"

The subscale of Relatedness increased across all groups. However, the sharpest increase was reported within the tailored OA programme where the importance of collaborative effort and support for others was continuously reinforced. This equated to future challenges children would face in school.

"I found working together meant it were easier—If I was on my own, I wouldn't have done it".

"I think that I have lots of people to talk to now and I can go to my teachers"

"We have more friends because we slept in the same room and did activities together so we helped and supported all the time"

3.2.3. Teachers Perspectives on Tailored OA Programme

Teachers' perspectives helped to illuminate processes associated with learning within the tailored OA programme. The characteristics of the tailored OA programme placed emphasis on allowing the children the freedom to plan and explore, undertake supported risk-taking and review naturally emerging experiences.

"There are no right or wrong answers, just a process, with multiple solutions. In working through these,

children are able develop creativity, collaborative learning and decision-making skills so early in coming to school"

"If the trust and relationship is not there, the pupils do not have much confidence in the classroom (or in

you) which links into lower academic attainment"

"Usually we see pupils only twice a week for an hour and so it takes longer to form relationships...gaining trust and understanding of how they learn may take till Christmas—this is a way to get them on track before then"

"Unfamiliar activities act as a leveller, whereby some children who traditionally are more dominant in school may be stretched out of their comfort zones outside, those quiet kids get a chance to shine"

3.2.4. Tailored OA Programme Sustainability of Impact

Four months following the programme, children and teachers were able to self-reflect on the importance of these behaviours which showed a degree of resonance.

"When I started this school, I was really shy but now my confidence has grown because I got to know people better than if we didn't go on residential"

"Yeah, I remember the time we had at the Outdoor Centre, and when I start to feel nervous, I remember how well I got on and how you have to try something even if it is scary"

"Practice makes perfect as I learn in archery that's because I saw improvements in me, so I practice much more now with other things"

Behaviours regarded as important for transition were observed by teachers during school time.

"Pupils were drafting and re-drafting and they weren't happy or content with it being mediocre.....sometimes it took six or seven attempts.....not by the teacher saying it isn't good enough, it was the students taking responsibility over their work and being proud of what they had done and achieved"

"They don't [pupils from the intervention group] seem to have the [academic] dip as much, they are more

confident. They ask for help much more and seem a lot happier around school—and attendance is better"

4. Discussion

This study investigated the efficacy of a tailored OA programme for facilitating benefits in children's psychological well-being and self-determination during and following their transition into secondary school. Investigations suggested a tailored OA programme compared to a non-OA school-based induction programme and generic OA intervention achieved the strongest scale of change in psychological well-being and in all three SDT subscales of autonomy, competence and relatedness. Increases in the perceived ability of school-children to connect with others during transition were reported across all three induction programmes. Qualitative testimonies corroborated the quantitative findings of the tailored OA programme, highlighting personal experiences and processes underpinning these changes.

Although limited to a modest population sample, these findings shed light onto the benefits of developing focused strength-based functioning within an OA residential programme for school children. More importantly, the nature of this change suggests that interventions can be devised that, potentially, support an effective transition for children from inner-city areas who may not be able to access effective learning in green spaces. OA residential programme exposure which helps pupils to (i) feel proud and content (well-being) (ii) become independent (autonomy), (iii) be good at something (competence) and (iv) feel valued as a group member (relatedness) can produce a range of adaptive capabilities that help transition to secondary school. To discuss the implications of these major findings, each of the study's objectives are considered separately.

4.1. The Psychological Well-Being of Schoolchildren across Programme Conditions

Both OA programmes delivered short-term increases in the children's psychological well-being compared to induction practices undertaken in a school setting. Items contained on the WEMWBS scale include the extent to which children 'feel optimistic', are 'interested in others and new things', can 'deal with problems', and 'feel loved'. In this regard, these findings confirm the value of the exposure of young people to novel, shared activities in a natural residential OA for providing immediate psychosocial benefits ('social capital', creativity, a sense of belonging) (e.g. [28,29,35,37]) that may transmit into school life and beyond [40]. Findings also suggest that natural settings advocating shared expectations, freedom of expression and promotion of teacher–pupil relationships may be preferable for embedding new pupils in transition than more uniform environments [50].

4.2. The Self-Determination of School-Children across Programmes

Intense challenges in OA which emphasise the need for self-reliance may create real senses of capability through individual's overcoming dissonance [21]. The tailored OA programme was foremost in enabling changes to more schoolchildren's self-determination. This aligns with findings from a recent similar study of children transiting into secondary school [50]. The predominance of change across all subscales reported by children exposed to this programme provides justification for deploying focused, collaborative approaches in OA for addressing schoolchildren's transitional needs. Appropriately planned and executed programming involving schools and wider partners may help to inform teachers and create confidence in formulating OA. This practice may take the form of distinctive residential programming or curriculum-based outdoor learning which is delivered in and around school premises.

4.3. Processes Associated with Learning within the Tailored OA Programme

To prepare incoming schoolchildren for the reality of secondary education, schools have been encouraged to develop approaches for pupils to become more self-determined [16]. The SDT subscale of Relatedness increased across all groups. This could represent the overarching emphases placed upon social skills needed for transition within each of these programmes. Nevertheless, the characteristics of the tailored OA programme placed most emphasis on allowing the children the freedom to

plan and explore, undertake supported risk-taking and review naturally emerging experiences. To consolidate learning, children were encouraged to move from describing outcomes and applying basic problem-solving (primary learning) to selecting, appraising and presenting an understanding of skills needed to achieve in school. Although these skills aligned with the school's philosophy (i.e., honesty, integrity), they were more practically understood as making friends, knowing staff, asking for help and being responsible for oneself and others.

4.4. The Sustainability of the Tailored OA Programme

It is contested that exposure to OA experiences does not implicitly build positive characteristics in young people which transfer across contexts but provide situations whereby individuals experience novelty and/or feel compelled to conform [52]. Although the transferability of OA continues to be questioned, there continues to be a dearth of evidence which advocates the use of OA for the holistic development of young people (e.g. [26]). In the present study, personal attributes akin to personality traits were not targeted for change through enforced participation. Rather, self-directed habitual behaviours in children were introduced and encouraged throughout all aspects of programming which could be replicated in local green spaces and school settings.

4.5. Limitations and Future Considerations

This study provides valuable insights into the comparability of programme effectiveness for enacting changes to well-being and self-determination of children during and beyond school transition. However, there are caveats to these findings. A limited number of pupils were recruited from similar schools, and therefore the findings do not generalise across the sector. Neither do the data reflect the on-going demands of a full academic cycle. Furthermore, the data can only confirm the programme content and follow-up measurement for the tailored OA programme. However, the measures of well-being and self-determination were responsive in determining differences in pupils' functioning and could be used to evaluate further impacts of targeted OA interventions upon school children in transition.

Evidence from the current study suggests that empowering children to taking responsibility for their own comfort, safety and learning through tailored OA programming provides authentic consequences which may lead to improvements in their well-being and personal adaptability. The children's self-determination was ensured by channelling workable ratios of pupils towards self-directed tasks, allowing them the freedom to succeed and fail in a neutral testing ground for challenges akin to those faced in secondary school. These findings provide encouragement for schools delivering active programmes aiming to smooth the transition of school children, particularly those targeted at more vulnerable groups. These experiences are optimised when teachers collaborate with experienced OA providers to shape programming to meet the specific aims of schools.

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Outdoor Adventure Builds Resilient Learners for Higher Education: A Quantitative Analysis of the Active Components of Positive Change

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Abstract: The inability of young adults to adapt to university life has been attributed to their declining resilience. Resilience refers to any individuals' capacity to change or modify behaviour in response to environmental hazards, so they thrive. Outdoor Adventure (OA) residential programmes have helped higher education inductees to acquire skills associated with resilience such as increased self-perception, better interpersonal relationships. However, this study addresses important gaps in existing literature by deploying a high-quality research design to examine the short-term impact of OA experiences on inductees' resilience and to identify the active components of those experiences that best cultivate inductees' adaptive capabilities. Multivariate analyses evaluated the efficacy of OA programming to build the resilience of over 2500 inductees. Significant positive gains were reported in the resilience of inductees attending 1-week residential OA programmes measured by an Effect size (ES) = 0.38 and 6.29% increase. Compared to students inducted at university, this represented an 8.35% greater increase in resilience (ES difference = –0.526). Camp-based experiences such as mastering new skills, developing new relationships and being female predicted heightened resilience. A defined blend of embodied, adventure-based meaningful challenges provides a template for helping university inductees to re-adjust, grow and persevere.

Keywords: resilience; mental health problems; higher education; outdoor adventure; multi-variate quantitative analyses; active components of positive change

1. Introduction

Any incapacity to cope with the accumulation of stressors may cause new entrants to higher education (HE) to present worsening levels of mental health, possibly ending with dropping-out from study. Resilience represents positive adaptive behaviours necessary for healthy adjustment during periods of transition, making it a powerful potential framework for deploying strategies designed to improve student retention and achievement.

Outdoor Adventure (OA) residential programming aims to develop a range of psycho-social characteristics consistent with enhanced resilience. These features may help HE inductees to make successful transitions into university. However, few studies based on robust empirical designs have examined the short-term impact of in-course OA experiences on inductees' resilience. Moreover, there is a lack of understanding of the active components within OA programming which may best cultivate adaptive capabilities in young people. Beyond establishing resilience effects through OA, this study also addresses how any such effects may have resulted from specific exposures to distinct, yet common, programme experiences. This understanding could help formulate strategies which offer an appropriate balance of embodied experiences aligned to helping new students meet the real challenges of HE at a crucial time of their academic development.

2. Background

The transition into university represents a pivotal, 'in between', period of adjustment to the interim between dependence on the family and complete independence [1]. Starting university will require students to use self-discipline to manage their academic progress alongside a possible influx of stressors, including financial uncertainty, time constraints, establishing new relationships and conforming to new social norms [2,3]. Persistent exposure to combinations of stressors in an unfamiliar environment and without established social networks may make university inductees more vulnerable to psychological and physical health problems compared to other populations [4–6].

Across the last decade, a global pattern of poor mental health and non-completion of first year students has been reported [6–10]. A number of factors have been proffered to explain this problem. Social media has been cited as detrimental to the psychological well-being of new students [11], while the reduced stigma of students reporting mental illness and increased self-referrals to university counselling services has helped to raise awareness of this issue [12]. However, the low resilience of progressively more diverse intakes of inductees, coupled with the failure of universities to adapt to meet their needs, is recognised as a key issue in the growing mental health problems and disengagement of new students [13–15].

Resilience refers to a person's capacity to change or modify behaviour in direct response to environmental hazards, thrive and self-fulfil despite or even because of stressors [16]. The popularity of resilience as a construct in the psychology literature reflects a move from a deficit-based paradigm toward focus on positive qualities and their acquisition [17]. Although low resilience may not be a precursor to mental illnesses, higher levels of resilience has been synonymous with reduced vulnerability in the face of stress [18]. From this perspective, individuals are able to adapt and recover quickly from prevailing stressors (denoting bounce-back ability) and may see problems as opportunities for dynamic self-renewal (bounce-beyond ability), demonstrating resilience as a complex, non-uniform capacity for change [19].

Resilience is often acquired by confronting and overcoming adversity, enabling the development of protective mechanisms which appear important for counteracting risks [20]. These *promotive* and *protective* factors appear at the individual level, affecting self-regulation, self-esteem and determination [21], within-families and through secure attachments such as sociability and empathy [22] and through broader social and community values in education [23]. In this way, highly resourceful individuals with wide functional cognitive, social and emotional repertoires for handling the demands of HE may be considered resilient [24,25]. Despite these assertions, the theoretical and empirical analyses of the resilience of university students remains under-researched.

2.1. Positive Immersion within OA Experiences

Conceptually, there is an apparent fit between the stated goals of OA residential programmes and experiences that may engender *promotive* and *protective* (resilience) factors in new students [26]. Idealised, residential OA programmes represent a microcosm of the challenges facing HE inductees, including establishing peer connections, becoming familiar with new routines and managing increasing levels of cognitive and affective complexity. Previously, following participation in OA programmes, students have reported increases in resilience equating to effect sizes ranging between 0.20 (small) to 1.10 (large) compared to non-attendees [27–31]. Under the premise of optimising student integration into a new environment [32,33], American universities have implemented one-week Outdoor Orientation Programmes (OOPs) with variable success, reporting greater levels of physiological, emotional and social development, and improvements in academic performance [34–37].

2.2. OA components of Adaptive Change

A number of distinct, yet inter-connected, components of OA provide structure for the learning and transfer of such adaptive responses. These components include *the physical environment, facilitators,*

processes of learning and the *learners* [38–40]. Responding to the *physical environment* in a variety of ways may influence subsequent resilient responses in young people. Physical interaction with nature is associated with elevated mood states [41–44], reductions in anxiety [45] and perceived restorativeness [46]. A spiritual connectedness with a greater good is signalled by a sense of awe [47,48], while being inspired by the countryside has predicted resilience outcomes in students from short-term exposure to residential OA programmes [49]. Unfamiliar OA settings foster growth by requiring youngsters to resolve the temporary disruption this causes, helping them to gain new perspectives on their usual environments [50,51]. Potential hazards in OA programmes necessitate that groups develop regard for others' well-being. Relational resilience [52] reflects growth-fostering connections in the face of testing conditions; this is connected to individuals using the social courage needed to ask for, and give, help.

A trusting facilitator may assist individuals to perform optimally in risk situations [53] and develop care for others [54,55]. Although there is a strong need for rationality and intentionality in adventure programming, instructors who provide authentic and immediately observable consequences for actions empower participants to self-regulate risk taking and consider the needs of others. The processes of learning in OA programming involve participants sorting and ordering meaningful information that emerges through adventurous experiences. To stimulate and accumulate meaning, OA experiences need to be intense and emotionally stimulating (therefore memorable), personally rewarding (aligned with known experiences) and relevant to everyday life (transferable) [56].

The nature of *learners'* age, gender and background may all have bearing on the level of engagement and nature of adaptive capabilities emanating from adventure programmes. Gender preferences for OA experiences may illustrate how differences occur and can be strengthened. Females especially valued trust activities and social interactions [57], whereas males favoured experiences related to self-determined power and dominance [58]. Although recurring characteristics of person and context emerge as predictors of resilience [59,60], attributing individuals to a particular level of resilience (low or high) will mask considerable and profound intra-personal variability. What constitutes a risk factor for one person in OA may provide opportunity for growth in another.

Notwithstanding these findings, characterising the dynamic interplay between OA residential exposure and resilient outcomes in young people is rare. Critics argue that positive behavioural outcomes emanating from OA are based on intuitive belief systems and untested assumptions rather than being derived from a broad empirical evidence base [61–64]. Methodological limitations, including over-reliance on anecdotal evidence, small sample sizes, lack of control groups, conspire to make it difficult to link short-term benefits to living and working together in unusual situations. For example, there is evidence that the first day of OA interventions tends to lower people's feelings of well-being, self-esteem, and resilience [65]. Therefore, any subsequent increase in resilience found on the last day of the programme may not necessarily be a true reflection of increased resilience but rather a return to pre-existing levels following the dissipation of a threat or challenge [30]. A specific comparison of resilience scores between a control and intervention group on the first day of the induction would show whether this phenomenon was taking place.

In this understanding, robust empirical investigations are needed to address how outdoor experiences shape outcomes that elicit positive psychological development in HE that predict behavioural change beyond the OA context [66]. This includes evaluating interactions between individuals, genders, groups and components of programming which combine to construct psychological resilience. In this way, the appropriate type and level of experiences may be better understood and then deployed to deliver programmes which optimise healthy changes whilst avoiding maladaptive responses [67].

2.3. Research Purposes

Current research falls short of providing robust empirical evidence of (i) short-term impacts or of establishing (ii) working mechanisms within OA programmes. Therefore, the specific purposes of this study were to:

- Establish the immediate changes to inductees' resilience following a five-day OA residential programme;
- Compare the magnitude and direction of resilience change to similar inductees accessing comparative induction programmes at university;
- Link OA experiences and activities to the most advantageous resilience profiles by equating resilience differences with most powerful OA residential experiences and students' perceived attributes of resilience.

3. Methods

3.1. Participants

Sixteen first-year undergraduate courses housed within a School of Sport from a single UK university provided a purposive sample of inductees recruited over five consecutive years. This study incorporated a main 'OA-intervention' group who attended 40+ five-day OA residential programmes. A smaller 'At-home comparison' group comprised inductees from courses who chose not to access the residential experience. These students were engaged within a 5-day active programme designed to orientate them to university practices and procedures. This included practical group activities and exercises to help students interact more productively and establish familiarity with staff and the institution.

Prior to data screening, the OA-intervention group included 2659 full-time degree students with a mean (M) age of 18.70 (±SD = 11.66) and comprised 1377 (51.8%) males and 1282 (48.2%) females. The At-home comparison group included 165 students (female, N = 89/53.9%) with a mean age of 18.62 (±SD = 1.56). After screening for incomplete questionnaires or unmatched responses, usable sample sizes included 2547 inductees (a loss of 4.2%) for the OA-intervention group and 135 inductees (a decline of 18.1%) for the At-home comparison group. In both groups, participants were predominately white (96.8%), making this sample highly compatible with a normative HE population of inductees. Across the UK, HE sectors in 2010/11, over two-thirds of all full-time first-degree students were either 18 or 19 years of age on entry, 45.8% were male and 84.7% were white [68].

This 'widening participation' university annually enrolled approximately 6000 new full-time degree inductees. More than 9 of 10 students were state educated and over one-third came from socio-economic groups 4–7 such as lower supervisory and technical, routine and semi-routine occupations. The UK Universities and Colleges Admissions Service (UCAS) tariff for admission into the School of Sport equates to 80 points. Advanced-level (A-level) qualifications are afforded an incremental tariff for entry into HE; grade E = 16 points; A* = 56 points. All participants gave informed consent for their involvement.

3.2. Design and Measures

Following institutional ethical approval, this study comprised three stages of investigation which matched the specific research purposes of the study. All analyses were conducted using the Statistics Package for the Social Sciences (SPSS) Version 24 [69].

3.2.1. Stage 1: Immediate Impact of OA on Inductees' Resilience

Inductees from both sample groups completed the self-reported Connor–Davidson Resilience Scale (CD-RISC) [18] immediately before and directly following their respective five-day OA residential/university-based induction programmes. This scale is suitable for use with older adolescents in educational contexts [70]. The CD-RISC generates Total Resilience (0–100) and five contributory subscale scores of (i) Competence (0–32), (ii) Trust (0–28), (iii) Change (0–20), (iv) Control (0–12) and (v) Spirituality (0–8). CD-RISC comprises 25 phrases such as 'I adapted to change' with scoring ranging from 0 (Not at all true) to 4 (True nearly all the time); higher scores reflect greater resilience.

CD-RISC TR internal consistency (Cronbach's α) was 0.92 and for the subscales as follows: Competence (0.86), Trust (0.77), Change (0.75), Control (0.65), Spirituality (0.60). Test–retest reliability

demonstrated a high level of agreement with an intra-class correlation coefficient of 0.87. Construct validity was confirmed with high convergent correlations (r = 0.83, $p < 000.1$) with the Kobasa Hardiness Scale [71], and appropriately negative discriminant correlations (r = 0.34, $p = 11$) with the Arizona Sexual Experience Scale (ASEX) [72].

A progressive series of statistical tests established the significance, magnitude and direction of change in the OA-intervention groups' resilience following the OA residential. Paired t tests, a one-way ANOVA, a 2 × 2 mixed-design ANOVA and Multivariate Analyses of Variance (MANOVA) established differences in CD-RISC Total Resilience difference (TRdiff) and the five resilience subscales by gender and annual cohort. The magnitude and direction of changes were represented by Cohen's *d* effect size (ES) and percentage differences. A general convention is to interpret the ESs of approximately 0.20 to be 'small' in magnitude, those of 0.50 to be 'moderate' and those larger than 0.80 to be 'high' [73]. To provide a further sensitised evaluation of the responsiveness of subgroups of inductees to the OA intervention, quartile ranges were constructed signifying differences in Total Resilience and subscales ranging from 'negative differences' to 'high positive differences'. Chi-square tests established any significant differences between the frequency of observations in the categories.

3.2.2. Stage 2: Comparative Analyses of Resilience Change

To test the efficacy of the OA residential programmes, CD-RISC scores of the OA intervention group were compared to the At-home comparison group. Comparative analyses were undertaken using independent t tests, a 2 × 2 mixed-design ANOVA, MANOVA and effect sizes.

3.2.3. Stage 3: Powerful Components/Personal Experiences of OA Programming

OA within the residential week involved participants' taking personal risks through progressive exposure to a range of outdoor activities designed to develop adaptive capabilities. These activities included team challenges, educational visits, rock climbing and abseiling, ghyll scrambling, bivouacking, mountain-walking, canoeing and kayaking. Although similar activities and practices were delivered across residential venues, there were course specific educational objectives embedded into specific programmes. Programmes were delivered across varied outdoor locations (The English Lake District, Yorkshire Dales and North Wales).

Immediately following completion of the OA programme, two bespoke instruments captured OA-intervention inductees' self-perceptions of their (i) level of immersion within OA components of the programme and (ii) competencies acquired associated with adaptive functioning across the duration of the programme.

A 19-item *Camp Rating Scale* (CRS) measured inductees' immersion within the programme. Items were formulated from previous School of Sport student reviews of OA residential programmes consistently identified as important for transition. A graduated five-point Likert scale enabled responses ranging from 'Never' (=1), indicating no engagement in camp-related activities, to the highest rating of 'Through most days' (=5). The internal reliability of the scale was identified as 'acceptable' (α 0.72). A 15-item *Perceived Competencies Scale* (PCS) enabled inductees to attribute changes to recognised adaptive behaviours, ranging from 'Much worse' (=1) to 'A lot better' (=5). Items comprised protective and promotive factors which could underpin changes in resilience. The internal reliability of the scale was identified as 'excellent' (α 0.88).

To identify factors from the two bespoke scales which predicted differences in resilience, a stepwise multiple linear regression analysis was undertaken. Multiple linear regression aids prediction by determining the degree to which a combined set of predictors, which may be measured on continuous (interval or ratio) and categorical (dichotomous) scales, predict a criterion. Used with large sample sizes, stepwise regression progressively selected the order in which predictors were established. A stepwise binary logistic regression analysis was also performed to identify those items on the rating scales most likely to predict inductees belonging to quartile groups of resilience difference (ranging from 'negative differences' to 'high positive differences'. This model systematically identifies significant variables to

predict the change in odds that observations belong to one of two groups. Scores for items on each scale were used to predict the likelihood of inductees belonging to the optimum 'high positive' resilience difference group, using the other quartile ranges as comparisons. This analysis helps to establish the most powerful active ingredients within the OA programmes alongside the personal attributes that generate behavioural change.

4. Results

4.1. Stage 1: Changes to CD-RISC Total Resilience (TR) and Subscales

Table 1 shows inductees' mean baseline and post-intervention scores for CD-RISC Total Resilience (TR) and subscales. Paired t tests revealed significant positive differences in TR and all subscales, showing a positive intervention effect on all resilience subscales. Effect sizes (ES) for TR and subscales were between 'small' and 'moderate' with the exception of Spirituality, where the ES was less than 'small'. The ES of 0.38 (range 0.13 to 0.86) for TR constituted a 6.29% increase. The largest percentage increase in subscales was seen in Control (8.66%). Indicating that females acquired a wider array of powerful, positive influences on behaviour than their male counterparts, females displayed the highest ES in TR, Competence, Trust, Change and Spirituality. Males recorded the largest ES in Control.

There were no significant gender differences in mean Total Resilience difference (TRdiff). Only the subscale of Change in females (M = 1.08, ±SD = 2.75) compared to males (M = 0.76, ±SD = 2.93) showed a significant mean difference F (1, 2547) = 8.35, $p < 0.00$. A 2 × 2 × 2 mixed-design ANOVA for baseline and post-intervention TR by annual cohort and gender revealed significant mean differences across baseline and post-intervention TR scores F (1, 2537) = 579.21, $p < 0.001$. TRdiffs were significantly different between annual cohorts F (4, 2537) = 53.59, $p < 0.001$, by year and gender F (4, 2537) = 3.30, $p < 0.05$.

To provide a sensitised evaluation of resilience difference, re-classified quartile ranges of TRdiff and subscales were developed. Table 2 quartiles reflect categories from 'Negative' differences (−31 to –2) to 'High Positive' differences (9 to 47). Most inductees were located in the positive difference quartile groups for TR and subscales. Over three-quarters of all participants recorded scores of −1 or above in TR from a possible range of −37 to 47. Over 85% of inductees reported positive changes in Control. More males achieved negative difference categories for TR and all subscales, with the exception of Control. Change was significantly associated with differences between observed and expected frequencies in the quartile categories χ 2 (1) = 15.52, $p < 0.01$.

4.2. Stage 2: OA-Intervention Group versus At-Home Comparison Group

The At-home comparison group displayed no significant changes to their resilience and subscales following the induction week. Their TR and subscales showed negative ESs and percentage decreases. TR reduced by 2.06%. The subscales mostly contributing to the decline in resilience were Competence (−3.19%) and Trust (−1.90%). A comparison was made of baseline scores for TR and subscales between the OA-intervention and At-home comparison group. Although there were no significant differences between their scores, the OA-intervention group scored higher across all measures. Table 3 highlights post-intervention mean differences (significance, magnitude and direction of TR and subscales) between the OA-intervention and At-home comparison group. The majority of mean differences were significant at the 0.01 level for the OA group. Effect sizes were 'high' (with the exception of Spirit), reflecting that the OA-intervention group outperformed the At-home comparison group in reporting positive changes as a function of time (pre/post). Most importantly, the effect size for TRdiff between the At-home comparison and OA-intervention group was −0.526, (OA group ES = 0.38; comparison group ES = −0.15) which represented difference of 8.35% in TR. The subscale that accounted for the greatest difference in ES between the groups was Competence (ES = −0.59, 9.63% difference).

Table 1. Baseline and post-intervention mean Connor–Davidson (CD-RISC) Total Resilience (TR) and subscale differences of Outdoor Adventure (OA)-intervention inductees by gender for all annual cohorts.

	Means (±SD) (n)														
	Baseline			Post			Differences *			Cohen's d Effect Size (ES) †			% Difference (+)		
Variable (Range)	Males (1309)	Females (1238)	All (2547)	Males (1309)	Females (1238)	All (2547)	Males	Females	All	Males	Females	All	Males	Females	All
CD-RISC (0–100)	74.64 (12.38)	74.93 (12.84)	74.77 (12.59)	78.98 (11.90)	79.98 (12.23)	79.47 (12.07)	t(1308) = 15.22	t(1237) = 18.27	t(2546) = 23.55	0.36	0.40	0.38	5.81	6.74	6.29
Competence (0–4)	3.26 (0.55)	3.25 (0.55)	3.26 (0.55)	3.47 (0.50)	3.47 (0.51)	3.47 (0.51)	t(1308) = 15.47	t(1237) = 16.87	t(2546) = 22.78	0.40	0.41	0.40	6.44	6.76	6.44
Trust (0–4)	2.84 (0.55)	2.83 (0.56)	2.84 (0.56)	2.97 (0.58)	3.00 (0.58)	2.98 (0.58)	t(1308) = 7.83	t(1237) = 11.61	t(2546) = 13.60	0.23	0.30	0.25	4.57	6.00	4.93
Change (0–4)	3.12 (0.60)	3.12 (0.63)	3.12 (0.61)	3.27 (0.57)	3.34 (0.56)	3.31 (0.57)	t(1308) = 9.44	t(1237) = 13.92	t(2546) = 16.33	0.26	0.37	0.32	4.80	7.05	6.09
Control (0–4)	3.00 (0.64)	3.02 (0.67)	3.00 (0.66)	3.27 (0.62)	3.26 (0.65)	3.26 (0.64)	t(1308) = 16.07	t(1237) = 14.08	t(2546) = 21.34	0.43	0.36	0.40	9.00	7.95	8.66
Spirit (0–4)	2.00 (0.97)	2.21 (0.91)	2.10 (0.94)	2.11 (1.02)	2.33 (0.94)	2.22 (0.99)	t(1308) = 5.27	t(1237) = 6.60	t(2546) = 8.34	0.11	0.13	0.12	5.50	5.43	5.71

* All $p < 0.01$; † Effect size (ES) 0.2—small, 0.5—moderate, 0.8—large.

Table 2. CD-RISC Total Resilience (TR) and subscale baseline and post-intervention difference ranges for OA intervention group by gender.

	Categories of Change for Total Resilience															
Variable	Negative %				Small Negative to Positive %				Small Positive %				High Positive %			
	Range Min to Max	M %	F %	All %	Range Min to Max	M %	F %	All %	Range Min to Max	M %	F %	All %	Range Min to Max	M %	F %	All %
CD-RISC	−31 to −2	25.8	22.4	24.1	−1 to 2	22.4	22.2	22.3	3 to 8	27.3	27.9	27.6	9 to 47	24.6	27.5	26.0
Competence	−12 to −2	16.7	13.6	15.2	−1 to 0	25.9	27.3	26.6	1 to 3	29.2	33.1	31.1	4 to 18	28.2	26.1	27.1
Trust	−15 to −2	26.1	21.1	23.6	−1 to 0	22.7	24.0	23.4	1 to 2	21.0	21.6	21.3	3 to 15	30.2	33.3	31.7
Change *	−14 to −2	16.8	12.4	14.7	−1 to 0	35.4	33.3	34.4	1 to 2	27.0	32.1	29.5	3 to 14	20.7	22.2	21.5
Control	−5 to −2	20.1	22.9	21.5	0 to 1	49.9	47.6	48.9	2 to 3	23.0	22.3	22.6	4 to 8	7.0	6.8	6.9
Spirituality	−6 to −2	10.1	8.1	9.1	−1 to 0	51.3	53.8	52.5	1 to 2	31.5	31.5	31.5	3 to 6	7.1	6.6	6.9

* Pearson's chi-square 2 (1) = 15.52, $p < 0.01$.

Table 3. Post-intervention mean differences for CD-RISC Total Resilience (TR) for OA-intervention and At-home comparison group by gender.

Post Mean Differences (±SD) (n)															
	OA-Intervention Group			At-Home Comparison Group			Differences †			% Difference (+)			Cohen's d Effect Size (ES) *		
Variable (Range)	**Male (1309)**	**Female (1238)**	**All (2547)**	**Male (61)**	**Female (74)**	**All (135)**	**Males**	**Females**	**All**	**Males**	**Female**	**All**	**Male**	**Female**	**All**
CD-RISC (0–100)	78.98 (11.90)	79.98 (12.23)	79.47 (12.07)	70.10 (9.46)	70.56 (10.58)	70.35 (10.06)	t(1368) = 5.68	t(1310) = 6.45	t(2680) = 8.55	12.66	13.35	12.96	0.83	0.82	0.82
Competence (0–4)	3.47 (0.50)	3.47 (0.51)	3.47 (0.51)	3.00 (0.53)	3.04 (0.48)	3.03 (0.49)	t(1368) = 7.05	t(1310) = 6.94	t(2680) = 9.88	15.66	14.14	14.52	0.91	0.87	0.88
Trust (0–4)	2.97 (0.58)	3.00 (0.58)	2.98 (0.58)	2.54 (0.43)	2.60 (0.48)	2.57 (0.46)	t(1368) = 5.31	t(1310) = 5.87	t(2680) = 7.87	16.93	18.11	15.95	0.86	0.75	0.78
Change (0–4)	3.27 (0.57)	3.34 (0.56)	3.31 (0.57)	2.94 (0.43)	2.94 (0.54)	2.94 (0.49)	t(1368) = 4.47	t(1310) = 6.12	t(2680) = 7.45	11.22	13.60	12.58	0.66	0.73	0.70
Control (0–4)	3.27 (0.62)	3.26 (0.65)	3.26 (0.64)	2.79 (0.61)	2.82 (0.58)	2.81 (0.60)	t(1368) = 5.80	t(1310) = 5.64	t(2680) = 8.10	17.20	15.60	16.01	0.78	0.72	0.73
Spirit (0–4)	2.11 (1.02)	2.33 (0.94)	2.22 (0.99)	2.36 (1.05)	2.46 (0.98)	2.42 (1.01)	NS	NS	t(2680) = 2.25	−10.59	−5.28	−8.26	−0.24	−0.13	−0.20

* Effect size (ES) 0.2—small, 0.5—moderate, 0.8—large, † $p < 0.01$.

Given that the descriptive analyses suggested differences to changes in resilience between the OA-intervention and At-home comparison group, a 2 × 2 mixed-design ANOVA compared the differences in TR between the two groups by gender. OA-intervention group vs. At-home comparison group and gender were the between-subjects' factors and time (resilience measurement day 1 vs. day 5) comprised the within-subjects' factors. A significant main effect of TR measurement was observed. Total mean resilience was significantly higher post OA (M = 74.97) compared to baseline (M = 73.31), F (1, 2678) = 14.02, $p < 0.001$. An interaction between time and group indicated a significantly greater change in TR for the OA-intervention group F (1, 2678) = 46.43, $p < 0.001$. There was no significant interaction between time and gender F (1, 2678) = 0.426, $p > 0.05$, and time × condition × gender F (1, 2678) = 0.020, $p > 0.05$. A MANOVA revealed significant mean differences in TRdiff and for all subscales between the OA-intervention and At-home comparison group following one-week interventions (Figures 1 and 2). There were no significant differences by gender or condition × gender.

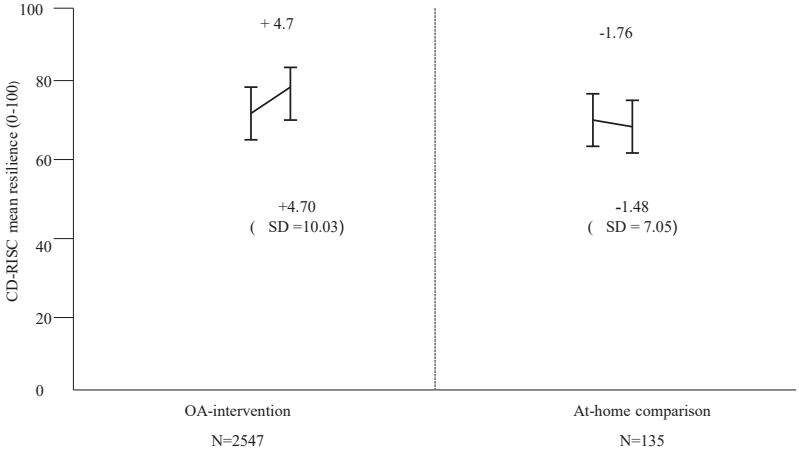

Figure 1. Mean difference in CD-RISC Total resilience difference by condition. MANOVA F (1, 2678) = 46.42, $p < 0.001$.

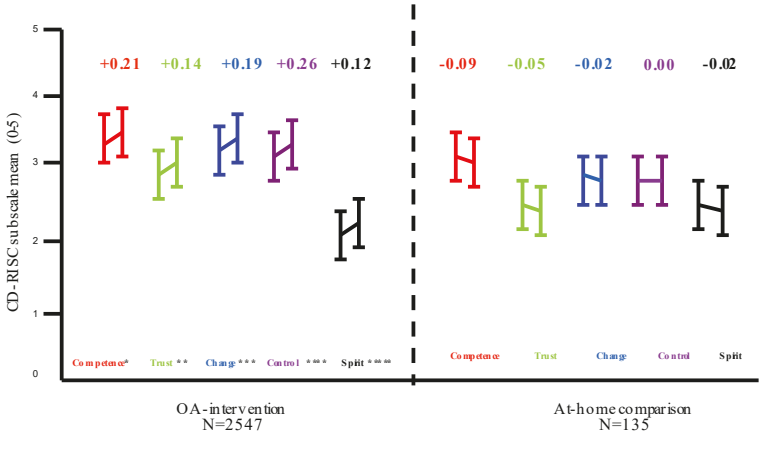

Figure 2. Mean difference in CD-RISC subscales by condition. MANOVA ALL F (1, 2678), * = 49.55, $p < 0.001$, ** = 14.99, $p < 0.001$, *** = 17.15, $p < 0.001$, *** = 39.96, $p < 0.001$, **** = 5.21, $p < 0.05$.

4.3. Stage 3: Influential Programme Experiences: Camp Rating Scale (CRS) and Perceived Competencies Scale (PCS)

Table 4 depicts OA-intervention inductees' mean level of perceived engagement within 19 OA residential activities from the *Camp Rating Scale* (CRS). Ratings indicated that individuals were actively engaged with 15 of the 19 activities 'Every day'. Students were able to consistently engage with others, become self-reliant and skilled in a broad range of areas while hardly ever feeling homesick. The lowest categories of engagement included 'Being able to choose the OA' and 'Being able to self-cater' reflects that most programmes contained a standard programme of activities and were fully catered.

Table 4. *Camp Rating Scale* (CRS), Mean (SD) responses.

Variable	Range Never Through Most Days 1 2 3 4 5
1. With people of my own age	
2. Got on well with people in my group	
3. Took part in adventure activities	
4. Able to laugh at myself	
5. Learned and mastered new skills	
6. Motivated by the activities I did	
7. Solved my own problems	
8. Took responsibility for things	
9. Took part in formal team-building exercises	
10. Good connections with residential staff	
11. Left behind usual unhealthy habits	
12. Could act in an independent way	
13. Enjoyed social and academic activities	
14. Experienced camp leaders	
15. Free to make my own decisions	
16. Inspired by the countryside	
17. Able to choose activities I did	
18. Cooked for myself and the group	
19. Felt homesick	

Table 5 illustrates inductees' perceived level of change to components of resilient behaviour from the *Perceived Competencies Scale* (PCS). Positive improvements were reported by inductees in all 15 facets of behaviour related to hallmarks of resilience such as social connectedness, cognitive and emotional competence. The greatest perceived changes were realised in developing relationships and coping with present uncertainty.

Table 5. *Perceived Competencies Scale* (PCS) Mean (SD) responses.

Variable	Range Never Through Most Days 1 2 3 4 5
1. My social relationships now	
2. My coping with unfamiliar events now	
3. My personal growth now	
4. My mental strength now	
5. My level of optimism now	
6. My resourcefulness now	
7. How well I know myself now	
8. My creativity now	
9. My ability to predict how others will react	
10. Forgive others shortcomings now	
11. My motivation to study now	
12. My connection to the world now	
13. Manage life's ups and downs now	
14. Forgive own shortcomings now	
15. My level of hostility now	

Multiple stepwise linear regressions revealed that seven OA programme experiences and competencies predicted inductees' heightened resilience. Three CRS items significantly influenced TRdiff, 'Learned and mastered new skills' (which was the most powerful, βeta = 0.082, t = 3.800, $p \leq 0.01$), 'Could act in an independent way' and 'Getting along well with people in my group'. Four items from the PCS scale included 'My social relationships now' (the most influential, βeta = 0.108, t = 4.184, $p \leq 0.01$), 'My level of optimism now', 'My motivation to study now' and 'Manage life's ups and downs now'. Gender was not a predictive influence on TRdiff.

Multiple stepwise binary logistic regression highlighted items on the CRS and PCS which most likely predicted inductees' membership of the 'High Positive Difference' quartile group. All multiple stepwise binary logistic regression ($\chi 2$ (1, 1089) $p < 0.05$) demonstrated that being female (OR = 1.351, 95% C.I. 1.060 to 1.721) alongside three CRS items predicted membership of the 'High Positive' resilience difference quartile group (26.0% of inductees) compared to the 'Negative' resilience difference group (24.1%). The CRS items were 'Learned and mastered new skills' (OR = 1.221, 95% C.I. 1.053 to 1.415), 'Free to make own decisions' (OR = 1.154, 95% C.I. 1.013 to 1.314) and 'Left behind usual tobacco, drug or alcohol behaviours' (OR = 1.145, C.I. 1.018 to 1.289). In this model, females were 35% more likely to be in the 'High Positive' group compared to males; for every unit increase in learning new skills, students were 22% more likely to be in the group with the highest positive resilience difference. The PCS items of 'My mental strength now' (OR = 1.426, 95% C.I. 1.135 to 1.759) and 'My social relationships now' (OR = 1.418, 95% C.I. 1.123 to 1.791) predicted membership of the 'High Positive' resilience difference group by 42 and 41% respectively. These analyses were confirmed by tests of appropriate goodness of fit, sample size, multi-co-linearity, classification accuracy, and cross sample validation.

5. Discussion

This research has established three main findings. First, significant positive gains were reported in the resilience (ES = 0.38, 6.29% increase) of considerable numbers of inductees within and across five years, representing 40+ OA residential programmes. Second, on average, residential OA inductees

achieved an 8.35% greater increase in resilience, compared to inductees who reported negative outcomes following university-based induction programmes (ES difference = −0.526). Third, frequent immersion of OA inductees within key components of OA programming and increases in perceived competencies predicted their heightened resilience.

These findings confirmed the positive impact of OA residential programming on the adaptive capabilities of new students. These data not only provide powerful evidence for OA developing immediate improvements in inductees' resilience but also identified the type of experiences and degree of exposure which generated these changes. The results established that these acquired skills and knowledge predicted inductees' resilience and linked these experiences and competencies to specific clusters of students. A variety of emotional responses reflected the inductees' adjustments to the challenges of these OA programmes. Nonetheless, students perceived developing a more controlled presence of mind and adoption of behaviours that helped manage any accumulation of stressors that might otherwise have triggered adverse emotional responses. Embodied, meaningful challenges which required inductees to realign their perceived capabilities may help to normalise difficulties that all learners face in HE and enable them to re-adjust, grow and persevere in their academic studies.

5.1. Short-Term Impact of OA on Inductees' Resilience

OA residential programmes initiated significant heightened resilience. Seven of 10 OA participants achieved positive differences in resilience and subscales. Over 85% of inductees reported positive changes in their ability to exert control over stressors. While the scale of changes to resilience differed between annual cohorts, positive gains were reported by inductees within and across all years. The magnitude and direction of changes (ES) were equivalent to the ESs of OA programming which were educationally significant (0.31 and 0.50) and represented therapeutic value for young people (range from 0.30 to 0.50) [43,44]. The findings were consistent with adaptive skill sets resulting from policy initiatives [65] and in-line with the ESs of much smaller previous similar studies [27–30]. These findings provide a powerful justification for using OA residential programming for developing immediate increases in the resilience of HE inductees.

5.2. Comparison Group

This study provides a strong contrast group, based on an induction programme conducted 'At-home', on campus, within the home university. The ESs for resilience and subscales were positive and 'moderate' for OA inductees, whereas non-OA attendees reported negative ESs and percentage decreases. Differences in the resilience outcomes were almost 9% greater for the OA-intervention group than in the At-home comparison. These findings support previous studies wherein the greatest improvement in the adaptive capabilities were developed through active OA induction programmes compared to traditional induction practices [29,31].

The resilience subscale that accounted for the greatest ES differences between the two groups was perceived Competence. Furthermore, within-group analyses identified that OA-intervention students' higher resilience was progressively and incrementally associated with how frequently they learned new skills. OA residential programmes typically require participants to continually re-evaluate their capabilities through problem solving in small groups within an authentic setting where consequences for actions are realistic. Although the OA condition may have been uncomfortable for some students (reflected in their negative responses), differences between the OA and At-home conditions highlight the potential problems of relying on existing locally based provision. This is unlikely to replicate the naturally emergent, experiential forms of learning which accompanies OA-based resilience building.

5.3. Components of OA Residential Programming

Resilient responses to *physical environments* in OA have ranged from participants' resolving disruption to their well-being, feeling psychologically restored and developing a spiritual connectedness with nature [41,42,46,48]. Although inductees' spirituality was unaffected by OA programming,

resilience was most evident through being free to test competencies, being required to get along with others, leaving behind old habits and dealing with uncertainty.

Regular social interactions between inductees and *facilitators* underpinned students' positive adaptive responses. Relational qualities associated with resilience, namely asking for help, establishing support networks, feeling connected to a broader community, all help to buffer the impact of stress on new university students. Predictive models in the current study highlighted the importance of students establishing social connections and becoming more self-determined for building their resilience. Refining the behaviours that develop autonomy may liberate participants to self-regulate and develop concern for others; these are important qualities for new students to deal with difficulties encountered at university [4,6–8].

Deploying *processing* strategies within OA programming, such as structured reflection, enables participants to internalise the meaning of their experiences and consolidates learning across contexts [39,40]. The current data show that specific behaviours predicted both inductees' resilience (learning new skills, mental strength, sociability, freedom of choice) and changes in the sub-domains of the CD-RISC. Given that a perennial challenge in OA programming is to transfer any newly acquired skills of participants with challenges faced in everyday life, our findings provide a template for behaviours aligned with 'items that create the sub-domains on the CD-RISC. These convert into teachable behaviours, pedagogies and practices, many of which have proven worth for promoting retention and achievement in HE [34].

Individual challenges to perceptions of capabilities ensure *learners* will display a variety of adaptive responses in OA contexts. Data indicated substantial variability within and between annual cohorts and sub-groups of inductees. For example, over one-fifth of new students reported decreases in their resilience and distinctive gender-based patterns of functioning were established [58]. Female inductees acquired a more powerful, wider repertoire of adaptive functioning than males; this emerged through experiences involving the learning new skills, building social relationships, forgiving personal shortcomings, and coping with uncertainty. In contrast, males preferred having the freedom to make decisions and the opportunity to solve their own problems. Previously, females reported higher levels of socialisation in OA programming within HE [29], while males placed a higher value on autonomy [58]. Findings from the current study suggest a more nuanced, tailored approach is more likely to meet the specific transitional needs of inductees. Further, gendered responses can help to construct better OA-based inductions. While it is possible that negative resilient outcomes reflected an advantageous process of reassessment, it is equally important that responses to any programme are not used to stigmatise some groups. More males than females featured in the high resilience difference categories for Competence and for Control.

5.4. Strengths and Limitations

The current research was based on clear chains of inferential reasoning supported and justified by rigorous, objective empirical practices across five annual cohorts. This is the largest study of its kind and, combined with the use of a comparison sample, it is both statistically powerful and internally valid. The similarity of resilience scores on the first day of the induction between the groups provide confidence that positive resilience outcomes were due to elements of OA programming. Anticipatory lower resilience reported immediately prior to OA programmes have brought doubt on the validity of increased outcomes in previous studies [29,65]. Further, strength arises from showing that the high completion rates of a comprehensive range of valid and reliable measures were sensitive to inductees' outcomes, predicting both the direction and magnitude of change.

Nonetheless, a number of methodological caveats affect the findings. First, this study was restricted to students within a single UK university, limiting generalisability across the HE sector. The pre-/post-time series design remedied the pitfalls of cross-sectional techniques. However, non-longitudinal analyses made it difficult to gauge the degree of transfer to other settings. As with any questionnaires requiring self-evaluation, establishing differences between pre-test and post-test scores within OA

programmes may have been affected by the timing of measurement. Pre-group measures could reflect participants' anticipation of confronting something new, making them lower-than normal estimates of personal capability. Equally, measures captured immediately following the programme may detect 'post-group' euphoria. Remedied, these issues may reduce the magnitude of overall programme effects. Allowing for the strengths associated with a 'At-home' comparison group, the relatively small sample may be unrepresentative. Further, this study focused specifically on the OA-intervention groups' programme of activities and not aspects of the university-based induction programme.

6. Summary and Conclusions

The aim of this study was not to portray resilience as a panacea for 'fixing' all aspects of adaptive functioning in new students. This study was designed to explore how enhanced resilience is predicted by manageable combinations of enabling processes and programme approaches. It also answers calls for empirically robust investigations into the impacts of OA programmes, and for HE to deliver engaging, induction practices which can develop a buffering capacity of first-year stressors.

This study provides powerful evidence that resilience was derived from actively confronting challenges. This indicated a purposeful compatibility between inductees' needs and the dynamics of known components of OA programming. Crucially, sub-domains of resilience, such as the capacity to make friends, solve problems and take control were all heightened through, and predicted by, frequent exposure to distinct OA experiences and practices. This substantiates the use of appropriately challenging pedagogical approaches in HE; none appeared to worsen inductees' perceived fragility. Moreover, these authentic learning experiences have helped inductees to appreciate the value of effort-driven behaviours and to draw as much learning from their unsuccessful activities as they do from success. This experience has strong possibilities for helping inductees to become self-reliant students with critical awareness.

Given the complexity of risk and resilience transactions in young people, there may be problems in promoting lists of universal assets arising from OA programming across groups, contexts and time. In the current study, evidence of negative emotional reactions to challenges, of cohort-specific and of gendered responses underlines that both universal 'guidelines' can be blended with individualising influences to optimise adaptive functioning. As an evidence-based approach, measures from this research could be used in a longitudinal study to investigate the sustainability of OA programming for students in the early experiences of HE. Further, future studies should ascertain how resilience reduces students' stress and correlates with learning measured through educational outcomes. Nonetheless, the embodied learning experiences reported offer powerful evidence for HE providers. The predictive programme components may be useful for planning to influence comparable inductee groups. This evidence constitutes a broad set of readily available assets and resources to a community of practice intent on building individual and collective agency to protect against the potential for drop-out among new students.

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The Impact of an Outdoor and Adventure Sports Course on the Wellbeing of Recovering UK Military Personnel: An Exploratory Study

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Abstract: UK military personnel have faced increased demands over the last three decades; these have affected their wellbeing and caused multiple physical and mental health problems. Currently, bespoke rehabilitation systems may recommend participation in sports programmes. Although research attention has been drawn to the short-term positive effects of these programmes, their long-term impact on psychological wellbeing is unknown. To address this gap, the current study explored the long-term impact of a sports programme on UK military personnel's ability to make changes in their day-to-day life through the lens of psychological wellbeing. For this purpose, UK military personnel (n = 97) completed an online survey aiming to provide a quantitative and qualitative picture of their experiences of an outdoor and adventure sports programme, underpinned by the basic psychological needs theory, six months following completion. Findings suggest that 75% of respondents found that the course was useful for facilitating adaptive changes. Content analysis suggests that elements of the course seem to satisfy their basic psychological needs of competence, relatedness and autonomy. Activities initiated six months after the course are mostly aligned with improved psychological wellbeing. Useful theoretical and applied implications are discussed.

Keywords: military personnel; psychological wellbeing; outdoor adventure activities; mental health

1. Introduction

UK Military Personnel (UK MP) have faced increased demands since 1991, following the Gulf War, Balkan, Iraq and Afghanistan conflicts. As a consequence, the prevalence and magnitude of their physical and mental health concerns has increased. A recent study [1] concluded that at least 67,515 UK veterans are likely to experience a physical or mental health condition at some point in their life as a result of serving between 2001 and 2014. Their physical health problems include a range of musculoskeletal injuries, traumatic brain injuries, spinal cord injuries, and limb amputations originating from the explosion of explosive devices or from gunshot wounds [2]. Further, the demands of dealing with these severe physical health conditions, combined with the exposure to trauma and difficulty of adapting to civilian life can also lead to increased mental health problems [3,4] and suicide rates [5].

These multiple issues combine to make it difficult to reintegrate into civilian life [2,6]. Hence, there is a need to provide effective support programmes that improve participant wellbeing in short —and over longer—time frames. One of the current systems available to support UK MP personnel is through participation in sports programmes [3,7]. The rehabilitative effect of such programmes in supporting the physical and psychological wellbeing of military personnel has received increasing interest from scholars in recent years; short-term impacts seem mostly positive. Accordingly, a systematic review by Caddick and Smith [2] exploring the impact of sport interventions on the physical and psychological

wellbeing of military personnel reviewed evidence from 11 studies, and findings highlighted positive psycho-social health and wellbeing outcomes following participation.

More recently, a systematic review by Greer and Vin-Raviv [8] investigating the impact of outdoor-based traditional recreational programmes (including sport) on veterans diagnosed with Post Traumatic Stress Disorder (PTSD) included 13 studies, and findings suggested positive short-term improvements in mental health measures and wellbeing outcomes. Although these results are promising and highlight the short-term benefits, a further understanding of their impact on the long-term day-to-day life of military personnel is still needed. Indeed, from the 13 studies reviewed [8], only one included paper [9] assessed the participants six months after participating in a programme. Considering that reintegration in a civilian society is a well-known challenge for military personnel [3,6,7], understanding the long-term impact of sports programmes on day-to-day life and wellbeing seems to be a research priority.

In regard to the study of wellbeing and its definition, consensus is still far from being established. Nevertheless, the experience of flourishing and the possibility to explore opportunities to identify one's potential [10] have received increased research attention from scholars over centuries [11]. Accordingly, philosophers have proposed multiple views of what constitutes living a good life [12], these include reaching human perfection, or satisfying human needs. Over the years, empirical evidence on wellbeing has increased [13], and a clear distinction has been established between eudaemonic and hedonic wellbeing [14]. Hedonic or subjective wellbeing relates to pleasant and unpleasant life experiences and happiness [15]. Eudaemonic or psychological wellbeing (PWB) refers to the individual's realisation of their true potential [16], including their experience of purpose and meaning in life [17]. Considering the foundational importance of PWB in defining who an individual is, its adaptive functioning nature [14] and protective features in dealing with significant life challenges and overall health [14,17], it seems wise that military personnel engage in daily activities that foster PWB. Although existing evidence supports the link between participation in physical activity (PA) and positive hedonic wellbeing [18], less is known about the influence of PA participation on eudaemonic wellbeing. According to a recent conceptual framework in the field of adventure recreation [19], participation in activities that support the satisfaction of basic psychological needs have the potential to positively impact eudaemonic wellbeing. Following this line of enquiry, the current study will explore the long-term impact of a sports programme informed by the basic psychological needs theory on UK MP's ability to make changes in their day-to-day life through the lens of PWB.

2. Materials and Methods

2.1. Participants

The 97 participants had all attended a 5-day residential Battle Back Multi Activity Course (MAC) in an Outdoor and Adventure (OA) sports context six months previously. Participants were Wounded, Injured or Sick UK MP who had attended a MAC and who met the following inclusion criteria: (i) male and female UK Service personnel; (ii) either wounded (battle field casualties), injured (non-battle casualties) and/or sick (mental/physical illness); and (iii) independently mobile and self-medicating. Out of the 66 participants that provided full answers to all questions at the six months follow-up time point, 18 were female and 48 were male. At the time of attending the MAC, all were serving members of the UK armed forces and were receiving formal recovery support due to being wounded, injured or sick (with a mental health issue or systemic illness). When participants provided information for this current study, they may have been medically discharged from the armed forces, returned to active duty or still be in-service and receiving recovery support. The proportions of participants in each category was not identified as this was not addressed within the ethical approval secured for the on-going evaluation of the within-MAC experiences. All participants, regardless of their subsequent status, had given approval for that activity. Ethical approval was awarded by Leeds Beckett University and The Ministry of Defence Research Ethics Committee (Protocol number: 562 MoDREC 14). A participant

information sheet was provided to MAC participants at least 24 h prior to attending. Written informed consent was then obtained from participants upon arrival and continued consent was confirmed online prior to completing the follow-up survey six months after attending.

2.2. MAC Overview

The five-day MAC targets individuals that have already left the Armed Forces and uses adaptive sport and adventurous training to foster personal development and growth. The MAC aims to support participants to achieve their best possible recovery in the transition to civilian life. The MAC combines adaptive sport and adventurous training activities that are relevant to the participants' recovery plan and are simultaneously enjoyable. Some examples of adaptive sports include indoor climbing and caving, clay pigeon shooting, kayaking and mountain biking. The MAC uses a participant-centred approach, underpinned by the basic psychological needs theory [20].

The course provides daily opportunities for participants to develop the three psychological needs of autonomy, competence and relatedness. Particularly, the MAC includes education sessions on the biology of thought processing which are then discussed and applied to the activity sessions. Additionally, opportunities are provided to master sport-based tasks that are important to participants. Furthermore, competence is amplified through daily end-of-day classroom sessions dedicated to reflecting on achievements in knowledge, skills, and mastery of meaningful tasks. The course staff deliberately features military representatives and autonomy is based on a challenge by choice approach, in which participants can refuse to engage in practical activities. To accentuate this experience, and to distinguish the programme from conventional military OA, by design, there are no morning or evening parades, no uniform and no formal recognition of military rank. Finally, the five-day residential course fosters opportunities to promote a strong sense of belonging and connectedness with others in similar situations through sport and social activities, combined with a close relationship with staff, equivalent to around 50 h of contact time.

2.3. Measures

Participants completed an online survey, part of a larger research project aiming to assess the quality of the MAC course. For the purpose of the current study, one closed and two open-ended questions were analysed in order to explore UK MP experiences of the MAC course following six months. For this purpose, the closed question asked: "Since being at Battle Back did you make any changes in your day-to-day life?" and participants could select Yes or No. The first open-ended question followed "If yes, what changes have you made? Use the example sentence *I have started* to help . . . ". The second open-ended question aimed to explore what elements of the course the participants valued the most: "What part of the Multi Activity course had the greatest impact on you?".

2.4. Data Analyses

Participants' open-ended responses were analysed using content analyses acknowledging their recognized usefulness for health research [21]. All such responses were coded by the first and second authors independently using an abductive approach, allowing flexibility in the analyses by using pre-identified codes according to Ryff's model of PWB [17] and the basic psychological needs theory [20], respectively, for open questions one and two, whilst remaining open to the appearance of new themes [22]. Ryffs's model of PWB proposes six specific dimensions of wellbeing, including self-acceptance (*SA*), the ability to see and accept one's strengths and weaknesses; purpose in life (PL), refers to having aims and objectives that give life meaning and direction; personal growth (PG), the feeling that personal talents and potential are being realized and developed over time; positive relations with others (PRO), possessing close and valuable connections with significant others; environmental mastery (EM), ability to manage the demands of everyday life and the surrounding world; and autonomy (A), pursuing a sense of self-determination and the strength to follow personal ideas, values and convictions, even if they go against others' ideas. The basic psychological needs

theory [20] is underpinned by the satisfaction of three basic psychological needs for autonomy, competence and relatedness. Autonomy (A) relates to feeling the origin of one's actions and decisions, and having a sense of control over activities and life. Competence (C) refers to the need of feeling effective in their ongoing interactions with their environment and experiencing opportunities to practice and express their capacities. Relatedness (R) includes the need to belong and connect with others, caring about and being cared for by others, and having a sense of belonging both with other individuals and community. When participants mentioned more than one activity, we coded the first answer named and then the second one, so each response was consistently given one or more codes, as appropriate. The first and second authors coded all questions independently. The first and second coders agreed on 86% of the emerging codes. For the 14% of different codes, further critical discussions established consensus, so all responses were coded.

3. Results

Survey Results

Out of the 97 UK MP that voluntary participated,89 provided responses to the closed and two open-ended questions. In response to the question "Have you made any change since your last sport course at Battle Back?", 66 (74%) answered *Yes* and 23 (26%) answered *No*. In response to the question "If yes, what changes have you made? Use the example sentence "I have started … " to help.", out of 66 answers provided, some participants mentioned more than one change, providing a total of 68 responses to be coded. All 68 responses were coded, apart from one that was coded as 'other' as it did not fit any of the major codes. Of the 68 coded responses, all were in line with Ryff's [17] conceptualization of PWB: self-acceptance, purpose in life, personal growth, positive relations with others, environmental mastery, autonomy. Most daily changes reported implicitly suggest activities relating to the more positive dimensions of PWB, with the exception of one answer that suggests limited adaptation to daily life (Table 1 provides an overview of data coded for each PWB dimension). Results suggest that most changes in day-to-day life seem to be beneficially related with PWB. Particularly, daily activities initiated seem to be more prominently related with the environmental mastery, self-acceptance and purpose in life dimensions of PWB. For the second open-ended question "What part of the Multi Activity course had the greatest impact on you?", out of 66 responses provided, some participants mentioned more than one aspect of the course, providing a total of 79 responses to be coded. The 79 coded responses are alligned with the three basic psychological needs of competence, relatedness and autonomy experienced during participation in the course activities (Table 2 for details).

Table 1. Main themes for the question "have you made any changes since your last sport course at Battle Back? If yes, what changes have you made? I have started … ". (n = 66).

Theme	No Change Example Quotes	Change Example Quotes	Frequency n (%)
Self-Acceptance (SA)	–	"Thinking about a positive thought for each day."	16 (24%)
Positive Relations with others (PRO)	–	"Tolerating other people's faults more readily."	5 (7%)
Autonomy (A)	–	"Facing my issues myself and not expecting support or help..."	5 (7%)
Environmental Mastery (EM)	–	"Adaptive swimming and cycling on a very regular basis."	23 (35%)
Purpose in Life (PL)	"I have tried cheer myself up/be happy but still can't find any happiness in myself or life."	"Have started work as a teacher/lecturer.""Going back to work."	12 (18%)
Personal Growth (PG)	–	"I have moved abroad to start my new life."	7 (10%)

Note: responses could be coded as more than one theme.

Table 2. Main themes for the question "What part of the Multi Activity course had the greatest impact on you?" (n = 66).

Theme	Elements of the Course Example Quotes	Frequency n (%)
Autonomy (A)	"Blend of activities particularly those related to life. I remember the mountain biking, for example, look at where you want to go, not at the hazard-brilliant!" "I can review what I can control and I can't control … "	14 (19%)
Competence (C)	" … I had feared after my illness I would be physically diminished- Battle Back helped me to kick that fear into the long grass.""The course made me feel like the old me." "The course helped me to recognize the positive skills and qualities I have."	38 (57%)
Relatedness (R)	"The camaraderie and the realization that I am not alone feeling as I do." " … being able to interact with people who are in similar situation and being able to speak to staff who are happy to help."	27 (40%)

Note: responses could be coded as more than one theme.

4. Discussion

This study offers a unique contribution to the OA literature by providing follow-up data of change following a bespoke, theoretically oriented programme aiming to enhance the personal development of wounded, injured and/or sick UK MP. Overall, six months after completion, almost three quarters of MAC participants perceived that they had made valuable changes in day-to-day life. Findings suggest that the MAC helped initiate positive activities likely to foster eudaemonic wellbeing for military personnel.

As well as being highly adaptative, these changes are related with all dimensions of psychological wellbeing [23] and the relevant aspects of the course reported are aligned with the satisfaction of the three basic psychological needs of autonomy, competence and relatedness [20]. The most prominent change initiated by participants was linked to environmental mastery, notably (i) being more active on a daily basis, (ii) initiating sport participation, and (iii) improving multiple health behaviours (e.g., diet and hydration). These findings show the positive impact of the MAC on near-transfer, which is to say, the effect on activities similar to that of the MAC but in different contexts. When explaining why this particular aspect of psychological wellbeing featured so strongly over others, it is likely to reflect the satisfaction of the psychological need of competence developed by the OA course programme. As stated by participants, the course "helped me to recognise the positive qualities and skills I have", suggesting that the programme generated powerful experiences, enhancing the ability to stay active and manage health behaviours.

Our findings also support the long-term impact of OA programmes for UK MP. Indeed, these seem to benefit the initiation of activities related with a higher sense of self-acceptance and purpose in life, personal growth, autonomy and relations with others. Possible explanations for the findings are likely to be aligned with a combination of factors underpinning OA sport participation and personal growth, as well as course design informed by a participant-centred approach and basic psychological needs theory. In support of the first explanation, a recent review on the benefits of OA sports to society [24] supports the short-term effects of OA sports programmes on physical and mental health outcomes and wellbeing. Accordingly, our findings extend this knowledge to show the positive long-term benefits particularly among military personnel. With regard to psychological wellbeing, evidence [25] highlights the potential of participant-centred interventions to improve positive self-care behaviours and health outcomes.

The positive long-term outcomes of the OA sports programmes are promising original insights. With regard to psychological wellbeing, while the evidence suggests lower levels in those with diverse

physical and mental impairment, it is also important to acknowledge the scale of (i) individual gains and/or (ii) the maintenance of wellbeing following impairment [14]. Importantly, evidence increasingly documents the wider implications of psychological wellbeing in health, biological regulation and brain functioning; the common underlying theme is that the MAC appears to facilitate adaptive and protective purposes by satisfying needs of relatedness, competence and autonomy.

Considering the well-established importance of the eudaemonic concept of wellbeing in other areas of psychology and its theoretical relevance in supporting wounded military personnel transitioning from military to civilian life, this paper advocates the need to integrate the basic psychological needs theory in the design of military personnel future rehabilitation sport programmes. Additionally, the evaluation component should not only consider short-term but also long-term effects of OA programmes on psychological wellbeing. Additionally, acknowledging that most research conducted in this area [8] mainly considers narrow impacts on negative outcomes (e.g., PTSD symptomology), addressing a wider perspective on positive outcomes (i.e., flourishing and positive functioning) assures that UK MP are supported in their reintegration post the course.

Though this study provides a novel insight into the long-term benefits of OA sports programmes in improving UK MP psychological wellbeing, it is important to consider the findings in light of the study's limitations and consider recommendations for future research. First, the study was exploratory in nature and relied on survey data only, restricting the depth of information collected. Future research should consider using more comprehensive qualitative methods (e.g., interviews, daily diaries) to fully understand UK MP's long-term experiences of psychological wellbeing following OA sports programmes. In addition, considering that data was collected six months after the course, we recommend future research to include measurements at more regular interval points, for example straight after the course and following six months, to fully understand the long-term sustainability of OA sports programmes' changes on UK MP's psychological wellbeing. Furthermore, acknowledging recent advances within the basic needs framework to consider beneficence as a fourth basic psychological need, showing to influence eudaemonic wellbeing [26], it is recommended that future research explores the utility of this variable in explaining psychological wellbeing for military personnel during and following OA programmes. Finally, acknowledging previous literature highlighting the important role of nature in enhancing psychological wellbeing [27], it is recommended that future studies explore the importance of this variable in OA programmes for military personnel.

In conclusion, the current study offers an original and significant addition to the literature by showcasing the long-term positive impact of OA sports programmes in supporting UK MP's ability to make positive changes in their day-to-day life. Furthermore, the work provides useful theoretical insights on the use of the basic psychological needs theory to inform the design of OA sports programmes aiming to increase eudaimonic approaches to psychological wellbeing [14], facilitating post-MAC recovery.

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Correction

Correction: Kaiseler, M., et al. The Impact of an Outdoor and Adventure Sports Course on the Wellbeing of Recovering UK Military Personnel: An Exploratory Study. *Sports* 2019, *7(5)*, 112

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The authors wish to make the following corrections to this paper [1]:

On page 3, Section 2.2, Paragraph 1, "The five-day MAC targets individuals that have already left the Armed Forces and uses adaptive sport and adventurous training to foster personal development and growth." should read "The five-day MAC targets individuals that have **not** already left the Armed Forces and uses adaptive sport and adventurous training to foster personal development and growth."

The authors would like to apologize for any inconvenience caused to the readers by these changes.

Reference

1. Kaiseler, M.; Kay, C.; McKenna, J. The Impact of an Outdoor and Adventure Sports Course on the Wellbeing of Recovering UK Military Personnel: An Exploratory Study. *Sports* **2019**, *7*, 112. [CrossRef]

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Article

'Perhaps a Bit Different to What We Did Twenty Years Ago': Senior Teachers' Perceptions of Outdoor Adventure within Primary Education in England

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Abstract: Outdoor and adventurous activities (OAA) are now a compulsory component of the primary education curriculum in England, with senior leadership teams exerting significant influence on its delivery in schools. This study considers senior teachers' perceptions and value of the OAA strand of the Physical Education (PE) National Curriculum (NC) in primary education. Six senior teachers from across a large northern city took part in semi-structured interviews. Data was analysed using an interpretivist paradigm incorporating a multistage thematic coding process. Findings centred on the lack of guidance given by the NC within OAA and ensuing issues for experienced and less confident teachers of the subject. Different interpretations of OAA were prevalent from traditional skills-based activities to personal and social development through basic activities delivered outside the classroom. Finally, all senior staff highly regarded OAA and offered a strong rationale for its inclusion within curriculum time. The full potential of OAA as a cross-curricular approach to learning in primary education is not being realised and can be partially mitigated by more purposeful integration within teacher education programmes.

Keywords: physical education; national curriculum

1. Introduction

Outdoor and adventurous activities (OAA) can elicit many positive health and well-being outcomes difficult to achieve via other means [1–6]. Consequently, OAA has been incorporated into British education for over a century [7–14]. Other benefits inextricably entwined with well-being typically include opportunities for holistic education [6], enhanced self-awareness and interpersonal skills [15–21] and cultivating life skills such as resilience, risk management, and independence [15,17,21–25]. OAA experiences create vivid long-term memories [15,23], through autonomy and exploration [1,17]. These activities often fall outside normal family experiences such as holidays or visiting friends and relatives [2,10,19,24] and can develop healthy lifelong habits [3,20,25,26] which positively influence academic attainment [15,19,20,27,28].

Since the inception of a National Curriculum (NC) in England in 1988, OAA has been formally, and somewhat contentiously, imbedded within Physical Education (PE) and seen as important in the development of transferable personal and social skills [10,14,16,19,28–36]. In 2014 the Conservative-led Government elevated the status of OAA from optional to mandatory from the age of seven (key stage two) onwards [29]. Primary education in England should be well placed to facilitate this recent curriculum shift. Schools now receive the School Sports Premium (SSPr), a significant ring-fenced fund (minimum of £16,000 per year, as of 2018) intended to improve mandatory PE and school sport provision, which includes OAA delivery [37–39].

Existing studies have shown senior leadership teams within schools to be pivotal in shaping school practices and cultures [19,25,31,40]. However, if knowledge and understanding is lacking and

OAA not valued, this may affect its delivery [18,20]. This is often compounded by conflicting priorities placed on the school leadership team through Ofsted inspection, league tables and attainment in core subjects such as English and Mathematics [5,7,41–44]. Several studies have investigated OAA delivery within schools in England, but few have been conducted since the recent shift in NC policy and introduction of SSPr [25,27,28,40]. Empirically based knowledge is required to more fully understand primary education senior teachers' perceptions and value of OAA because of the pivotal role they play in its promotion and delivery. This paper presents findings taken from a wider research project that investigated the complexity of delivering OAA within primary education in England. Specific objectives included how senior teachers interpreted the OAA strand of the NC, their understanding of OAA as a concept within an educational context, and the value placed on OAA within curriculum time. Six in-depth semi-structured interviews produced rich data presented under the findings of this paper.

2. Literature Review

2.1. Concepts of OAA

A myriad of overlapping concepts are used to refer to structured learning that occurs outside of classrooms [15,28]. Example terminology includes: Outdoor Learning, Outdoor Education, Adventure Education, Learning in Natural Environments and Outdoor Adventurous Activities [18,21,29,40,45,46]. Many of these have preconceptions. For example, teachers historically consider Outdoor Education (OE) to largely include skills-focused outdoor pursuits that incorporate elements of risk and challenge, often within a residential setting [14,25,28]. Fagerstam [15] supported this notion by stating OE is something typically provided by professional organisations at purpose built outdoor centres rather than schools. Similarly, Thorburn and Allison [35] suggested OAA is routinely perceived to encompass a week-long residential experience, which they asserted is a common misconception. OE has historically been preferred in Britain; however, Sutherland and Legge [14] suggested this term started to experience rivalry from Adventure Education around the 1990s. Despite international trends, the Government has adopted the term Outdoor and Adventurous Activities (OAA) within educational policy. Hence, for the purposes of this paper and to ensure consistency with existing legislation, OAA is used throughout to refer to activities typically occurring outdoors in natural environments which include components of challenge and adventure [14,29,47]. Primary school teachers often lack a clear and consistent conceptual understanding of both PE and OAA [28]. Coupled with the fact that generalist teachers gain scant guidance from the Physical Education National Curriculum (NCPE) and often do not receive much in the way of formal preparation regarding OAA, it is unsurprising many lack confidence in this area [14,21,24,40,48–54].

2.2. OAA in the National Curriculum

In the most recent NC (2014) the presence of OAA has been coupled with minimal specific guidance [29]. This has proven to be a strength in that broad links can be made between other curricular subjects, and a weakness, because teachers have the autonomy to deliver OAA how they see fit. Government has encouraged teachers to exercise professional judgement in translating and enacting the latest NC to fit within the socio-cultural context of their respective school [53]. This can cause difficulties for primary school teachers since many are non-subject specialists and lack PE and OAA related subject knowledge and pedagogical confidence [14,21,24,40,48–52,54]. Such findings are not confined to the UK. Recent research by Remington and Legge [43] and Dyment et al. [55] considered school teachers' perceptions from an antipodean perspective, highlighting many professionals lacked clarity and understanding leading to OAA and its potential being undervalued. OAA documentation was open to interpretation and lacked clear working examples. They concluded curriculum change must be supported by effective teacher resources. Such findings have not been heeded in England. NC documentation generally, and PE and OAA specifically, has been produced to allow greater

local autonomy, with this approach particularly problematic in primary education through lack of subject knowledge.

MacLean et al. [53] purported autonomy gaps can emerge between the intentions of policy makers and how delivery is successively translated into practice with unintended consequences possible as a result of ambiguity. Flintoff [56] referred to this concept as 'slippage' where practitioner delivery strays from the ideologies of policy makers. When considering marginalised areas of the curriculum such as OAA, this notion is concerning, since Flintoff explained the NCPE can be seen as a flexible document, open to debate and meaning different things to different schools. Empirical findings partially substantiated this concern, as teachers sought further clarification and support from senior management to affirm their interpretations of the policy were correct [53,56].

Influential work on policy by Penney and Evans [57,58] rejected the NC as a hierarchical document blindly adopted by others, instead arguing implementation is a process involving several stakeholders. This notion was substantiated by Curtner Smith's early research [50] on teachers' interpretations of the NCPE in England. Occupational Socialization was used as a theoretical lens to consider factors which influenced teachers ensuing practice. Findings highlighted teachers' practice was markedly different to intended policy aims, with staff adapting, recreating, and modifying the NC to fit their own beliefs about teaching. Curtner-Smith [50] also found teachers with less experience were more likely to embrace new ideas, and those with more experience resist change by only modifying rhetoric rather than behaviour.

2.3. Valuing OAA in English Schools

Flintoff [56] explained policy shifts rely heavily on the enthusiasm of those involved in implementation, which in this context is teachers. Since Curtner-Smith [50] found teachers practice often reflects their values, it is important to consider this in relation to OAA, particularly given its shift to mandatory status [31]. Ofsted [49] reported curriculum ideas valued by senior teachers will often cascade down to inspire other colleagues. Pether [31] substantiated this notion stating teachers highlighted senior leadership teams as instrumental in successful initiation and development of an OAA culture within primary education. They saw head teachers as those responsible for providing the initial impetus behind a particular vision before sharing this responsibility amongst other staff. While Remmington and Legge [43] and Cosgriff [28] commented on this in the antipodean context, there is a dearth of empirical evidence in British primary schools. Nevertheless, a collaborative report by Waite et al. [21] considered how OAA could be implemented within a school setting and findings showed the schools most likely to facilitate OAA displayed characteristics such as strong leadership, open mindedness and the ability to create a positive staff culture [18,49]. Christie et al. [48] found teachers' understanding of OAA varied, with many lacking awareness of the associated benefits, which was speculatively seen as a constraining factor.

Despite evidence clearly suggesting senior school staff play a significant role in advocating and supporting OAA implementation, it is concerning that Ofsted [18] highlighted "some schools remain unconvinced of the benefits (of OAA) when weighed against the many barriers" (p. 14). An Ofsted report [46] evaluating the impact of learning outside the classroom stated head teachers commonly reported staff, governors and parents had expressed concern that "time spent outside the classroom might reduce academic attainment" (p. 21). Further, Ofsted explained that some schools viewed OAA as an 'extra' or 'special' treat, confined to the limits of yearly off-site trips. School stakeholders often need reassurance of the integrity of OAA, and a strong rationale before incorporating this into curriculums [31]. Remington and Legge [43], however, also observed that, since outdoor centres often assume responsibility for school OAA delivery, it may be tangential to curricula with teachers becoming distanced from its associated educative potential.

An effective way to support schools with OAA delivery would be using funding to influence staff perspectives through professional development training [48] Thorburn and Allison [40] suggested sharing the growing evidence base and research credentials of OAA may help to convince others

of its fidelity. Many scholars feel it necessary to challenge traditional perceptions of OAA within education and convey its numerous evidence-based benefits to all stakeholders involved [6,17,31,55]. Accordingly, Remington and Legge [43] found a strong enabling factor to be teachers' awareness of the social benefits of OAA. Purposive support and development of teachers is an important theme many scholars have considered [6,7,17,31,40,55] and Christie et al. suggested OAA is gaining increasing recognition in schools [48].

3. Methodology

The methodology adopted a cross-sectional design to capture rich contextualised data from six primary schools and senior teachers across a large Northern city in England. Since the senior leadership teams of schools have been indicated as pivotal in shaping organisational practice and cultures [31], qualitative findings here specifically relate to educators interpretations of the OAA strand of the NC, understanding of OAA as a concept within an educational context, and sense of value placed on OAA within curriculum time. As this study was positioned in a social context with objectives largely based on socially constructed phenomena it incorporated an interpretivist paradigm to consider interpretations, personal emotions and values [20,59–63].

3.1. Participant Information

All participants were male and worked within senior leadership teams of primary schools holding responsibilities of overseeing and implementing OAA within curriculum time. Their teaching experience ranged from two to seventeen years, summarized below in Table 1. Considering some participants only had several years of teaching experience despite working within senior management teams, this potentially highlighted a lack of female or equivalent expertise and confidence in relation to PE and OAA within these primary schools.

Table 1. Summary of participant characteristics.

Pseudonym	Role	Experience (Years)
Kevin	Head Teacher	17
Stuart	Assistant Head Teacher	12
Jerry	PE Coordinator	6
John	PE Coordinator	5
Bob	PE Coordinator	3
Dave	PE Coordinator	2

3.2. Recruitment

Convenience sampling was used where participant inclusion criteria comprised of primary school teachers working within senior leadership teams overseeing and implementing OAA within curriculum time. A local school sport partnership (SSPa) organisation acted as a 'gatekeeper' for recruitment of senior teachers. Research information outlining thorough details of the study, participant expectations, the right to withdraw, and details of confidentiality measures were sent via email to a range of appropriate teachers selected by the gatekeeper. The researcher also attended a senior teacher conference hosted by the SSPa to invite participants to take part in a more personable manner. Informed consent was agreed and recorded prior to collecting data from all participants within interviews. In line with ethical approval granted via a University Ethics Committee and BERA guidelines [64], confidentiality and anonymity were offered to teachers and schools by the use of pseudonyms and stringent data protection etiquette.

3.3. Interviews

Semi-structured interviews were used to discuss real world topics and gain rich data [15,19,20,25,40,47,55,62]. An interview schedule was used throughout with prompts to elicit

deeper responses (see Table 2), whilst also allowing conversation digression and unanticipated information to emerge [59,60,63]. Interview questions were informed by Curtner-Smith's [50] early research on Occupational Socialization Theory, which considered influential factors on teachers' interpretations of the NC. These original questions were adapted to fit the context and objectives of this study [61]. To enhance convenience for participants, interviews took place within schools over four weeks spanning January and February. Interview locations were private from children, including individual and shared offices, staff rooms, and vacant classrooms. Discussions lasted between 25 and 45 min and were audio recorded throughout to enable participants' body language to be observed and any misunderstandings clarified. The semi-structured interview schedule used is presented below in Table 2.

Table 2. Interview schedule.

Question	Prompts
How long have you worked as a teacher and senior teacher?	What about at this school?
What do you interpret the OAA strand of the PE curriculum to mean?	Could you talk a little about the clarity of the wording used in the NC?
–	Is there any additional guidance provided alongside the NC in relation to OAA?
–	What do you think about the policy in relation to generalist teachers?
What sense of value do you place on OAA within curriculum time?	How does this compare with the perspectives of other school stakeholders?
–	Are you aware of any of the benefits of OAA?
Is there anything else you would like to add on this topic?	–

3.4. Data Analysis

Qualitative data was analysed using a multi-stage thematic coding process to examine commonality, difference, and relationships [59,62,65,66]. First, interview recordings were transcribed verbatim before being thoroughly re-read to prompt familiarity with the data. Initial codes intended to encapsulate the main point being made were assigned to pertinent aspects of the transcripts in relation to the research objectives [66], with any irrelevant data being discarded from further analysis procedures [59,62]. These codes were successively processed deductively through alignment with the studies objectives to create overarching thematic categories. Inductive analysis was then used to capture the nuances within this data, with similar codes being grouped together to form subcategories [59,62]. Proposed themes and sub-categories were reviewed and refined to ensure findings accurately represented the dataset and clear distinctions existed [65]. This deductive–inductive approach allowed the macro focus of the original research objectives to be retained whilst also considering subsequent emergent findings [66]. To enhance the credibility of this process, colleague checks were performed throughout the analysis to substantiate any decisions made [67]. Similarly, the findings were also forwarded to all six participants to check the researcher's interpretations were correct [62]. In keeping with confidentiality agreements, anonymised interview extracts were selected and used within the findings section to illustrate pertinent points made by participants [62].

4. Findings

This study aimed to investigate senior teachers' interpretations, conceptual understanding and the value placed on primary education OAA. The findings integrate qualitative data from six senior teachers specifically related to the aim of this study.

4.1. Teachers Perceptions of OAA within the Curriculum

Senior teachers indicated the current NCPE was considerably slimmer and less prescriptive than earlier editions, with minimal inclusion of OAA. Five teachers expressed this allowed greater autonomy, yet another mentioned it suggested a lack of Governmental value. "It's gone from a curriculum that was pages and pages and very prescriptive … to schools having the autonomy that fits in with their school" (Bob). This lack of policy clarity was said to be replicated within OAA discourse since example activities are no longer provided within or alongside the curriculum forcing teachers to interpret the limited information provided. "There's not an awful lot to do with OAA on the curriculum is there … and it's not tied down to particular events" (Dave). Three teachers mentioned this situation may be open to abuse by schools perceiving NCPE requirements as easy to fulfil, potentially creating a tokenistic approach. Equally, the majority of participants mentioned its sparseness and ambiguity allowed schools flexibility and was seen as a positive feature, highlighted below.

"There is not much there in terms of what we are supposed to be doing, but I think there is enough to take that and tailor it to offer something we want" (Bob).

Similarly, two teachers expressed the scant curriculum detail regarding OAA could pose a problem for less experienced generalist teachers and lacked ambition for more confident schools with well-established PE programmes. Consequently, the NCPE seemed to neither support the lower end of the spectrum regarding OAA confidence nor those schools aspiring to extend existing provisions shown here.

"Because it is so vague and doesn't actually give any strategies of how to do it, your underqualified teachers, or your people that don't have knowledge of OAA … don't know how to do it" (Jerry).

In relation to teachers' conceptual understanding of OAA, this was interpreted in a number of different ways. Two staff perceived OAA included 'hard' skills-based activities such as water sports and high ropes, while all participants suggested it incorporated lower level 'softer' activities focused on personal and social development. "It's things like hiking, climbing, canoeing, caving, and mountain biking" (Kevin) and "it's about building up their ability to work as a team" (Dave). Two senior teachers highlighted that these lower level interpersonal activities were markedly different to OAA typically delivered by schools in the past.

"I think historically it's probably been OAA is done through residentials. There is a common misconception that OAA has to happen in mountainous areas, or on the lake or something, and it doesn't really" (Bob).

While teachers did not always appear fully confidant regarding the conceptual characteristics of OAA, most seemed aware of the contrasting environment and pedagogical approach from typical classroom teaching illustrated here.

"That's what OAA is about … an adventure … the chance to go and explore without me prescribing it … you give a little bit of structure … then you say, go on, off you go" (Jerry).

4.2. Values of OAA

This section outlines the sense of value senior teachers place on OAA within curriculum time and its perceived benefits, before considering several socio-cultural factors said to influence the status of OAA within primary education.

4.2.1. School Based

All senior teachers appeared to highly value OAA and provided a strong rationale for its inclusion within the NC by identifying numerous benefits. These included developing pupils' self-awareness, confidence, interpersonal skills and resilience, as articulated here: "I think OAA is massively valuable in terms of the teamwork, the friendships, and the relationships it can help to build" (Stuart). Teachers expressed that OAA developed life skills not explicitly taught within traditional education such as managing risk and becoming more independent. Likewise, this holistic form of education was also

suggested to facilitate a great sense of achievement amongst students who may not typically experience this within academic spheres, shown here.

"Skills we take for granted a little bit because we don't specifically teach them, like team working, being able to discuss a problem, being able to come up with ideas, and I think OAA is good for those sorts of things" (Bob).

Similarly, since several schools featured disadvantaged catchment areas in terms of socio-economic status, five teachers highlighted the importance of OAA in offering exploration and new experiences to students not readily available through their network of family and friends, as explained here: "There's not a great deal students see other than brick walls . . . without school putting those OAA opportunities in place, most children wouldn't experience it at all" (John).

Interestingly, three teachers also mentioned attempting to capitalise on the learning and development generated via OAA by transferring pertinent principles back into classrooms, as illustrated here:

"I firmly believe the OAA strand really builds resilience . . . if they have pushed themselves . . . we would talk about transferring that to when things are tough in literacy and you're not quite getting it" (Dave).

These teachers clearly espoused a strong regard for OAA, with all providing significant advocacy within their respective organisations and attempting to convince other school stakeholders of its value and educative potential.

"You can probably tell I am a big fan of OAA . . . so I think whenever I have got a say in it, there will be a lot built in around it" (John).

4.2.2. Socio-Cultural

Four teachers recognised their positive perceptions of OAA were not reflected amongst other educational professionals and suggested factors which may contribute to this situation, as expressed here: "I would say from my experience that many schools place very little importance on OAA . . . it is neglected in the vast majority of primary and secondary schools" (Jerry). One example included the weight of accountability pressure schools face in relation to English and maths resulting in contrasting subject priorities. "Primary schools are dictated by maths and English results so that's always going to be the main focus" (Stuart). Similarly, one teacher expressed that Ofsted places little value on both PE and OAA, which he found surprising when considering societal concerns such as childhood obesity and mental health. More recognition of the subject was said to be needed at governmental level before any change seemed likely, emotively explained here.

"It's (OAA) undervalued because your school isn't judged on it. You will be lucky if Ofsted even come out and check your PE lesson, let alone if you are doing OAA. It's top down. If the government don't place enough importance on it, then Ofsted don't, and if Ofsted don't . . . then your head teacher won't . . . then you as a classroom teacher won't do it because you will get criticised and asked why you are not in a classroom" (Jerry).

Having presented findings concerning teachers' perceptions of OAA and how it is valued, the following discussion considers the data against other findings and its importance to OAA delivery in primary schools.

5. Discussion

5.1. Tensions of Professional Decision-Making

Since OAA coverage in the NCPE was highlighted as brief and ambiguous, this raised several concerns amongst senior teachers regarding professional decision-making, as illustrated here by Dave: "There's not an awful lot to do with OAA on the curriculum . . . and it's not tied down to particular events". As in research by MacLean et al. [53], some teachers subscribed to the enhanced autonomy offered by this slim policy document as lessons could be tailored to the needs of pupils and schools [53],

as shown here by Bob: "I think there is enough to take that and tailor it to offer something we want". This ideology should permit broad cross-curricular links to be made within OAA themed lessons. Equally, it is entirely possible this flexibility could be vulnerable to exploitation by some schools and potentially create a tokenistic approach towards OAA delivery as Flintoff indicated [56]. Other senior teachers suggested interpreting limited curricular information posed a problem for generalist or inexperienced teachers, as shown here by Jerry: "Because it is so vague … your underqualified teachers don't know how to do it". This argument aligned with findings by MacLean et al. [53] where teachers sought further clarification from senior management regarding policy interpretations due to unclear intentions and considerable flexibility [53]. Clearly, it seems policies can offer teachers too much freedom in unfamiliar areas, especially when not accompanied with formative feedback or support [53]. Considering many generalist teachers lack adequate subject and pedagogical knowledge in relation to OAA this raises several concerns [14,21,24,40,48–52,54]. Findings by Dyment et al. [55] substantiated this point as Australian teachers expressed anxiety due to curriculum documents lacking clarity and being too open to interpretation with no clear examples of OAA to inform delivery. Consequently, teachers were forced to interpret meaning by drawing on their personal experiences, something which Curtner-Smith [50] found resulted in considerably varied practice. Dyment et al. [55] concluded any curriculum changes should be supported by effective teaching resources, something not readily available for OAA in England at present. This situation ultimately equates to a lack of support for teachers and endorses the assertion of Sutherland and Legge [14] that educators require more thorough OAA preparation within initial teacher education programmes or professional development courses [40]. This lack of formal training [14,40] draws attention to the argument of participants that the NCPE lacks ambition for more confident schools aspiring to extend existing OAA provisions, as shown here by Kevin: "it's not pushing people to have a very imaginative or exciting curriculum based on that one statement". Many of these schools had a healthy culture of OAA delivery, yet seemingly also welcomed additional insight of new ideas or suggestions. This highlights the rationale for providing a range of OAA themed activities within or alongside the NCPE, ironically as was the case with the earlier policy document.

5.2. Teachers' Conceptual Understanding of OAA

Senior teachers' conceptual interpretations of OAA varied and encompassed both 'hard' skill-based activities and 'soft' activities focused on personal and social development. This finding aligns with existing literature [14,25,28] and highlights how some teachers subscribe to more traditional notions of OAA which involve skills focused outdoor pursuits incorporating elements of risk and challenge, as shown here by Kevin: "we talk to the children about managing the risks". Since many activities of this type would be challenging for schools to provide onsite, this reflects a common misconception often associated with OAA that professional organisations facilitate delivery at purpose built outdoor centres [14,15,25,28,35]. Conversely, the 'lower level' component mentioned by participants is congruent with the Anglo-Saxon definition of OAA offered by Fagerstam [15], which referred to adventure experiences incorporating aspects of team building and leadership development. It was clear teachers were not always fully aware of OAA's conceptual characteristics, yet understood it involved a contrasting setting and pedagogical approach to typical classroom teaching. This reflects regular references in literature of primary education teachers lacking clear conceptual understanding of OAA [14,21,24,28,40,48–52,54]. Nevertheless, participants seemed to grasp various overarching ideological principles of OAA and acknowledged this involved student-centred pedagogy with holistic multi-sensory experiences to promote exploration of outdoor phenomena with genuine consequences [7,15,17,23,68]. This general understanding amongst teachers is positive since literature indicates OAA can add context and depth to curricular with school experiences becoming more enjoyable, vivid, meaningful, and memorable by increasing students' motivation and curiosity [18,22,46,68]. Similarly, the diverse range of perceptions regarding OAA potentially illuminates a shift in understanding amongst primary education teachers, as illustrated here by Kevin,

who mentioned that team problem solving "is perhaps a bit different to what we did twenty years ago". Thorburn and Allison [40] suggested diverse views like this can actually hinder the progress and implementation of OAA within education, although did not elaborate exactly how. Nevertheless, this situation highlights that OAA is a socially constructed subject [14,56] and influenced by various socio-cultural forces. Moving away from traditional notions of OAA centred around skill acquisition and risk align with a new vision posited by Dyment et al. [55] as more suitable for twenty-first century inclusion in curricular. This school-based ideology advocates cross-curricular learning in natural environments. This paradigm shift reflects the Scandinavian approach used for generations [15] and foregrounds the recent interest, remodeling and commercialisation of this approach marketed as 'Forest Schools' in England.

5.3. Value of OAA within Primary Education

All senior teachers highly valued OAA and provided a strong rationale for its place within the NC by identifying numerous associated benefits. These included aspects of personal and social development, gaining life skills not explicitly taught within traditional education, facilitating a sense of achievement amongst students who may not typically experience this within academic spheres, and offering opportunities that families may not be able to, summarised here by Stuart: "I think OAA is massively valuable in terms of the teamwork, friendships, and relationships it can help to build". This finding is congruent with the wealth of literature stating the ability of OAA to elicit personal and social development, as recognised here by teachers [16,18,19]. Slade et al. [20] highlighted collaborative learning can enhance interpersonal skills through greater social interaction during practical tasks. Similarly, Moreri [17] and Atencio et al. [25] suggest OAA is a good platform to disconnect young people from their habitual urban environments and assist in the development of more resilient, rugged, and self-sufficient citizens better able to function within society. This perspective mirrors aspects of the initial motivation to incorporate OAA into mainstream British education back in the 1970s [10]. These senior teacher perspectives also align with scholars such as Adams et al. [7] and Robinson [33] who suggest education is more than the acquisition of knowledge and has a moral obligation to educate children holistically for uncertain futures. This finding also substantiates Pether's point [31] that OAA is no longer the domain of innovative schools but part of mainstream approaches to prepare young people for the workplace. Participants seemed aware of the unique potential of OAA to develop vital skills such as increased independence, teamwork, leadership and risk management [15,17,23]. Equally they also acknowledged the role of schools in offering inclusive provision to all pupils, as shown here by John: "without school putting those OAA opportunities in place, most children wouldn't experience it", which is important since Scrutton [19] stated children who may benefit most from OAA were often those least likely to afford it. This point aligns with Cook's [10] previous assertion that OAA can unlock opportunities typically inaccessible to some socio-economic demographics. Moreover, Fagerstam [15] stated novel experiences can challenge typical classroom hierarchies of high and low achieving students by creating a new platform for pupils to show a different side to themselves and other abilities. Waite [23] found students often mentioned overcoming challenges during OAA led to a great sense of accomplishment, alluded to here by Bob: "you see children . . . really pushing themselves and . . . achieve something they thought they wouldn't be able to". Moreri [17] and Waite [23] both indicated that children often value freedom to explore natural environments finding it fun and exciting. Several scholars propose the dynamic OAA environment is capable of producing unanticipated learning opportunities that enhance student motivation, concentration and curiosity when compared to the classroom [15,20,28]. Similarly, the exploration, autonomy and creativity afforded by OAA have been shown to develop skills that can assist students with future life transitions [1,23,27,68]. Literature also suggests positive early OAA experiences can influence attitudes towards adventure, strenuous exercise, and the natural world, all vital in developing healthy lifelong habits [9,20,25,26].

Some teachers attempted to capitalise on the development achieved via OAA by transferring pertinent principles back into classrooms, as highlighted by Dave: "we would talk about transferring

resilience to when things are tough in literacy and you're not quite getting it". The notion that participating in OAA can enhance academic attainment is becoming more prominent within literature [19], however, leveraging these benefits for school-based purposes is not often considered from a teacher's perspective. One study by Atencio et al. [25] found many teachers felt learning from OAA did indeed transfer back into school classrooms, highlighting its importance as a future consideration. Despite admirable efforts by educators in this study, they were unable to offer robust insight into the effectiveness of this process. Nevertheless, this point is encouraging since the literature often indicates explicit links between OAA and classroom contexts are not attempted [14,35,46].

Considering the aggregation of positive factors associated with OAA offered by senior teachers, it was perhaps unsurprising they provided significant advocacy for this within their respective schools, as shown here by John: "whenever I have got a say in it, there will be a lot built in around OAA". This finding is congruent with numerous references in literature regarding senior teachers being the main driving force within schools and their enthusiasm cascading down to inspire others [21,31,48,49]. This support was sometimes a collaborative effort by several staff, but also individuals, reflecting Pether's [31] point of senior leadership being instrumental in successful development of OAA cultures. Similarly, a finding by Waite et al. [21] was also pertinent, highlighting the schools most likely to implement OAA were those with a positive staff culture towards the subject.

Participants also suggested several socio-political factors which influenced the value of OAA within schools. For example, other teachers and organisations were suggested to not share their positive vision for OAA, the weight of accountability pressure in English and maths often resulted in OAA being neglected, and a lack of focus by Ofsted was cited to compound this situation, alluded to here by Jerry: "from my experience OAA is neglected in the vast majority of primary and secondary schools". Despite OAA now being a compulsory part of the curriculum, this finding aligns with literature [18,46] which indicates many school stakeholders are unconvinced of OAA's place within schools as it may detract from learning occurring within classrooms. Components of Pether's study [31] reflect this as school stakeholders required reassurance of OAA's integrity and rationale before incorporating this into curricular. Several scholars attributed a lack of value regarding OAA to deficient understanding of the subject's purpose and educational credentials [17,20]. Curtner-Smith suggested [50] if teachers' early life experiences lacked the affordance of OAA then it seemed likely their interpretations of PE may favour more familiar and traditional sports. Dyment et al. [55] indicated this concern extends beyond a British context, with Cosgriff [28] explaining OAA is experiencing similar challenges in Australasia. Despite such difficulties, a strategy touted as powerful enough to convince sceptics involves sharing OAAs compelling rationale and growing empirical evidence base alongside its impact on both pupils and teachers [40,46]. Such an approach, however, would involve pushing against the performative and comparative agenda within education that champions attainment across core subjects such as English and maths. The seminal paper by Ball [41] indicated success in education has recently been measured by these indicators and resulted in significant pressures of accountability, thus prompting schools to strive for this narrow measure of success at all costs. Cosgriff [28] mentioned that the introduction of National priorities requiring teachers to report on students' literacy and maths progress can significantly impact other curricular components such as OAA. Cosgriff stated this leads to higher staff workload and a narrower curriculum, which Spielman [44] asserted is sadly the case within primary education in England. Dyment et al. [55] argued this narrow focus reinforces decontextualized classroom learning and the marginalisation of subjects historically considered less academic. Ofsted have recently recognised ramifications stemming from the current performance-based education system and attempted to counterbalance these within a new school inspection framework. This will soon require organisations to explicitly demonstrate a broad and balanced curriculum, with attention directed towards subject leaders regarding PE [69]. Once implemented this legislation has potential to mitigate these concerns; however, at present, it has received only sceptical support from professionals.

6. Conclusions

The purpose of the study was to investigate how senior teachers within primary education in England interpreted the OAA strand of the NC, understood OAA as a concept within an educational context, and valued this approach within curriculum time. The methodology replicated other similar studies conducted around the world [15,19,20,25,40,47,55].

The recent Conservative Government in England have dramatically reduced content of the NC for foundation subjects such as PE to encourage professional decision-making. This shift has resulted in policy unable to meet the needs of teachers at both ends of the confidence spectrum regarding OAA delivery. These findings indicate contemporary legislation has regressed in terms of supporting teachers in this area. Governmental aspirations for greater teacher autonomy seem a commendable intention. However, when this involves a curricular area such as OAA associated with generalist teachers lacking expertise and confidence, its outcome is problematic. Findings of this study suggest teachers clearly require more support interpreting the vague and ambiguous NC information available for OAA. The lack of conceptual clarity regarding OAA amongst senior staff, coupled with generalist teachers struggling to interpret the sparse curriculum and its lack of value amongst other educators illuminates the salience of professional development training.

Recent socio-political shifts within education may offer some legitimacy to any sceptical school stakeholders regarding the value of OAA. These include acknowledgement by Ofsted that primary education curricula are too narrow and the implementation of a new school inspection framework to evaluate whether schools are providing a broad and balanced curriculum.

This study draws attention to several challenges within primary education for the delivery of OAA and outlines broad strategies in response. Its intentions are to ensure teachers feel better informed and supported in relation to OAA and encourage more schools to consider and engage with this holistic form of education. As minimal research has focused on factors which influence OAA within primary education in England since the recent curriculum change and introduction of the SSPr, this study offers new empirical findings to an underdeveloped literature base [19,25,28,55]. Despite contextualised findings being unable to represent the wider population, pertinent points can be considered and potentially transferred to other similar settings [62,67]. This can inform future work of policy makers, practitioners, and scholars within the UK and further afield.

6.1. Limitations

Study limitations have been noted. For example, participants were a non-representative sample, since all schools featured enthusiastic staff who championed OAA delivery within their respective organisation. The invitation to participate in this study appealed to senior teachers already interested in the outdoors. The sample included male senior teachers, which may be seen as unrepresentative of a predominantly female workforce within primary education. Senior teachers in primary schools hold considerable influence over school practices, yet the scope and size of this study means the research is a snapshot of OAA delivery in the North of England. While transferability to other similar educational settings may be considered, a greater evidence base is required in order to more fully understand OAA and its place in primary education in England.

6.2. Recommendations

NC documentation has to provide a more robust OAA framework to instil confidence amongst primary education teachers. It needs to emphasise a range of suitable activities and associated pedagogical approaches, beginning with the use of immediate school environments to help dispel the myth that OAA is just about "hiking, climbing, caving and mountain biking" (Kevin). Such an approach was adopted in the past before the inception of the 2013 NC with good effect. Creating guidance to supplement the NC would require consultation from the many OAA organisations across the UK to ensure support is informed by both research and practice. Similarly, the SSPr could also be

used for professional development purposes and result in schools becoming more self-sufficient with OAA and enhance the longitudinal impact of this potentially ephemeral revenue stream. This approach could be further supported by introducing senior peripatetic teachers with OAA experience and interest who could coordinate delivery across several schools concurrently. Such considerations require acknowledgment within initial teacher education, with fundamental changes required. The compulsory element of OAA in primary schools, which often includes some form of residential experience, should be reflected within teacher development programmes. This could be purposefully integrated by explicitly outlining OAA's educative potential, conceptual characteristics, curricular requirements, pedagogical principles and demystifying appropriate activities. While ambitious, programmes could also consider providing short introductory OAA themed residentials organised by pre-service teachers early in the programme as an introduction to OAA and means of developing course culture and strong bonds amongst peers. Subsequent cross-curricular day visits could also be organised to showcase the strengths of OAA as a legitimate approach to learning. Schools should also be encouraged to support pre-service teaches engaging with OAA opportunities available within their professional teaching placements.

More empirical research of OAA in primary education, specifically considering women who represent the majority of teachers and their experiences is recommended. Similarly, more could be done to capture the exemplary practice and worth of OAA in primary schools to create a more positive culture within education.

Author Contributions: For research articles with several authors, a short paragraph specifying their individual contributions must be provided. Authorship must be limited to those who have contributed substantially to the work reported. The following statements should be used: This article is comprised of several objectives taken from a larger academic research project completed at Leeds Beckett University. C.W. was the student and A.H. was the academic supervisor. The corresponding paper has been primarily conceived and driven by Chris, with support from Ashley. Please see below for a more specific breakdown of input ratios. Conceptualization: C.W.; Methodology: C.W. & A.H.; Software: C.W.; Validation: A.H.; Formal analysis: C.W.; Investigation: C.W.; Resources: C.W.; Data curation: C.W.; Writing—original draft preparation: C.W.; Writing—review and editing: A.H.; Visualization: Chris Webber; Supervision: A.H.; Project administration: A.H.; Funding acquisition: N/A.

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Glossary of Terms

NC	National Curriculum
PE	Physical Education
NCPE	Physical Education National Curriculum
KS	Key Stage
OE	Outdoor Education
OAA	Outdoor and Adventurous Activities
SSPa	School Sports Partnership
SSPr	School Sports Premium

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Concept Paper

Reconsidering McKenzie's Six Adventure Education Programming Elements Using an Ecological Dynamics Lens and Its Implications for Health and Wellbeing

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Abstract: Two decades ago, McKenzie's meta-analysis of literature provided six fundamental elements of adventure education programme design still used to guide research and practice today. While the value of McKenzie's early work should not be underestimated, adventure education has undergone considerable changes. Adventurous activities are now available in urban and indoor contexts and used to facilitate a growing health and wellbeing agenda. The use of risk as part of adventure education programming has also been critiqued. This paper reflects on contemporary notions of adventure, risk and the emergent narratives emphasising the associated psychological benefits. The Ecological Dynamics framework, along with representative design delivery, are presented as a viable way of building on McKenzie's work. Both consider how effective outcomes in adventure education programmes are achieved through designs that focus on the unique relationship between the individual and their environment. While McKenzie's six elements recognise the importance of human relationships, Ecological Dynamics forefronts relational elements, not just between participants but, importantly, the task and the environment. Individual participant needs in relation to their everyday life therefore become the focus of adventure education expanding beyond the traditional long-standing narratives of risk and danger. Through these two important concepts, this paper advocates an approach to the design of adventure representative of a participant's everyday environment. In this way, adventure education outcomes translate beyond the adventure-specific context and align more holistically with the needs of individual participants while also assuring emphasis on individual health and wellbeing.

Keywords: adventure education programming; Ecological Dynamics; adventure education; representative design

1. Introduction

At the turn of this century, a meta-analysis of outdoor literature by McKenzie [1] succinctly captured six elements of adventure education programming (AEP) design that contribute to achieving programme outcomes. These elements were: the physical environment, activities, processing, the group, the instructor and the participants. McKenzie suggested that outcomes were dependent on how well the interaction between each of these categories aligned with programme goals. Physical environment referred to the use of unfamiliar outdoor settings to facilitate new perspectives on everyday environments. Activities referred to the quality of the activities designed into the programme and

how well they provide mental, physical and psychological challenges and opportunities for mastery. Processing described the process of making sense of the programme by the participants and how learning in the adventure programme might be transferred to everyday life. The group element focused on the impact of group size, fellow participants and cooperation during learning. The instructor's influence included how they interacted with the group and what they brought to the programme. The participant's characteristics and capacity for autonomy were also considered important.

Underpinning these categories was the notion that effective adventure programme design suggested the inclusion of challenge and risk, for example, opportunities for emotional and social risk. Contemporary evidence suggests AEP is still based on activities designed to emphasise the impact of risk (physical and psychological), with little regard for nature and requirements of participants [2–6]. According to Wurdinger [7], it is risk, danger and uncertainty that differentiate AEP from other activities and impacts on the learning outcomes (see Brown and Beames [3] for a contemporary account of definitional issues). While the impact of McKenzie's work should not be underestimated, as indicated by the fact that the six elements are extensively utilised in much of the current AEP practices [8–10], research into the outcomes and processes of AEP has increased and broadened exponentially since her original meta-analysis, which presents some challenges for understanding how best to apply the six elements and the value of the risk focus [3,11,12]. Furthermore, the last two decades has seen transformational developments in society through technological enhancement [13] and the indoorisation and urbanisation of adventure activities [4,14]. Adventurous education programming has embraced these advances, and contemporary programme design often includes technological adaptations and indoor activities [15–17]. Contemporary design is also rethinking the value of the human-nature relationship and the impact of AEP on health and wellbeing [3,18–22]. These transformations add to the notion that focusing on risk in AEP might be outdated, and the risk focus which underpins the six elements highlighted by McKenzie requires rethinking. It is possible a traditional interpretation of McKenzie's six elements is limited in its capacity to support effective AEP design in contemporary contexts.

This paper revisits McKenzie's six elements of AEP from a contemporary perspective and proposes that an interpretation and expansion of these elements through an Ecological Dynamics (ED) framework provides a grounded approach to effective AEP design and research. An ED interpretation of McKenzie's six elements critiques the underpinning promotion of risk and danger as limited in its capacity to lead to AEP goals [23]. An ED approach also allows reframing of the dualistic presupposition that interactions between the six elements somehow act on the participant. Instead, ED promotes learning and behaviour as a relational notion that combines the characteristics of the learner, environment and task. ED recognises participants as active, embodied agents and emphasises the person-environment (social and physical) relationship as fundamental to behaviour and learning. Here, a sharp distinction must be drawn between what McKenzie sees as the importance of human relationships within AEP (participant, group and instructor, for example) and EDs emphasis on the relational, per se, which not only embraces the human but extends to relational elements of environment and task.

2. McKenzie's Six Elements in Contemporary AEP

Careful consideration of McKenzie's six AEP elements in the light of contemporary AEP contexts reveals a number of developments that stretch traditional interpretations. In this section, we highlight contemporary impacts in each element.

2.1. The Physical Environment

The proliferation of indoor and purpose-built environments is impacting on the variety of physical environments used in AEP [24]. For example, indoor environments for activities, such as climbing and skiing, allows for more efficient delivery of time-bound, task-oriented sessions. In the UK, for example, this has been compounded by the continued prevalence of packaged "off the shelf" outdoor and

adventure delivery to schools through private organisations [25]. Outdoor environments continue to be sanitised, rationalised, commercialized and commodified [3,24–27] through the addition of purpose-built parks and centres, designed to provide opportunities for activities such as skateboarding, mountain biking, skydiving, surfing, rafting and kayaking. For instance, high ropes courses, zip wires and via ferrata all provide possibilities for convenient "unfamiliar physical environments" [1] (p. 20) where "seemingly" adventurous activities can take place. This has allowed a greater range of adventurous activity choices for AEP designers who are intent on emphasising risk management, danger limitation and the perception of unpredictable outcomes (though, in fact, outcomes are even more predictable). It also accentuates the importance of risky, dangerous, unfamiliar, even offbeat activities, which emphasise the centrality of the traditional risk narrative and allows particular providers greater "pulling power" over their potential "customers". The importance placed on "cognitive dissonance" [8], also recognised by McKenzie [1], remains a central theme when designing and utilising contemporary physical environments in AEP contexts, perhaps with greater emphasis on perceived risk, rather than actual risk [28].

2.2. Activities

McKenzie's [1] final remarks on this section are telling. She lists activity characteristics as being "holistic, incremental, and organized; that enable success, failure, goal setting, and choice; and that are chosen to produce specific outcomes" [1] (p. 22). However, she also suggests that "although these characteristics seem to be generally accepted as those that should be included in adventure education activities, there is remarkably little research to support this" [1] (p. 22). This alludes to taken for granted notions [29] of activity delivery with little empirical evidence to support the selection of activities for programmes, learning outcomes or participants. The choice of activities from which to select is now wide-ranging. It still seems that activities driving programme design and learning outcomes, or what a particular environment offers, is, at best, a secondary concern [30–33]. While place-based approaches are now more readily considered in programming [5] and can be strongly linked with the physical environment [30] and associated health and wellbeing benefits, the overarching default position for most programmes is still based on the notion that activities create cognitive dissonance for learners, which is the best way to meet programme outcomes [3,4]. Little substance has changed in the majority of practices where the focus still lies with novel activities creating a sense of danger and risk, allowing participants to feel physically and psychologically challenged.

2.3. Processing

McKenzie [1] (p. 22) defines processing as "the sorting and ordering of information" that contributes to programme outcomes. The three models of processing (or facilitation) alluded to are: minimalist intervention, where the "mountains speak for themselves", guided facilitation by the leader and an approach with strong emphasis on metaphoric links [8]. The importance of processing is, once again, a taken for granted way of delivering adventure education outcomes. Often, it is the instructor who ensures each group member takes away what the instructor feels is important, because individuals "may not be able to make sufficiently clear connections between programme activities and their daily lives on their own" [34] (p. 25). There is strong consensus in contemporary writing on the importance of processing [34,35]. However, there is still little consensus about how learning in AEP transfers to everyday life contexts [36–39]. Critics also question the idea that processing after the event has the desired impact and instead call for a rethink of programme design [40]. Finally, processing is now regularly considered under reflective processes, and, while there is direct reference to reflection in AEP [41,42], a wider review of literature covering other educational contexts, where reflection is at the forefront of delivery, would be worthwhile (nursing and medicine, for example).

2.4. The Group

McKenzie [1] focuses on the importance of interpersonal "bonds" made by group members in AEPs. The "nowhere to hide" approach with a "warts and all" perspective on outcomes for group members [43] (p. 108) is supposed to facilitate deep and meaningful group connections over a short space of time. Group sizes, interactions and outcomes are deemed to be of considerable importance in AEP. However, McKenzie also recognised that knowledge about the processes involved is limited, and a better appreciation of the impact of groups is imperative. Given the wide participant remit of AEP (including women-only groups, disabled groups and hard-to-reach groups, as well as ages and diversities across the spectrum), it is surprising how little research has been conducted to address the issues raised, though there are exceptions [44–46].

Importantly, in more contemporary place-based practices [30], there has been a call for tailoring delivery to reflect group [5,39] or individual needs. However, the practice of activity-focused programmes that are underpinned by how best to exploit resources, such as time, staff and location, continue to dominate. The importance of income generation that drives many organisations now involved with AEP has also resulted in designs that reinforce efficiency (e.g., minimizing potential waste) rather than effectiveness (e.g., maximizing potential outcomes). While adventure tourism companies embrace the importance of bespoke experiences specifically tailored to the needs of participants [47] and regularly conduct market research to ascertain participant needs [48,49], such approaches have been slow to filter through to AEP.

2.5. Instructors

McKenzie [1] recognized the concentration of research efforts on understanding the link between "instructor styles, behaviours, and attitudes" (p. 24) and AEP outcomes. Interestingly, there was no mention of leadership. However, there is a plethora of writing on outdoor leadership elsewhere [8,50–53], which suggests the foundation skills alluded to in McKenzie's paper still hold true today. McKenzie [1] (p. 24) glossed over the tangible instructor attributes ("technical, organizational, problem-solving, and decision-making skills") and concentrated efforts on the hidden, more ethereal instructor issues ("biographical background, personality and interpersonal interactions"). She pointed to conflicting evidence in her study around gender and highlighted research emphasising the impact of instructor/participant relations. For the most part, research in this area has focused on determining leadership characteristics or behaviours linked to effective outcomes. Little attention has been paid to understanding the impact on learning outcomes (except perhaps in extreme situations) if sound practices are not applied [40,53].

2.6. The Participant

McKenzie [1] highlighted the role of participant gender on individual outcomes where stereotypical gender notions are reinforced. Males are reported to be interested in dominance, control, challenge and adventure, whereas females seek trust activities and spiritual development. A more recent study [54] suggested that AEP might have greater impact on the resilience of female students than male students. McKenzie's [1] findings that sex stereotyping not only affects how men and women see each other but also how they see themselves might explain this finding. Allan et al. [54] suggested perceptions of resilience levels prior to an AE residential programme and ability to cope with the residential experience are overestimated in males and underestimated in females.

2.7. The Six AEP Elements in Context

Since McKenzie [1] first undertook her meta-analysis, some of the original six elements identified have been extensively researched, confirming the role they play in the creation of effective outcomes. Others, such as "processing", still require further exploration. However, much of the original risk and danger narrative prevails.

Measuring the worth of programme outcomes for different participants remains difficult, particularly considering long-term benefits, because several variables are likely to impact on results [55]. Research has examined the impact of AEP on specific outcomes, such as resilience, through quantitative studies [56–58]. Research has also investigated the link between AEP and health and wellbeing across the globe, particularly among adolescents [59,60]. The impact of green space and the outdoor context on health and wellbeing has also been investigated [61,62]. Contemporary research has shown that the nature, scope and potential value of adventure education goes way beyond the traditional notion of expected AEP outcomes, allowing for more extensive personal benefits and general health and wellbeing to be accrued [25,33,62,63].

Importantly, scholars have also questioned the relevance of the risk-oriented approach to AEP that underpins much of McKenzie's analysis [3,5,28,31,64] and highlights unfortunate cultural and historical assumptions implicit within the original meta-analysis. For example, while the participation of women in the outdoors continues to rise, outdoor leaders remain predominantly male, and programmes are often steeped in male machismo [65]. Forays into race and ethnicity prove even more problematic, as the outdoors remains essentially a white, male, predominantly middle-class space. While this paper does not extend to further exploration of these important issues, their impacts are significant. In response to many of these critiques, contemporary scholars have called for a bespoke learner-centred approach to AEP that emphasizes individual needs [3,54].

2.8. Building on the Foundations of McKenzie's Work

The Ecological Dynamics (ED) framework provides a timely alternative to addressing the many points raised so far in a manner that suits twenty-first century living [66–70] by building on the foundations established through McKenzie's six elements. From an ED perspective, the environment is much more than the conduit through which activities take place, and "decontextualized activity-based programmes" [71] (p. 9) are limited in their capacity to facilitate desired outcomes. Meaningful engagement by learners, considered active agents, with environments both natural and artificial can play a substantial role in supporting learning outcomes, enhancing participant health and wellbeing and providing intrinsic motivation for achieving personal goals [72]. The Ecological Dynamics perspective recognises a set of conditions that can be utilised in AEP to complement the work of McKenzie by addressing the contemporary issues raised, further extending our understanding of how effective AEP outcomes can be achieved.

3. Ecological Dynamics

Ecological Dynamics combines concepts from ecological psychology and the dynamical systems theory. Conceptually, ED recognises humans as dynamic, complex systems constantly interacting with other systems. It extends already familiar and well-developed physical, social, cognitive and emotional domain works [8] and understands these through the overarching, complex human-environment (social and physical) relationship. The human-environment relationship is key to understanding how behaviours emerge and suggests learner and environment are equally important in the relationship. Rather than the environment acting on a passive learner as if a separate external force, ED promotes a relational interaction. This is significantly different to the human relational element considered by McKenzie. Ecological Dynamics provides a more holistic relational element that goes beyond the identification of the human element within AEP. For example, the learner brings to the learning context height, limb length, emotional experience, culture, historical experience and so on. The environment is perceived in terms of function or possibilities for action (see below, under affordances), rather than in terms of its form. For example, surfaces are perceived as jumpable, or climbable, opportunities for shelter, communicating, food and so on. The relationship between person and environment guides behaviour and is time-bound. For example, an apple in a tree invites eating for an animal that can physiologically digest apples. In a human context, cultural background, hunger, preference,

limb length, position of the apple, condition of the apple and so forth guide action and whether the apple is picked and eaten, left alone or even noticed.

Ecological Dynamics has been effectively employed to explain the learning process in a range of fields, including human movement science, psychology and physical education [73–77]. Research has demonstrated that ED effectively explains how lasting behavioural change emerges from the interactions between each individual, the environment and the task (or context). In this paper, we explore how the ED framework is ideally suited to guide effective AEP design, because it supports the idea that knowledge and behaviour emerge from the interactive relationship between an individual and the environment.

Ecological Dynamics is truly holistic, promoting an idea of learning as emerging from the relationship between an active, embodied, perceiving agent and the environment, which goes beyond the notion of passive holistic learning through the senses [77]. Instead, learning encompasses relational elements involved in the learning process. Each relational element is unique to each participant, therefore addressing the importance of a bespoke programme at the individual level. Designing learning opportunities using the ED framework invites participants to begin to address relationships with themselves, others, the task in hand and the physical environment. It also provides support for critiques on the value of designing programmes based on a one-size-fits-all approach and instead promotes a framework for learner-centred design. Key concepts from the ED framework useful for interpreting the six elements of McKenzie's work are representative design, constraints, affordances and perception-action coupling.

3.1. Representative Design

Representative design is considered the most effective way of maximizing the potential for contextualized individual learning relevant for the everyday performance environment of the learner. Recognition of the need to design programmes that reflect everyday environments is already apparent in outdoor management development [78,79], yet not readily utilised in AEP. From an ED perspective, for learning to be useful in an everyday context, representative design is key. As noted above, learning emerges from the person-environment relationship. This idea differs from the information-processing model of learning that emphasises the human mind and the computer metaphor. Ecological Dynamics is also different from the behavioural approach, which focuses on the impact of the environment on the learner. The ED approach is also different from other approaches that emphasise the individual learner (including those that recognise the impact of the environment but only as an external influence acting on the individual—rather like a pill), arguing that such approaches reinforce organismic asymmetry (too heavily weighted on explanations that are individually determined). Ecological Dynamics frames learning as a process whereby the learner becomes attuned to meaningful information in an environment and adapts their behaviour accordingly. The learner is promoted as an active agent, and learning is an embodied process. For learning to be useful in the learner's everyday environment, the design of the learning experience (environment and task) must be representative of the everyday performance environment. This does not suggest the environment needs to be physically the same but that key aspects of the everyday environment need to be effectively designed into the learning context. One implication of this idea is that if the learning context is not representative of the performance environment, the learner could attune to unhelpful information in the learning environment and, therefore, the learning context could be detrimental to the performance context. In ED, this is understood as one possible "rate limiter". Other potential rate limiters, if representative design is not effective, include the leader, other members of group and the task. Interestingly, representative design also suggests that reflection will not counteract poorly designed learning experiences. However, well-designed learning experiences and reflection are powerful [40,53].

3.2. Constraints

Constraints encompass three main areas that influence and interact in a learning context: the individual, environment and task [55]. The term "constraints" relates to the characteristics of the individual, task and environment that interact to promote (or hinder) effective learning. From an ED perspective, as noted above, the individual is not seen as a passive recipient of stimuli via sensory mechanisms but rather an active organism continually attuning to information in the environment and adjusting behaviour to adapt to the environment or, on occasion, adapting the environment to achieve learning goals. As noted above, an individual brings unique dispositions to any context in terms of physical and psychological characteristics: culture, history, past experiences and so on, which lead to unique ways of interacting with an environment and the emergence of functional solutions to the tasks or challenges presented. However, the learning context can be manipulated to support effective learning by skilled leaders. For example, in AEP, the use of kayaking as part of a programme designed to facilitate group development with participants of different heights, limb lengths and experiences might be well-placed to have a fleet of kayaks of different sizes, shapes and volumes and paddles of different lengths, weights and feathering. Introductory sessions might encourage group experimentation through the completion of a short journey or similar, where groups of three guide each other, rather than traditional instructor-focused models. The leader can then observe and adjust tasks to help each learner and learning group achieve the desired goals. Interestingly, this also supports learner-centred approaches. The leader might also carefully consider the environmental characteristics appropriate for the learning context and manipulate as needed. For example, perhaps the light breeze could add challenge and support greater group work for some of the small groups, or perhaps the breeze might be too challenging for others.

In ED, perception is an active process [66], and this is crucial in understanding its dynamic transactional nature with other systems [80]. Importantly, the environment is conceptualized as both social and physical, and "experiencing the environment is not mental and subjective but understood relationally" [66]. The size, experiences, history and so on of the individual, combined with the opportunities in the environment, guide learning. If the learning designer does not consider this carefully, then, at best, learning will be weak and perhaps even detrimental to the performance context. In the example above, the use of kayaks and particular social and physical environments need to be carefully thought through in relation to learning goals. For example, is kayaking the tool for enhancing nature connection, health and wellbeing, resilience or another area, and, if so, how do the learning goals, individual constraints, task constraints and environmental constraints impact on the learning design?

3.3. Affordances

Affordances are opportunities for action that combine individual and environmental characteristics [81]. From the Gibsonian perspective, the notion of affordances signifies a recognition of a mutual relationship between the environment and perceiver. Gibson proposed the term to reflect opportunities for both good and ill; an affordance for good for one person might equate to an affordance for ill for another or the same person at different times. For example, bumps in the snow may prove to be an affordance for a serious injury for a novice skier, but, to an experienced skier, they provide an opportunity for honing skills or jumping [81]. This indicates affordances are not merely characteristics of the environment but relational notions that combine individual characteristics, abilities and capabilities (e.g., genes, physical ability, cultural background, personal history, skills, learning experiences, motivation and emotions), known as "effectivities", with environmental characteristics. This relationship shapes the perception and action of affordances. To achieve maximum potential from affordances, ED recognizes constraints also exist in the individual, task and environment, interacting to shape perceptions and behaviours, cognitions and actions. These constraints can be manipulated to guide potential opportunities for action [82,83].

3.4. Perception and Action Coupling

Perception in humans is the process of orienting to and making sense of information in the environment that potentially leads to action. Whereas the traditional notion is sensory-based and emphasises how the individual makes sense of the passive process of sensory input for motivation and action, the ecological perspective is information-based and emphasises an active exploratory process. Gibson [83] identifies this as "the act of picking up information, moreover, is a continuous act, an activity that is ceaseless and unbroken". The individual agent interacts with the environment in a continual perception-action cycle. Invitations in the environment, combined with the action capabilities of an individual, facilitate action possibilities. On occasion, affordances are perceived but not acted upon; on others, not perceived, and, on others, perceived and acted upon. The key being that the individual-environment relationship suggests a rich landscape of affordances that rely on the perception-action process to realise. Ecological Dynamics also proposes a view of perception and action that is different from the traditional notion where perception is the precursor of action. In ED, the coupling of perception and action means that action might lead to perception or the two might be so closely coupled it is impossible to determine an order. Perception is also described as direct, where meaning is already in the environment and detected through the person-environment relationship. For example, walking on rough ground can shape walking style as the agent (learner) learns to adapt to the environment; each step involves perception and action. On occasion, the act of placing the foot, for example, on an extremely rough patch, might lead to changes in gait. Characteristics of the environment are rich and directly perceived, and internal augmentation through mental models is not required.

4. AEP Design Using the Ecological Dynamics Lens

Practical examples often allow sense to be made of conceptual frameworks. To illustrate how the ED model can be applied in an AEP context, we will use the example of the first day of a five-day outdoor residential for first-year university undergraduate students embarking on their degree programme in Physical Education where team development activities are delivered. The learning outcomes for the overall programme are four-fold. First, the programme aligns with and offers opportunities to cover material associated with two first-semester modules that specifically consider academic outcomes linked to foundation academic skills; in this case, referencing and reflective practice. Second, the residential is designed to facilitate learning in effective group dynamics in a higher education setting, with focus on group assessments. Third, the residential experience is also designed as an important "ice breaker" for all students in the course to facilitate more effective relationships in the university context. Fourth, the programme is designed to support learning how to adapt in difficult and challenging circumstances. In this example, we will call this resilience the capacity to cope with adversity, as outlined by Connor and Davidson's [84] five strands of resilience (personal competence, high standards and tenacity; trust in one's instincts, tolerance of negative affect and strengthening effects of stress; positive acceptance of change and secure relationships; control and spiritual influences). Research indicates that resilience is fundamental to successful undergraduate completion [85,86].

4.1. Capitalising on the Individual-Environment Relationship

The implications for AEP design from the notions discussed above stem from the impact of the person-environment relationship in learning. For the most part, AEP explicitly aims to capitalise on unfamiliar outdoor settings to facilitate new perspectives in everyday environments. However, as discussed above, from an ED perspective, representative design is key to effective learning. Designing environments where learners can perceive and act upon affordances apparent in the everyday performance environment is essential. Learning communication or group effectiveness in an "artificial" outdoor context might only work if the affordances available reflect those in the everyday performance context. As such, effective AEP design requires a good knowledge of the performance

context of each learner (e.g., the university environment). The physical and social environments in AEP might, for example, be manipulated to accentuate certain everyday contexts. Activity design might provide opportunities representative of effective group work in a university context. The vital message from ED is that learning goals and performance environments need to be aligned. Using the example above, an unfamiliar outdoor environment could be manipulated to provide the adverse conditions required to facilitate learning for resilience if the affordances required for effectiveness in an undergraduate setting are also available. For example, rather than designing activities that support physical competition and individualism, it may be better to design activities that support emotional support and collective appreciation. Activities that invite emotional support from fellow students and show their beneficial outcomes are likely to have greater impact on learning how to support each other in the university context than those that invite performance. The leader emphasising achievement goals in a climbing session or abseiling session is inadvertently supporting performance-oriented learning, perhaps even to the detriment of possibilities for emotional support. Conversely, an activity designed specifically to invite encouragement in difficult situations is likely to encourage similar behaviours in the performance context. It will also be important to ensure the individual learning that emerges from the AEP activities facilitates the capacity to attune to information in the environment in a manner that is appropriate to the university context.

Another important notion stemming from ED is that learning does not follow a one-size-fits-all process, because learning stems from the interaction between the learner and their environment. While AEP design should be representative of performance contexts, the rich landscape of affordances available to the learner will inevitably mean that learners will perceive and act upon a range of affordances. On occasion, this may not be helpful for the performance context. This means a leader will need to be continually vigilant and aware in order to adapt and develop the learning context as appropriate.

4.2. Responding to Individual Needs

Ecological Dynamics conceptualizes an individual as a complex system influenced by surrounding environmental characteristics [74,87]. Within the person-environment interplay, the physical and social environments shape opportunities for individual responses. Using the example above, students find themselves immersed in the beauty of the outdoors but also immersed in a social environment with a group they may have only known for two weeks. The perception and action of affordances is therefore shaped by each individual's unique relationship with the social and physical environment. Some students may be very familiar with the outdoors or comfortable amongst strangers, whereas, for others, unfamiliar social groups or outdoor environments may be completely new and potentially rich with opportunities for anxiety. This may influence which affordances are perceived and acted upon. Recognising the uniqueness of each individual creates additional opportunities for potential personal success within AEP, inviting additional opportunities and learning benefits for participants. Individual characteristics, as previously noted, might filter the perception and action of affordances, so awareness of affordances and educating to these might be useful. The unfamiliar physical and social environment in the AEP can be representative of the unfamiliar physical and social environment in university if key affordances are designed into the AEP context. Developing resilience in this context needs to be useful for the university context. Awareness and educating to affordances for resilience development through the team development activities might require the discovery of individual feelings and opportunities. Individuals will need to appreciate the importance of adaptability and coping with difficult circumstances and develop the skills to adapt to the challenging tasks and environment in a manner suitable for individual constraints. As such, the AEP design might emphasise opportunities to perform in difficult contexts and the psycho-emotional impact/skills this invites. Personal tutors might work with students and become involved, not just in the team development activities but in the whole residential. All participants (including staff) see each other in completely new ways. Individuals

become three-dimensional beings exposing layers of their multifaceted characters often hidden to the others. The tutor learns with the group and is responsible to, rather than for, their students [88].

Evidence from a growing number of disciplines suggests the physical environment plays a much greater role in adventure education than traditionally accepted [33,89–91]. These wider programme benefits become more pronounced when considered through the ED lens. The team development activity sites are carefully chosen in beautiful settings with rich opportunities for action invited by surrounding lakes, rivers and mountains. Beneficial transactions occur in the natural environment [66]. More specifically, health and wellbeing benefits have been reported, such as stress relief [91] and increased concentration [92]. ED recognises the relationship between the environment (physical and social) and the individual learner and emphasises the importance of facilitating all these relationships.

4.3. Moving away from Instructor Focused Activity

An important implication of the ED model is that instructors and other members of the individual learner's group become part of the learner's environment. This provides scope for moving away from a dominant instructor-centred approach and instead focuses on the relational importance between the individual students and the instructor as part of the learning environment. The student is therefore also part of the instructor's environment, which suggests careful attunement to useful information afforded by each student. This demands a steep learning curve to begin with, but, over the five days, the instructor (and in the case above, personal tutor) can, first, offer affordances for good that may be usefully taken up by the student and, second, educate towards affordances not yet perceived. By focusing on individual students and their relationship to the specific environment, bespoke programming is possible. Therefore, key to the ED perspective in an AEP context is the instructor (and personal tutor) as an influencing factor in creating or educating towards affordances for individual learners.

Placing the instructor role within the context of the environment places more emphasis on the skills required to be effective. They are continually observing each participant, adjusting tasks to provide effective affordances for the action through which learning occurs. The team development afternoon (and indeed, the whole residential programme) becomes a microcosm of their three-year degree.

4.4. Academic Focus

Academic learning can filter into the team development activities that might also allow teams to begin relating to theoretical principles. During their delivery, students already begin to formulate relationships between theory and practice, how theory can be used to greater understand experience and how to articulate such thoughts in many different ways (perhaps physically, for example, through actually representing the different strands of resilience within a coloured wrist bands, or in other ways, such as discussions, reflective presentations and informal contact with others (including staff)). Tasks and actions are "representative" of the students' everyday environment, because ED has been considered from the outset. Each task and action is purposefully aligned with what is expected in an undergraduate context. This reframes the role of the instructor (and the personal tutor) as the person uniquely attuned to each individual learner through a focus on individual participants, ensuring a more inclusive, holistic approach that accesses feedback from the physical, social and emotional environment to identify affordance opportunities.

4.5. Wellbeing Outcomes

Representative design suggests risk in AEP is only relevant if it is a key factor of the everyday environment. One of the greatest potential fears a student could face is the social and emotional risk of being with new people and not developing new friendships as the course progresses. ED, through attention to relational elements of the programme, would place emphasis on the health and wellbeing benefits of open and honest relationships with peers and also the unique contribution of the power of outdoor immersion. This on its own should be enough justification for tasks with a

specific immersive, rather than risk-based, focus to be considered as the start of a week-long outdoor residential programme [28,37].

4.6. Practical Considerations

The final consideration for advocating such an approach is one of practicality. Representative design principles do not require wholesale change of activities with resultant costly implications. The process advocates modifying activities to achieve desired outcomes by fore-fronting the individual student-environment relationship. Representative design allows consideration of the alignment of activities specifically to the student experience while also providing a rich landscape of affordances for broader learning. In the example above, ED emphasises the relational element and the centrality of both personal tutor and outdoor instructor in ensuring affordances are maximized for each individual student. One way of doing this was to ensure how the uniqueness of each team development activity could be considered for each student. This was captured through depicting individual resilience through coloured resilience wristbands. This enabled a visual representation of Connor and Davidson's [84] five strands of resilience for reflecting on by each student. Key programme changes only occurred in the area of resources for the wrist bands and enough lead-in time for personal tutors to become familiar with the team development tasks and the facilitation of these through resilience theory.

4.7. Real Reflection and Transfer of Learning

From the ED perspective, processing is also a task and should be designed to emphasise and ensure key affordances relevant to the students' everyday world. The idea of representative design, while not new, is only just beginning to be adopted in AEP. Representative design builds on the idea of tailoring a programme beyond tried and tested activities and considering programming in its entirety as a task itself, allowing constant component modification in line with the fluid environment-person relationship to present affordances for good. Processing, or making sense of the experience, is presented as a key ingredient of successful AEP [8,52]. While effective representative programme design enhances perception and action coupling, processing is often the lubricant that refines learning. Evidence highlights that, for processing to be effective, the activity needs to be representative of the outcome for links to take place [93]. Individual students should be able to draw out skills relevant for a future context. A key ED concept is recognizing this link as perception-action coupling. In the example provided, this means the student needs to attune to meaningful information in a performance environment. Through representative design, the chances of learning being relevant for the everyday performance environment is enhanced.

4.8. Critical Evaluation

Section 4 provides practical considerations of how Ecological Dynamics is able to build on McKenzie's work and move towards an individually focused approach to AEP with possible health and wellbeing outcomes. It addresses issues raised in Section 2, yet still recognises McKenzie's six elements as important in AEP but accentuates holistic relational interactions rather than more one-dimensional human relations. However, the dynamic nature of AEP has to be recognised, and its complexities require many variables to align before meaningful outcomes may be realised. With this in mind, we acknowledge that, for ED to achieve maximum potential and successful outcomes, a combination of other factors requires addressing. For example, financial and logistical issues may require consideration. Philosophically, organisations may have to consider cultural changes for their successful implementations. Importantly, instructors relinquishing the role of leader, hard-skill developer and risk assessor to become the conduit for facilitation of the experience may prove problematic. Such design and facilitation changes could be difficult for well-established outdoor organisations steeped in traditional practices. Challenging existing, normative narratives is always difficult. Ecological Dynamics offers a framework to allow this to happen but only if the physical, philosophical and facilitation issues above are recognised and addressed. Research spanning the broad

AEP community is needed to apply lessons learned to future programmes. The development of tools for programmers and practitioners is needed to assist in changing long-standing practices in AEP. One possible way of achieving this is by considering each of the elements of ED through empirical research and analysis.

5. Conclusions

This paper represents the first tentative steps in considering what happens when students embark on an adventure education programme using an ED approach. McKenzie [1] identified six possible elements involved in AEP outcomes. The ED framework forefronts the individual and their relational interactions with the environment and task and, therefore, reconceptualises her work. This represents a significant shift away from risk and danger-based AEP and towards bespoke programming that is truly holistic, extending learning beyond the senses and into the relational elements of a learning experience. Such an approach emphasises the instructor as a key player in facilitating AEP outcomes as part of the learner's environment, rather than a leader of risk-based activities where risk and danger requires negation. Under an ED approach, instructors appreciate representative design, ensuring tasks are meaningful to the everyday context, and they progress the activities to maximise individual outcomes. They understand the outdoors to be a powerful environment which can offer a myriad of opportunities for contextualised immersive activities. ED represents a new way of considering AEP design relevant to each individual learner through representative design.

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Commentary

Rethinking Tourist Wellbeing through the Concept of Slow Adventure

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Abstract: The necessity for humans inhabiting the 21st century to slow down and take time to carry out daily practices frames the discourse of this research note. We suggest reconceptualising tourist wellbeing through the concept of slow adventure, as a response to the cult of speed and as a vehicle for engaging in deep, immersive and more meaningful experiences during journeys in the outdoors. We suggest that slow adventure has the potential to improve people's general health and wellbeing through mindful enjoyment and consumption of the outdoor experience and thus bring people back to a state of mental and physical equilibrium. In so doing, we argue that extending the concept to include discussions around the psychological and social aspects of slow adventure is needed.

Keywords: slow adventure; time; slowness; wellbeing

1. Introduction

This commentary is set within the discourse that draws attention to the necessity for slowing down and taking time to carry out practices in life in order to construct richer, deeper and more meaningful experiences. The argument is taken further to suggest that slow adventure, a tourism concept, inspired by the global slow movement and *friluftsliv* (the Nordic philosophy of outdoor life), may be an antidote to the societal condition characterised by prevalent psychological illbeing. While there is a large corpus of research discussing health, wellbeing, outdoor activities, adventure or positive psychological effects of tourism in general, studies that specifically interrogate wellbeing in the context of adventure tourism are limited. We therefore point to the necessity of continued research into potentials of slow adventure, as a way of 'being' on holiday and consuming the outdoors at a slower pace, to improve the health and wellbeing of humans inhabiting the 21st century.

People's ways of life have drastically changed in highly developed societies. Stress-related and mental health problems are an ever-growing concern. The World Health Organisation envisaged that in 2020 depression and related illnesses will become the largest cause of ill-health [1]. It is no surprise that in an era of prevalent risks, insecurities and anxieties, individuals increasingly search for ontological security in all aspects of their lives [2–4]. People seem 'trapped' within their own delirious discourse and within the structures of the digitalised, urbanised and industrialised world that seem to have been only designed to confine us. It is claimed that time deprivation is one of the consequences of high-speed societies [5,6]. Therefore, as a response to the accelerated tempo of living, slowness has been gradually introduced to various spheres of people's lives. It has been incorporated into concepts such as food, cities or travel, to denote the value of time invested in the consumption, appreciation and delayed, rather than instant, gratification of experiences. Slowness has a special focus on learning how to value and cultivate the sense of time and "restore meaning, authenticity, security or identity to time-deprived subjects" [7] (p. 369). Likewise, slow travel celebrates simple, local, traditional, sensory and affective aspects of the experiences generated through movements at a slower pace and immersion

in the destination and local way of life. It explains one's desire to connect to pleasant, enjoyable and meaningful things, while at the same time disconnecting from the stressful and disturbing stimuli with which the external world is overly saturated [8,9].

2. Health Benefits of Nature-Based Tourism

It is claimed that people's quality of life may be greatly improved through tourism [10–12]. As a 'social force' [13] it can in many ways create comfortable, hospitable spaces in which people can temporarily slow down, feel safe and secure, dwell, bond and belong, and in which they can, in the basic, primitive, ontological sense, feel well. Thus, vacations have been increasingly 'prescribed' [14]. Ever more people are travelling for the purpose of improving their general health and wellbeing, which has prompted redesigning and developing diverse tourism products that promote both physical and mental health. This espouses preventative rather than curative approaches to personal health management and the visitation of destinations and facilities that support this. Many destinations worldwide are now creating their products to meet the needs of postmodern consumers interested in lifestyle-based wellness and overall wellbeing [15]. In particular, short nature-breaks have the power to 'fix' the body, spirit and mind, and offer compensation for people's alienated, fast-paced lives [16]. These therapeutic and restorative powers of nature have been highlighted [17,18]. Various authors raise awareness of the necessity for continued research into the benefits of tourism on people's wellbeing. By way of example, the interplay of tourism, health, wellbeing and protected areas has been recently discussed [19], illuminating the ways in which these four broad fields of research co-exist. Simultaneously looking at the preservation of protected areas on the one hand, and the health and wellbeing of their consumers on the other, the authors aim to deepen our understanding of the synergy of these themes and suggest ways in which together they can bring long-term benefits for multiple agents participating in this process. There have been correlations between spending time outdoors and people's subjective wellbeing, which is directly linked to people's overall happiness [20] and anxiety reduction [21]. The concept of wilderness therapy [22] has also brought some in-depth insights into the health benefits of undertaking activities in natural environments.

Therefore, either being or being active in nature is claimed to have noteworthy physical, mental, emotional and spiritual effects on people's physical and mental health [10,23–26]. In reconnecting with the natural world, some individuals opt for travelling to unfamiliar and remote wild places, releasing their 'adventurous' spirit and searching for their 'authentic' being. Adventure, however, has been mostly associated with a purchasable short-term holiday experience and as a marketing hook for potential consumers who wish to engage in what Varley et al. [27] termed as 'scream-n-go' experiences. Adventure tourism, through commodification of such experiences, has become one of the fastest growing niche tourism forms, being researched from multiple perspectives to date. Rantala et al., however, stated that adventure tourism is a "concept which has different meanings and uses depending on context", which is "too broad and too fluid" [28] (p. 9). Commercially, it is defined as a product "where the principal attraction is an outdoor activity that relies on features of the natural terrain, generally requires specialised equipment, and is exciting for the tour clients" [29] (p. 2). It mostly promotes 'hard' or fast adventure activities such as climbing, mountaineering, white-water kayaking, bungee jumping or snowmobiling, all of which are usually embedded into the natural environment.

3. Slowing Down, Immersion and Adventure

However, there is more to adventure tourism and outdoor activities. Apart from the 'classic' outdoor adventure sports, tourists are offered 'softer', more immersive activities in order to experience, know and feel cultural landscapes. These experiences are also claimed to be highly embodied, with an emphasis on the extension of time, comfort and deep multisensorial appreciation of and engagement with the surrounding places and social groups [23]. This is where the materialisation of 'slow adventure' becomes important. In conceptualising slow adventure, Varley and Semple [16] distilled its four critical elements: time, nature, passage and comfort. Time embodies itself in awareness of its passing during

the outdoor journeys; nature refers to the natural setting and access to it; passage, both physical and spiritual, is the navigation through time, space and the self; comfort implies being at ease with the unusual challenges throughout the journey, or reconnection with the place and the self. Evidently, the concept is juxtaposed to the adrenaline-pumping outdoor adventure activities and extreme sports used to traditionally define adventure tourism.

However, the temporal aspect of the tourism experience and the commodification of slowness seem crucial here. The authors explain that slow journeys "unfold at human pace, meals take time to prepare; time is spent directly in the effort of journeying and living" [16] (p. 86). Consequently, the slow pace of doing things allows for the unravelling of other qualities that are germane to the slow adventure concept. For example, spending extended time in nature, and physical activity combined with relaxation of the mind and intellectual stimulus, allows for subjective comfort, the fitness of body and wellness of mind and spirit. This may be achieved through collectively partaking in recreational activities, such as kayak or canoe expeditions, multi-day treks, cooking foraged foods, pitching a tent in a forest or telling stories around a crackling campfire. In so doing, people are given the opportunity to immerse themselves into prolonged interactions between self and the world. Such activities are usually undertaken in small groups, and although safer and less risky, they require the presence of an expert, a skilled guide, to interpret, mediate and navigate people through unfamiliar wild spaces, negotiate harsh environments and make such experiences more available even for less skilled participants [27,30]. Such experiences facilitate the generation of social capital and the creation of deep, memorable experiences. Ultimately, slow adventure may in many ways be compared to the Danish 'hygge', explained as "a state of pleasant wellbeing and security, with a relaxed frame of mind and open enjoyment of the immediate situation in all its small pleasures" [31] (p. 54) cf. [27].

Recently, psychological and social wellbeing benefits of outdoor adventure tourism have gained increased attention among researchers [32,33]. Filep et al. [34], for example, tackled the issue of wellbeing in this context and pointed to the absence of more substantial research surrounding this topic. To date, there have been few studies granting attention to the relations between wellbeing and adventure tourism practices, and these have tended to adopt a more generic approach, which underplays the inherent value of slow, immersive 'being' in nature, rather than actively 'doing'. For example, Kulczycki and Lück's study suggested that "various components of the adventure tourism experience, such as place attachment, calculated risk taking, achievement and accomplishment, social interaction, have the capability to actively contribute not only to health, but also to wellbeing" [35] (p. 176). Similarly, in conceptualising adventurous nature sport (ANS) in relation to wellbeing, Houge Mackenzie and Brymer [36] framed their study within positive psychology and discussed the eudaimonic and hedonic outcomes of undertaking ANSs. The authors claim that such activities enhance physical health and psychological wellbeing in a number of ways, for example building resilience and fulfilling psychological needs, thus calling for further research into social aspects of ANSs in relation to wellbeing and flourishing.

4. Conclusions

In general, adventure tourism has the potential to address current societal conditions and offer possibilities for re-establishing people's connection with both natural and social environments. Building on the postulates of slowness, the aim of slow adventure is to introduce consumers to an alternative dimension of adventure and the simplicity of just *being* in the outdoors. It can partly aid the treatment of 'affluenza' and move people away from their languishing towards flourishing [37]. Therefore, this commentary suggests that adventure tourism researchers have much to gain from further explorations of the health and wellbeing benefits of undertaking slow activities on holidays. Through their highly embodied activities, immersive research should investigate how people may successfully recreate familiar, comfortable spaces in which they experience longed-for feelings of reconnection, restoration, reunion, regeneration or recreation, and make a meaningful contribution to their improved wellbeing. Crucial here is to extend the research into temporal, psychological and social dimensions of the slow

adventure concept as a commodified tourism product. In particular, psychological, sociological, philosophical and ecosophical concepts, such as spirituality, mindfulness, friluftsliv, flow, sense of place, communitas, ontological security, dwelling or aesthetic experiences, may provide theoretical avenues in future explorations that explore how 'slowness' can conduce the wellbeing of fast-living and fast-moving inhabitants of the 21st century.

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