Abstract
How causation is approached has, for some time now, been a central debate within the archives of educational research. Despite rich discussion in broader literature, the influence of what has been described as the ‘methodology wars’ has rarely featured within the field(s) of outdoor and environmental education (OEE). This paper explores causation in this context, employing a feminist paradigmatic approach to investigate the role of causation in OEE research. A positivist approach is also considered in parallel, asking whether and how research in OEE navigates causation, and the potential influences of this upon competing audiences (e.g., policy makers and funders). Drawing on a conceptual causal pluralist approach to causation within the feminist paradigm, four key touchstones are presented that stand ready to facilitate inclusive, equitable, and reflexive research for OEE post-pandemic. The paper reflects on the general position of OEE presently, and responds to increasing sociocultural complexity as it is lived and felt within the profession and beyond.

Keywords Causation · Methodology wars · Feminism · Positivism

Introduction
The relationship(s) between broader educational inquiry and research that seeks to expose causal relationships has, for some time, been a significant topic for scholarly debate outwith the outdoor and environmental education (OEE) literature. As discussed by Rowbottom and Aiston (2006), to what extent the scientific method, or clinical trial, features in educational research has been a repetitive issue in its history. Whilst the writings of Poplin (1987), Matthews (2004), and Mackenzie (2011) offer...
a welcome set of exchanges on the matter, which was reignited recently by Thomas (2021), it is perhaps the dialogues presented in volume 21 of the journal *Educational Researcher* that contextualises the question: how does research in education expose causal relationships, and why does it matter? Taking the form of a discussion, Schrag (1992a; 1992b), Eisner (1992), and Erickson (1992) debate the merits and alternatives of a positivistic approach in educational research. For Schrag (1992a), any educational research that addresses questions centred on a causal hypothesis will have to commit itself to an educational trial. Alternative research approaches may derive new practices, policies, or ways of thinking, but without the educational trial these claims can be considered unreliable or fallacious. Meanwhile, Eisner (1992) and Erickson (1992) refute these claims. They question whether a universal approach to understanding reality, which draws on a foundationalist conception of knowledge and disconnects value from fact, oversimplifies the situated experiences of real-world teaching and learning where a single, universal, semblance of reality cannot exist. As Alexander (2006) neatly put it, this dichotomy may be called the “methodology wars” (p. 206). Over two decades ago, Allison and Pomeroy (2000) explored this in the experiential education context, and stated that the field needs to explore a range of paradigms to uncover the situated and complex nature of the processes involved in outdoor learning.

This discourse warrants closer examination within the fields of contemporary OEE and outdoor learning to assess the place and relevance of research that exposes causal relationships. Such a discussion comes at an important time for the field in the context of COVID-19 where across the planet we have seen OEE often relegated and, in some cases, halted altogether (Quay et al., 2020). The question remains, in relation to capturing and sharing the well-acknowledged benefits of learning outdoors (e.g., James & Williams 2017; Schwass et al., 2021), what role does causation play in the development and realisation of research? And, as I discuss in this paper, what role might our ontological and epistemological assumptions play in the development of inclusive and equitable research? This paper could reflect on many paradigms to assess the place of OEE in the so-called methodology wars. However, drawing on work (Ackerly & True, 2020; Cosgrove & McHugh, 2000; Daley, 2010) that recognises the importance of how knowledge, power, relationships, and context affect the research process, this paper considers whether attentiveness to epistemic belief may alter the ways in which causal relationships are interpreted and defined in OEE.

To do this, a feminist approach is employed that, as discussed by Hesse-Biber (2012), provides a platform from where a range of epistemologies and methodologies may be interrogated and transformed. This interrogation is of critical importance when acknowledging and celebrating research processes as chaotic, non-linear, and heterogeneous. To offer a critical view, positivism is also discussed as a lens through which the feminist standpoint might be challenged or reinforced. The paper concludes that, in OEE, research does expose causal relationships so long as we reframe our understanding of ‘causality’ to encompass and extend beyond the scientific method. Within this, four touchstones are introduced that jointly identify how causation can take many forms and, perhaps crucially, that recognise a need for causal approaches that stand ready to address the complexities of 21st century OEE. In addressing these complex issues, I turn to the work of de Sousa Santos (2014) on the *Sociology of*
Absences and to Smith’s (2021) work on Māori feminist research approaches to explore their need and relevance within the field of OEE. I begin by providing initial definitions of what I mean by ‘causal relationships’, as well as operationally defining feminism and positivism. I then turn to OEE literature, exploring causation in practice, and, finally, assess whether an explicit understanding of an alternative frame of causation may be useful as OEE recovers from COVID-19.

Before going any further, I have grappled with my position as a white heterosexual male in this field and continuously asked myself whether I am the right person to write a paper on the relationship(s) between feminism, positivism, and causation. Unconscious bias, unacknowledged power, and privilege were just some of the factors that came to mind. The truth is I am not sure I am the right person to compose a manuscript on the intersections of causation within feminism and positivism in OEE. Was this a reason to discontinue the project? I turned to Tienari and Taylor (2019), two men who have written about their interpretations, vulnerabilities, and positions within feminism, to help me understand my position and my contribution. I was taken by their discussion on the potentials and importance of men engaging with cultures of exclusion, domination, and prejudice. I also reflected on the texts of Van der Gaag (2014) and Smolović-Jones et al. (2021) and concluded that if we (as practitioners and researchers) want to make a lasting and inclusive difference in OEE, then irrespective of gender we have a duty to do so. This acknowledges that a feminist paradigmatic approach to causation is too important to shelve on account of my position as a white heterosexual male. I therefore proceed with the upmost reflexivity as I present the tensions between feminism, positivism, and causation in OEE.

What are ‘causal relationships’ in research?

The traditional view of causal relationships in research, that is the cause and effect relationship whereby a cause variable (X) leads to changes in an outcome variable (Y), has provided “the basis of ordinary quantitative [and experimental] research” (Mohr, 1996, p. 99). For Morris et al. (2016), one such approach for uncovering causal relationships in education is the use of randomised controlled trials. However, to what extent the randomised controlled trial in OEE captures, for instance, on the ground lived experiences remains unclear. This leads me to Reed’s (2011) ‘landscapes of meaning’ which acknowledges that the researcher’s primordial task is to paint the landscape of the phenomena under investigation, thus enabling the meanings of historical, social, and cultural actions to be discovered and shared. This indicates that causal relationships are discoverable in both qualitative and quantitative research, but are interpreted and understood based on structures of epistemic perspective that are framed by interconnected social, cultural, and historical factors. Nichols’s (2000) research agenda for adventure education ‘gets at’ some of this complexity when discussing the classical experimental causality model as impractical, and that it may hold an unrealistic view of the social world in outdoor learning. Further, Warren and Loeffler’s (2000) paper on social justice research in outdoor experiential education holds resonance. They suggest there is an absence of developed approaches to research that stand ready to emancipate the voices and experiences of marginalised groups. As I discuss later in the paper, the ways in which we are atten-
tive to our ontological and epistemic beliefs are important when developing reflexive approaches to research in OEE that do not inopportunely overlook or discount the experiences of disempowered voices.

**Introducing feminism and positivism: mapping the nature of causation**

**Feminism**

Hooks (2000) acknowledged that there has been a lack of consensus on a definition of feminism due to its diversity and wide-ranging purposes. From the work of Wittgenstein (1953/2009), feminism can be considered a broad family of critical approaches which question the status quo, counter oppression, and has at its core the recognition that gender/sex must be examined when attempting to evaluate the social world. Drawing on the literature cited by Hesse-Biber (2012, p. 3-4), a feminist approach is attentive to structures of authority and power in research that extend beyond androcentric bias. Feminism empowers the researcher to see and embrace diversity, whilst overtly acknowledging and challenging intersecting discriminatory structures which serve to subjugate how knowledge is produced. As Dillard (2000) outlined, the beating heart of feminism re-frames the research endeavour as one that liberates the marginalised and brings into question “the traditions, perspectives, viewpoints, cultural understandings, and discourse style of the researcher” (p. 663). I do not have to look far in the OEE literature to acknowledge the salience of feminism in practice (Allin & West, 2013; Bren & Prince, 2022; Gray, 2016; Haq et al., 2020; O’Brien & Allin, 2021; Wall, 2017; Warren & Rheingold, 1996) and the continued oppression, misogyny, and sexual harassment experienced by diverse groups of people in the outdoors (Davies et al., 2019; Gray et al., 2020; Kennedy & Russell, 2020; Warren et al., 2018). That said, when seeking research with an explicit feminist paradigmatic approach in OEE, the results often yield limited applications. Although work such as Lynch et al. (2020) explicitly discusses feminist approaches to data collection, there appears to have been a limited ‘banging of the drum’ on the role of an explicit feminist paradigm for the field.

It is therefore important to map the nature of causation in feminist research. Drawing on Crasnow’s (2015) chapter on causal pluralism in feminist research, this paper now asks: can a research approach focussed on emancipative processes expose causal relationships in OEE? Whilst many have discussed plurality in causality (e.g., Campaner & Galavotti 2007; De Vreese, 2006; Weber, 2007), Crasnow (2015) defines causal pluralism as “the view that there is more than one form [of] causal explanation” (p. 637). In essence, in order to fully understand the situated complexity of individual experiences, the positivist focus on ‘average effect causation’ is called into question. Cartwright (1999, 2004) picked up on this, arguing that applying universalism to a cause and effect relationship cannot identify which individual features of the cause and effect are both felt and realised at the individual level. However, whilst Cartwright (2006) agreed an alternative theory of causal relationships was necessary, they showed that “we do not have any theories [of causal plurality] at all” (p. 66). Both Reiss (2011) and Crasnow (2011, 2015) picked up on this. Whilst Reiss (2011) discussed wide-ranging theoretical approaches to pluralism, including evidential
and metaphysical causal pluralism, Crasnow (2015) outlined a conceptual pluralism for understanding causal relationships in feminist research. Put simply, conceptual causal pluralism places the very notion of ‘cause’ under scrutiny. By positing that ‘cause’ will have different effects within a diverse population, exposing causal relationships in feminist research moves beyond unitary average effect causation that is thought to treat causal relationships as one-dimensional and oppressive for populations at the margin.

**Positivism**

Positivism, broadly framed, is more readily defined in the literature (e.g., Bryant 1985; Giddens, 1974; Neuman, 2014) than its feminist counterpart. Its central argument recognises that, through experimentation and the scientific method, the natural and social world can be understood and improved by employing deductive reasoning and precise empirical scrutiny. Whilst Blaikie and Priest (2017) sketch out the origins of positivism, including reference to Comte (1830/1988), Durkheim (1895/1938), and Hume (1888), the basis of positivism in this paper is drawn from Howe (2009) and Mackenzie (2011). Together, they state that positivism, grounded in philosophy and characterised by the scientific method, is a bias-neutral paradigm which seeks to uncover nomothetic knowledge through exact empirical inquiry by developing understanding in the form of universal laws. Turning to literature in OEE, which I take to constitute empirical and peer-reviewed research within outdoor learning contexts, it is clear that quantitative approaches have been readily employed in numerous studies (e.g., Cooley et al., 2016; Stott & Hall, 2003; Scrutton, 2015, 2020). However, it is Scrutton and Beames’s (2015) paper that overarchingly discusses quantitative approaches for outdoor learning, and specifically its applicability for research seeking to assess personal and social development outcomes within the context of outdoor and adventurous education. Alongside recognising the importance of statistical evidence for stakeholders, their analysis of 28 quantitatively grounded papers revealed a series of methodological limitations that restrict operational rigour for studies within the positivist paradigm. This raises important issues for the field of OEE. If we seek to publish research that evaluates situated experience and complexity, then how does this paradigmatically and practically match stakeholder expectation, the accessibility of future funding, and the position of OEE in broader curricula endeavours? This question ultimately links back to Allison and Pomeroy’s (2000) core question, that is, “how shall we know?” (p. 92), and I add, how shall we share?

Gerring (2005) acknowledges that the traditional, unitary, view of causation has come under increasing scrutiny in the social sciences. Despite the increased scrutiny, Checkel (2006) recognises positivism’s theory of unitary causation as the foundational scientific measure which “provides the how-we-come-to-know nuts and bolts for mechanism-based accounts of social change” (p. 363). In relation to causation, then, the positivist approach enables causal relationships to be exposed, explained, and predicted at an empirically large scale whilst being replicable (Park et al., 2020). As Freedman (2006) describes, positivistic approaches to exposing causal relationships “offer more reliable evidence on causation than observational studies” (p. 691), which are thought to lack broad applicability across society. It is this which contrib-
uted to the United Kingdom’s Department for Education (2018) recognising positivism as the primary approach from which to base its research agenda and policy development; for examples, see Department for Education (2019, 2020a, 2020b). One significant benefit to the Department for Education’s approach is expressed by Hargreaves (1997) and Gorard et al. (2017), that is the ability to assess and implement evidence-based practice. According to Thyer’s (2008) paper, which is grounded in social work, liberal views and caring attitudes will not expose causal relationships that can readily influence practice. Instead, they state that if we are to seek “the best available evidence” (p. 344) which exposes causal relationships for practice development, then we will ultimately have to “embrace the fundamental tenets of positivism” (p. 339).

**Through the looking-glass: shifting conceptions of causal relationships in outdoor and environmental education research**

**A rejoinder: confusion, complexity, or causation?**

Whilst Gerring (2005) and Crasnow (2015) both approach the notion of causation from different standpoints, both acknowledge the term ‘causal relationships’ to be ironically polysemantic. Indeed, despite the contrast described between positivist and feminist approaches to causation, Leckenby (2007) outlines a feminist empiricist approach that they identify as unwaveringly positivistic yet underpinned by feminist values and criticality. To get to the bottom of this tension in OEE research, it is worth considering what Allin and Humberstone (2006) and Quay (2016) discuss on the social, cultural, and environmental complexities which encompass educating young people out-of-doors. We know that there are innumerable intersecting factors that frame pedagogical practice and the experiences of participants. As Christie et al. (2016) note when quoting Davis and Sumara’s (2006, p. xi) work on complexity in education, outdoor learning endeavours are so complex and heterogenous they surely defy “simplistic analyses and cause-effect explanations” (p. xi). Reason for this is found in the work of Byrne (2005) who claims the positivist view on causation relies too much on linearity. Acknowledging the complexity of social life therefore depends on recognising that there is an assemblage of multiple, interrelated, and unpredictable causes that frame the nature of reality. To what ends, then, can linear and controlled approaches to causation fully explicate the nature of complex and fluid human lives? This raises an important consideration surrounding the efficacy of paradigmatic standpoints within OEE and whether they stand ready to capture and share the inherent complexities and nuance that naturally emerge when educating people out-of-doors.

Is that the end of that then? Positivism can expose causal relationships in OEE, but cannot fully capture the complexity of experience, learning, and growth when learning outside? Recent work that has employed a positivist ‘average effect’ causal approach in outdoor learning (e.g., Beames et al., 2018; Cooley et al., 2020; Scruton, 2020) suggests this view is too simple an answer. Quibell et al. (2017) somewhat alleviate this causal tension by outlining why the unitary view on exposing causal relationships is limiting. This highlights that using a positivist standpoint to understand and explain OEE is limited and oversimplified. Quibell et al. (2017) argue that a more nuanced and relational understanding of causation is required to fully capture the complexity and fluidity of human experience in outdoor learning.

**Conclusion**

In conclusion, positivism has been a powerful tool in shaping research agendas and policy development within outdoor and environmental education. However, its limitations should not be overlooked. As educators and researchers, we must continue to explore and develop more sophisticated approaches to understanding causation in OEE. This will require a shift in thinking from a linear, cause-and-effect mindset to one that embraces the complexity and fluidity of human experience in outdoor settings. By doing so, we can better support the holistic development of young people and ensure that our educational practices are truly reflective of the rich and diverse world they inhabit.
relationships is important in outdoor learning. They acknowledge how, without substantial and conclusive statistical evidence, the benefits of learning outdoors cannot be captured and shared with policy makers and curriculum developers in a meaningful and accessible way. This is of added importance when considering the work of Quay et al. (2020) on the negative impacts the pandemic has had on OEE. There has been a real risk that OEE could be considered an expendable commodity in the education of young people. What is required, then, could be a blending of both Gerring’s (2005) and Crasnow’s (2015) assessments of causation if OEE is to remain a viable endeavour in the eyes of policy makers and funders. However, whilst it can be claimed that both feminist and positivist approaches to causation have merit in the field of OEE, it is worth acknowledging that adventurous activities and outdoor environments have been considered an inherently male space (Gray, 2016; Kennedy & Russell, 2020). This points us towards Brooks’s (2007) outlining of what they call the ‘dominant knowledge canons’ in research that naturally questions whether employing unitary average effects in OEE may inopportune expose causal relationships from the more dominant male standpoint only. It is this that returns me to Leckenby’s (2007) feminist empiricist approach that could unlock the potential of positivism for OEE whilst remaining critically attentive to all voices and perspectives.

The challenge

To bring to life the purpose of the feminist paradigm in OEE, I draw on Marshall (1994), Parsons and Priola (2013), and Berila (2021), to recognise feminist research as a mediator for social transformation. To return to Ackerly and True (2020), the purpose of good feminist research is to “push the boundaries of how other scholars have understood things” (p. 258). Centrally, they acknowledge that feminist research is above all attentive; attentive to the power of epistemic belief but also attentive to boundaries and relationships in the research process. However, before social transformation can be assessed as an alternative conception of causal relationships, Mishra’s (2013) and Todd’s (2016) problematisation of what has been outlined above requires acknowledgement. Both recognise traditional feminist research to normalise feminism’s purpose from a Western perspective, which may marginalise indigenous, racial, and ethnic minority populations. Both authors call for a postcolonial or indigenous feminist approach to research that allow the transformative purposes of feminism to be realised. This turns me to Smith’s (2021) work and their citing of de Sousa Santos (2014) and, specifically, de Sousa Santos’s theorising on the Sociology of Absences. The Sociology of Absences is important for this discussion as it does not begin by asking ‘what is present?”, as we may in traditional research approaches, but begins by asking what is functionally produced, in terms of knowledge, as null, non-existent, or unseen? As de Sousa Santos (2014) explains, a Sociology of Absences pulls into question “the positivistic principle that consists of reducing reality to what exists and to what can be analyzed with the methodological and analytical instruments of the conventional social sciences” (p. 172). It is thus claimed that by focusing on what is absent and what is assumed within the development, realisation, and sharing of research that we may address what de Sousa Santos (2014) defines as the centrality of Westernised monocultural knowledge. As Smith (2021) explains, this
may reinvigorate the purpose and scope of research, as research which focusses on social justice “is an intellectual, cognitive and moral project, often fraught, never complete, but worthwhile” (p. 270).

So, does the ‘best’ research expose causal relationships?

The advantages of incorporating plurality in the exposure of causal relationships from both feminist and positivist standpoints have now been discussed. This, alongside questioning what is absent and what is present in traditional discourses of knowledge, generates challenging yet necessary terrain for research in OEE to navigate. Focussing on Shaheen (2016), it is, however, noted that causal plurality is at risk of developing causal ambiguity, where any cause and effect may falsely be claimed an exposure of a causal relationship. It is therefore important to ask exactly how causal plurality fits within OEE research. When operationally defining what we may describe as ‘best’ research, that is how a chosen research design can effectively answer the chosen research question, it is reasonable to suggest that the overarching purpose of research is to expose causal relationships. However, if best research is to fully evaluate the complexities of the social world, then re-applying epidemiology’s metaphor of the web of causation (Venkatapuram, 2011) to the social sciences could be useful for OEE. As Ventriglio et al. (2016) outline, the web of causation posits that multiple causative relationships often exist and influence an effect at any one time and therefore require multiple research approaches to fully uncover them. Weber et al. (2005) reaffirm this through their acknowledgement that cause and effect relationships are often structured and discovered based on both research design and the reflexivity of the researcher. It is this diversity which enables new research questions to be explored, research questions that can reframe how causation is interpreted, such as employing Crasnow’s (2015) conceptual causal pluralism, to liberate previously unrecognised causal relationships within oppressed and marginalised populations. In so doing, questions of what is absent and what is decided (consciously or subconsciously) to be non-existent may come to the fore and be considered. Whilst doing this, research must be attentive to Ackerly and True’s (2020) feminist research ethic that ensures the situatedness of the researcher is acknowledged and mitigated. Ultimately, by recognising the interplay between research design and research question, research that ensures all voices are heard and all perspectives are accounted for represents an exemplary benchmark for research in OEE.

That being said, dismissing positivism as secondary research and as the vanguard against inclusion and alternative conceptions of causation risks “throwing … the baby out with the bathwater” (Husén, 1988, p. 13). It is this that leads me to question Howe’s (2004) assertion that the positivist/non-positivist debate in educational research is a matter of value-based duality; right and wrong, left and right. Instead, drawing on Lather (2006), approaching research and causation from a standpoint of paradigmatic diversity could allow a multitude of perspectives to come to the fore that can more readily assess the “complexities of language and the world” (p. 36). What we are at risk of here, however, is discussed by Halliday (2002) who, when citing Griffiths (1998), stated that “sitting on the [paradigmatic] fence is unproductive and probably impossible” (p. 53). The best research cannot be considered to
expose causal relationships when ambiguity and methodological uncertainty frame the research process. To understand how we can arrive at best research, which mutually recognises the historical and contemporary purposes of both the feminist and positivist perspectives, returning to Smith’s (2021) work on the decolonisation of epistemology and methodology offers paradigmatic hope, and offers opportunity to re-evaluate how we design and implement research in OEE. As Wilson (2001), Mishra (2013), and Todd (2016) discuss, how can we arrive at the claim that best research exposes causal relationships without acknowledging the colonial backdrop to such a statement? Smith (2021) shows how what can be considered best research in the paper thus far needs to ‘research back’ to disrupt the rules and practices of traditional research. By utilising a Māori feminist approach, Smith (2021) argues that if research is to expose causal relationships in a manner that does not oppress or marginalise, research must focus on developing culturally appropriate ontologies, epistemologies, and methodologies. What emerges, then, are key touchstones for research that must be evaluated in OEE. These are: recognising causation may take many forms; remaining attentive to the situated complexity of the social world and people’s experiences of it; acknowledging and addressing how ontology, epistemology, and research approaches can inopportune marginalise populations; and finally, embracing the research process as non-linear and heterogeneous. When incorporating these four touchstones, OEE researchers can step through the looking-glass and see best research not as something abstract and untouchable, but as something that is ready to embrace the challenges and hurdles that will come with researching learning outside the classroom in the 21st century.

Implications

These four touchstones have clear implications for future OEE research that must situate itself in what is an increasingly transcultural and globalised world. As Cochran-Smith (2004) and O’Leary (2017) note, a research question that is investigated through different research approaches will likely arrive at different answers. This paper suggests that to fully realise the complexity of the social world in OEE, this diversity in approaches is to be embraced and not prohibited. In addition, Crasnow’s (2015) conceptual causal plurality offers an opportunity to expose causal relationships beyond the confines of one-dimensional interpretations of causation. This view is consolidated when re-applying epidemiology’s metaphor of the web of causation (Venkatapuram, 2011) to the social sciences and when considering the importance of a Sociology of Absences (de Sousa Santos, 2014). For OEE, then, how research ensures the historically, socially, culturally, and politically entangled webs of causation are acknowledged and reported is of upmost importance. Critically, this reminds us that, when approaching the plural web of causation, the works of Hesse-Biber (2012), Ackerly and True (2020), and Smith (2021) should be applied to ensure equity and emancipation can come to the fore. This perspective reconsiders a significant question outlined by Preissle and Han (2012), that is, what could a feminist research ethic offer us? The implication in this paper encourages us to extend beyond
this to ask, what are the consequences if we do not employ a feminist perspective in our research?

Conclusions

Having started by outlining what Alexander (2006) described as the “methodology wars” (p. 206), this paper has assessed the place and role of causation from feminist (e.g., Berila 2021; Parsons & Priola, 2013) and positivist (e.g., Howe 2009; Mackenzie, 2011) perspectives in OEE research. We have seen that getting to the bottom of causation and the purposes of exposing causal relationships are inherently complex and fraught with paradigmatic and methodological hurdles. We have seen how different research approaches will likely answer research questions differently (O’Leary, 2017), how the complexities of experience and policy development in OEE require multiple research approaches to assess causation (Christie et al., 2016; Quibell et al., 2017), and how Crasnow’s (2015) conceptual causal pluralism provides a means through which to do this. What has emerged recognises the importance of Ackerly and True’s (2020) feminist research ethic and, when approaching research in OEE, how this can emancipate multiple forms and interpretations of causation. However, a degree of critical hesitancy is required when considering the works of de Sousa Santos (2014) and Smith (2021). It was questioned whether colonialism provided the cultural backdrop to our quest to assess the methodology wars in OEE. Four key touchstones were therefore outlined with the aim of recentring the research process to recognise how those marginalised and oppressed by the ‘dominant knowledge canons’ (Brooks, 2007) can be heard. What has been discussed recognises that research which does expose causal relationships are situated within layers of sociocultural complexity and the historical suppression of marginalised voices. It is only when this is addressed that research in OEE can enter a new realm of possibility, that is the chance to jointly emancipate causal relationships and marginalised populations. It is this stance that will enable the field to ‘keep up’ with what Schaeffer (2014) describes as the rising tide of global social change.

Acknowledgements

I would like to thank the contributions from two anonymous reviewers whose comments and insight enhanced the paper’s coherence and arguments. I would also like to thank both Kaining Chen and Catherine Dunn who helped synthesise my thoughts whilst the paper was being prepared for its second round of review. Finally, I would like to thank Professor John Ravenscroft at The University of Edinburgh for encouraging me to think more critically and deeply about what constitutes ‘best research’.

Authors’ contributions

N/A

Funding

No funding was received to assist with the preparation of this manuscript.

Availability of data and material

N/A

Code Availability

N/A
Declarations

Conflicts of interest/Competing interests  The author declares they have no conflicts of interest.

Open Access  This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article’s Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article’s Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0/.

References

Ackerly, B. A., & True, J. (2020). Doing feminist research in political and social science. Red Globe Press.
Alexander, H. A. (2006). A view from somewhere: Explaining the paradigms of educational research. Journal of Philosophy of Education, 40(2), 205–221. https://doi.org/10.1111/j.1467-9752.2006.00502.x
Allin, L., & Humberstone, B. (2006). Exploring careership in outdoor education and the lives of women outdoor educators. Sport, Education and Society, 11(2), 135–153. https://doi.org/10.1080/13573320600640678
Allin, L., & West, A. (2013). Feminist theory and outdoor leadership. In E. Pike, & S. Beames (Eds.), Outdoor adventure and social theory (pp. 113–124). Routledge.
Allison, P., & Pomeroy, E. (2000). How shall we “know?” Epistemological concerns in research in experiential education. Journal of Experiential Education, 23(2), 91–98. https://doi.org/10.1177%2F105382590002300207
Beames, S., Mackie, C., & Scrutton, R. (2018). Alumni perspectives on a boarding school outdoor education programme. Journal of Adventure Education and Outdoor Learning, 20(2), 123–137. https://doi.org/10.1080/14729679.2018.1557059
Berila, B. (2021). Radiating feminism: Resilience practices to transform our inner and outer lives. Routledge.
Blaikie, N., & Priest, J. (2017). Social research: Paradigms in action. John Wiley & Sons.
Bren, C., & Prince, H. E. (2022). The experiences of trans and non-binary participants in residential and non-residential outdoor programmes. Journal of Outdoor and Environmental Education, 1–19. https://doi.org/s42322-021-00092-9
Brooks, A. (2007). Feminist standpoint epistemology: Building knowledge and empowerment through women’s lived experience. In S. Hesse-Biber, & P. L. Leavy (Eds.), Feminist research practice: A primer (pp. 53–82). Sage.
Bryant, C. G. (1985). Positivism in social theory and research. Macmillan.
Byrne, D. (2005). Complexity, configurations and cases. Theory, Culture & Society, 22(5), 95–111. https://doi.org/bh69hr
Campaner, R., & Galavotti, M. C. (2007). Plurality in causality. In P. Machamer & G. Wolters (Eds.), Thinking about causes: From Greek philosophy to modern physics (pp. 178–199). University of Pittsburgh Press.
Cartwright, N. (1999). The dappled world: A study of the boundaries of science. Cambridge University Press.
Cartwright, N. (2004). Causation: One word, many things. Philosophy of Science, 71(5), 805–819. https://doi.org/10.1086/426771
Cartwright, N. (2006). Where is the theory in our “theories” of causality?. The Journal of Philosophy, 103(2), 55–66. https://doi.org/f3f93c
Checkel, J. T. (2006). Tracing causal mechanisms. International Studies Review, 8(2), 362–370. https://doi.org/dmbsxh
Christie, B., Beames, S., & Higgins, P. (2016). Context, culture and critical thinking: Scottish secondary school teachers’ and pupils’ experiences of outdoor learning. *British Educational Research Journal, 42*(3), 417–437. https://doi.org/10.1002/berj.3213

Cochran-Smith, M. (2004). Ask a different question, get a different answer: The research base for teacher education. *Journal of Teacher Education, 55*(2), 111-116. https://doi.org/10.1177%2F0022487104262971

Comte, A. (1888). *Introduction to positive philosophy*. (F. Ferré, Trans.; 2nd ed.). Hackett Publishing. (Original work published 1830).

Cooley, S. J., Burns, V. E., & Cumming, J. (2016). Using outdoor adventure education to develop students’ groupwork skills: A quantitative exploration of reaction and learning. *Journal of Experiential Education, 39*(4), 329–354. https://doi.org/10.1177%2F1053825916668899

Cooley, S. J., Eves, F. F., Cumming, J., & Burns, V. E. (2020). “Hitting the ground running”: preparing groups for outdoor learning using a theoretically-based video. *Journal of Adventure Education and Outdoor Learning, 20*(1), 30–48. https://doi.org/fm2g

Cosgrove, L., & McHugh, M. C. (2000). Speaking for ourselves: Feminist methods and community psychology. *American Journal of Community Psychology, 28*(6), 815–838. https://doi.org/cqqd

Crasnow, S. (2011). Evidence for use: Causal pluralism and the role of case studies in political science research. *Philosophy of the Social Sciences, 41*(1), 26–49. https://doi.org/10.1177/0048393110387884

Crasnow, S. (2015). Feminism, causation, and mixed methods research. In S. Hesse-Biber, & R. B. Johnson (Eds.), *The Oxford handbook of multimethod and mixed methods research inquiry* (pp. 637–651). Oxford University Press.

Daley, A. (2010). Reflections on reflexivity and critical reflection as critical research practices. *Affilia, 25*(1), 68–82. https://doi.org/10.1177/0886109909354981

Davies, R., Potter, T., & Gray, T. (2019). Diverse perspectives: Gender and leadership in the outdoor education workplace. *Journal of Outdoor and Environmental Education, 22*(3), 217–235. https://doi.org/10.1007/s42322-019-00040-8

Davis, B., & Sumara, D. (2006). *Complexity and education: Inquiries into learning, teaching, and research*. Lawrence Erlbaum Associates.

Department for Education (2018). *Areas of research interest*. https://www.gov.uk/government/publications/department-for-education-areas-of-research-interest

Department for Education (2019). *PISA 2018: National report for England*. https://www.gov.uk/government/publications/pisa-2018-national-report-for-england

Department for Education (2020a). *Examining the London advantage in attainment: Evidence from LSYPE*. https://www.gov.uk/government/publications/examining-the-london-advantage-in-attainment-evidence-from-lsype

Department for Education (2020b). How early years providers support children. https://www.gov.uk/government/publications/how-early-years-providers-support-children

de Sousa Santos, B. (2014). *Epistemologies of the South: Justice against epistemicide*. Paradigm Publishers.

De Vreese, L. (2006). *Causal pluralism and scientific knowledge: An underexposed problem*. Paradigm Publishers.

Dillard, C. B. (2000). The substance of things hoped for, the evidence of things not seen: Examining the London advantage in attainment-evidence-from-lsype

Dillard, C. B. (2000). The substance of things hoped for, the evidence of things not seen: Examining an endarkened feminist epistemology in educational research and leadership. *International Journal of Qualitative Studies in Education, 13*(6), 661–681. https://doi.org/10.1080/09518390050211565

Durkheim, E. (1938). *Rules of sociological method*. (W. D. Halls, Trans.; 2nd ed.). Free Press. (Original work published 1895).

Eisner, E. W. (1992). Are all causal claims positivistiv? A reply to Francis Schrag. *Educational Researcher, 21*(5), 8–9.

Erickson, F. (1992). Why the clinical trial doesn’t work as a metaphor for educational research: A response to Schrag. *Educational Researcher, 21*(5), 9–11.

Freedman, D. A. (2006). Statistical models for causation: What inferential leverage do they provide?. *Evaluation Review, 30*(6), 691–713. https://doi.org/fd54r4

Gerring, J. (2005). Causation: A unified framework for the social sciences. *Journal of Theoretical Politics, 17*(2), 163–198. https://doi.org/10.1177/0162243905050859

Giddens, A. (1974). *Positivism and sociology*. Heinemann Educational Publishers.

Gorard, S., See, B. H., & Siddiqui, N. (2017). The trials of evidence-based education: The promises, opportunities and problems of trials in education. Routledge.

Gray, T. (2016). The “F” word: Feminism in outdoor education. *Journal of Outdoor and Environmental Education, 19*(2), 25–41. https://doi.org/10.1007/BF03400992
Gray, T., Mitten, D., Potter, T., & Kennedy, J. (2020). Reflective insights toward gender-inclusive outdoor leadership. *Journal of Outdoor Recreation, Education, and Leadership, 12*(1), 102–121.

Griffiths, M. (1998). *Educational research for social justice: Getting off the fence*. Open University Press.

Halliday, J. (2002). Researching values in education. *British Educational Research Journal, 28*(1), 49–62. https://doi.org/bvbj2s

Haq, Z. A., Imran, M., Ahmad, S., & Farooq, U. (2020). Environment, Islam, and women: A study of eco-feminist environmental activism in Pakistan. *Journal of Outdoor and Environmental Education, 23*(3), 275–291. https://doi.org/10.1080/s42322-020-00065-4

Hargreaves, D. H. (1997). In defence of research for evidence-based teaching: A rejoinder to Martyn Hammersley. *British Educational Research Journal, 23*(4), 405–419. https://doi.org/d5bkps

Hesse-Biber, S. (2012). Exploring, interrogating, and transforming the interconnections of epistemology, methodology, and method. In S. Hesse-Biber (Ed.), *Handbook of feminist research: Theory and praxis* (pp. 2–26). Sage.

hooks, b. (2000). *Feminist theory: From margin to center*. Pluto Press

Howe, K. R. (2004). A critique of experimentalism. *Qualitative Inquiry, 10*(1), 42–61. https://doi.org/10.1177/1077800403259491

Howe, K. R. (2009). Postivst dogmas, rhetoric, and the education science question. *Educational Researcher, 38*(6), 428–440. https://doi.org/b5kbbn

Hume, D. (1888). *A treatise of human nature*. Oxford University Press.

Husén, T. (1988). Research paradigms in education. *Interchange, 19*(1), 2–13.

James, J. K., & Williams, T. (2017). School-based experiential outdoor education: A neglected necessity. *Journal of Experiential Education, 40*(1), 58–71. https://doi.org/10.1177%2F1053825916676190

Kennedy, J., & Russell, C. (2020). Hegemonic masculinity in outdoor education. *Journal of Adventure Education and Outdoor Learning, 21*(2), 162-171. https://doi.org/10.1080/14729679.2020.1755706

Lather, P. (2006). Paradigm proliferation as a good thing to think with: Teaching research in education as a wild profusion. *International Journal of Qualitative Studies in Education, 19*(1), 35–57. https://doi.org/10.1080/09518390500450144

Leckenby, D. (2007). Feminist empiricism: Challenging gender bias and “setting the record straight”. In S. Hesse-Biber & P. L. Leavy (Eds.), *Feminist research practice: A primer* (pp. 26–52). Sage.

Lynch, P., Bell, M., Cosgriff, M., & Zink, R. (2020). Practicing feminist reflexivity: Collaborative letter writing as method. In B. Humberstone, & H. Prince (Eds.), *Research methods in outdoor studies* (pp. 175–185). Routledge.

Mackenzie, J. (2011). Positivism and constructivism, truth and ‘truth’. *Educational Philosophy and Theory, 43*(5), 534–546. https://doi.org/crgxmd

Marshall, B. L. (1994). Engendering modernity: Feminism, social theory and social change. Polity Press.

Matthews, M. R. (2004). Reappraising positivism and education: The arguments of Philipp Frank and Herbert Feigl. *Science & Education, 13*(1–2), 7–39. https://doi.org/e87xmp

Mishra, R. K. (2013). Postcolonial feminism: Looking into within-beyond-to difference. *International Journal of English and Literature, 4*(4), 129–134.

Mohr, L. B. (1996). *The causes of human behavior: Implications for theory and method in the social sciences*. University of Michigan Press.

Morris, S. P., Edovald, T., Lloyd, C., & Kiss, Z. (2016). The importance of specifying and studying causal mechanisms in school-based randomised controlled trials: Lessons from two studies of cross-age peer tutoring. *Educational Research and Evaluation, 22*(7–8), 422–439. https://doi.org/fm2k

Neuman, W. L. (2014). *Social research methods: Qualitative and quantitative approaches* (7th ed.). Pearson.

Nichols, G. (2000). A research agenda for adventure education. *Journal of Outdoor and Environmental Education, 4*(2), 22–31. https://doi.org/10.1080/09518390500450144

O’Brien, K., & Allin, L. (2021). Transformational learning through a women’s outdoor leadership course. *Journal of Adventure Education and Outdoor Learning, 1–12*. https://doi.org/10.1080/14729679.2020.19325565

O’Leary, Z. (2017). *Feminist theory: From margin to center*. Pluto Press

Parsons, E., & Priola, V. (2013). Agents for change and changed agents: The micro-politics of change and feminism in the academy. *Gender, Work & Organization, 20*(5), 580–598. https://doi.org/fm2n

Poplin, M. S. (1987). Self-imposed blindness: The scientific method in education. *Remedial and Special Education, 8*(6), 31–37.
Warren, K., & Loeffler, T. A. (2000). Setting a place at the table: Social justice research in outdoor experiential education. *Journal of Experiential Education, 23*(2), 85–90.

Warren, K., & Rheingold, A. (1996). Feminist pedagogy and experiential education: A critical look. In K. Warren (Ed.), *Women's voices in experiential education* (pp. 118–129). Kendall-Hunt.

Warren, K., Risinger, S., & Loeffler, T. A. (2018). Challenges faced by women outdoor leaders. In T. Gray & D. Mitten (Eds.), *The Palgrave international handbook of women and outdoor learning* (pp. 247–258). Palgrave Macmillan.

Weber, E. (2007). Conceptual tools for causal analysis in the social sciences. In F. Russo & J. Williamson (Eds.), *Causality and probability in the sciences* (pp. 192–207). College Publications.

Weber, E., Van Bouwel, J., & Vanderbeeken, R. (2005). Forms of causal explanation. *Foundations of Science, 10*(4), 437–454. https://doi.org/10.1007/s10699-005-5357-3

Wilson, C. (2001). Decolonizing methodologies: Research and Indigenous people. Review report. *Social Policy Journal of New Zealand, 17*, 214–217.

Wittgenstein, L. (2009). *Philosophical investigations*. (G. E. M. Anscombe, P. M. S. Hacker, & J. Schulte, *Trans.*; 4th ed.). Blackwell Publishing. (Original work published 1953).

**Publisher's note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

**Jack Reed** is a Ph.D. candidate at the University of Edinburgh. He investigates whether and/or how mobile devices and networked spaces influence how young people experience residential outdoor education.