Psychological transformation of the 'self' towards eco-sensitivity through high-risk nature-based sports: a South African context

Nicolette Human [a,*] and Barend Johannes Marthinus Steyn[b]

[a]Department of Sport and Leisure Studies, University of Pretoria, Pretoria, South Africa;

[b]Department of Psychology, University of Pretoria, Pretoria, South Africa

*CONTACT Nicolette Human. Department of Sport and Leisure Studies, University of Pretoria, Pretoria, South Africa. Email: nicolettehuman@hotmail.co.za

Abstract

Mindless actions in the form of environmentally degrading behaviour constantly threaten the sustainability of healthy ecosystems. In this paper, the intrinsic value of strengthening the bond between humanity and nature through high-risk nature-based sports participation is explored. This interpretative phenomenological analytical study considers lived experiences of 10 skilled South African high-risk nature-based sports participants who take calculated risks through precautionary measures. Participant's activities are performed in the wilderness in isolation from civilisation with minimal availability of human and medical resources in case of an emergency, which give rise to the term 'high-risk.' Phenomenological traditions from Heidegger and Merleau-Ponty navigate a hermeneutical understanding of theirbodily-being-towards-death. Evidence of meaningful psychological transformation towards an eco-sensitivity by way of high-risk nature-based sports participation is analysed, through first-hand narratives via semi-structured interviews. The sensitizing process of the 'self' can be effectively articulated in the synchronous relationship between the Eigenwelt, Mitwelt and **Umwelt.**

Keywords: High-risk nature-based sports participation; eco-centrism; eco-sensitivity; interpretative phenomenological analysis; mindfulness

Introduction

Environmentally degrading human activities have collectively caused an imbalance in ecosystems and the depletion of the biodiversity of life (Education, 1990; Martin et al., 2016; Steg & Vlek, 2008). Even though humans are equipped with conscious thoughts, most of their decisions and actions continuously exploit and degrade natural resources (Atchia, 2002). Mindless actions persist in the form of environmentally degrading behaviour, which exhaust the earth's life-support network (Davis, 2008; Hardin, 1968).

Since a large section of the South African population are environmentally uneducated, they do not regard the impact of their environmentally degrading behaviour as threatening to healthy ecosystems. Environmental education is happening haphazardly in South African schools (Rosenberg et al., 2009). South African societies need to invest in sustainable ways of learning and acquiring knowledge, skills, and abilities to be more environmentally sensitive and become environmental responsible citizens. Fostering an environmental sensitivity leads to pro-

environmental citizens whose mission is to support 'a varied, beautiful, and resource rich planet for future generations' (Tanner, 1980, p. 20).

Self-awareness and attitude toward nature, play a significant role in an individual's tendency to participate in ecologically deteriorating acts such as littering. A lack of self-awareness and irresponsible attitudes motivate acts of littering (Waghorn Lees et al., 2013). True change towards more sustainable pro-environmental actions is said to happen at an individual level involving changes in their habitual behaviour and attitudes (Gifford, 2007). Provided that an individual experiences 'oneness' with nature, their emotional care for nature, allows for a strong inclination to behaviourally commit to sustainable ways of nature conservation (Schultz et al., 2002).

Feeling psychologically connected to the natural world fuels sustainable pro-environmental behaviour, where individuals are willing to change their habits and attitudes to serve these sustainable practices (Dunbar, 2004; Matthews, 2006; Schroll, 2007). This connectedness with or so-called psychological inclusion of nature by an individual, where they position nature within their scope of justice, reveals a sense of respect and responsibility towards nature (Opotow & Weiss, 2000). A feeling of oneness with nature that allows the individual to view humans as one of many parts of nature where the interdependence of people and nature, as well as the well-being of the ecosystem are valued (Opotow & Weiss, 2000). To understand people's belongingness in the ecosystem and the human-nature relationship, it can be hermeneutically interpreted, where the whole (ecosystem) can only be comprehended as it correlates to its parts (natural world and humans), and vice versa, the parts can only be comprehended as they link to the whole (Tomkins & Eatough, 2018).

Most people have progressively become estranged from the outdoor natural world by constructing their lives inside technologically built environments, nurturing the idea that humans are *apart* from nature (Acar & Özyavuz, 2013; Schultz et al., 2002). An eco-centric perspective does not view the natural world as a separate entity, which isolates itself from humanity. Eco-centrism advocates that humankind should be viewed as being *a part* of nature (Davies, 1996; DeMares & Krycka, 1998; Lundmark, 2007). Humans are thus interlaced with the health and survival of the natural world within a larger functioning network (Thompson & Barton, 1994).

In contrast with eco-centrism, which represents a deep and caring relationship with nature, the ego-centric mindset views humankind above nature and has the privilege to dominate and exploit nature for one's own benefits (Versfeld, 1991). According to Versfeld (1991), the self-creation of the ego, that manifests itself as a sense of 'I,' desires absolute power, ownership and deems nature as 'things' and 'property.' This specific use of the self-created ego can be traced back to the significant contribution by Erich Fromm in his explication of the function of the desiring ego in the manifestation of the *having* mode (Fromm, 1985).

An eco-centric mindset does not consider humans as the apex of living organisms, but rather views them as an integrated part of a whole. Integrated beings value the integrity of fauna and flora and recognize their oneness with the Earth (Versfeld, 1991). Versfeld (1991) makes it clear that the origin of environmental degradation rests in the perceptions of ego-centric humans, who have not developed a deep respect for fauna and flora, and do not consider them as 'beings' but rather as 'objects' in their domain. When an individual has an I-It attitude towards nature, where they view its elements as objects to be subdued, it brings forth ego-centric behaviour (Buber & Smith, 1987).

In contrast, an I-Thou relationship with nature correlates with eco-centric notions of respectfully communing with the natural world (Buber & Smith, 1987). McCluggage (1999, p. 11) translates the I-Thou and I-It relationship to a good and poor skier in the following description:

> The poor skiers fight the mountain, attacking it with their tiny poles, their miniature spirits, and slashing at it with their edges. The good skiers join the mountain, commune with it, go with it. The good skiers have an I-Thou relationship with the mountain; there is union.

An individual's authentic and true self holds the key to set nature free from human possession, allowing an intimate connectedness, where both nature and human beings have the space and time to accept and respect each other (Versfeld, 1991). Achieving oneness, allows the interwoven human being the wisdom to acknowledge that when they confront nature, they confront themselves and when they understand nature, they understand themselves (Glendinning, 1994 as cited in Brymer & Gray, 2010). The recognition entails that both nature and humans affect and are being affected by each other. The interwoven concept or sense of oneness is illustrated by Muir (1911, p. 110): 'when we try to pick out anything by itself, we find it hitched to everything else in the Universe.'

Through eco-centric lenses, the true 'self' is potentially unlocked when people experience and surpass society's norms by re-visiting the wilderness, harmonizing with nature and facing their mortality (Duerr, 1985). The wilderness provides a natural and organic landscape, with minimal human interference 'where one can discover one's relationship with the living Earth, indeed with life itself' (Hawes et al., 2018, p. 11). Participation in high-risk nature-based sports is considered to be a form of unconventional physical activity, where individuals have sufficient time to explore the wilderness and rediscover their relationship with the Earth, and naturally with life itself (Hawes et al., 2018; Sirch, 2014).

Eco-centric management reflects principles of ecological justice and an eco-sensitivity in recognizing the intrinsic value of nature and all living organisms, rather than to exploit them as humans see fit (Bosselman, 2006). A basic characteristic of ecological justice is the acknowledgement that we share environments (Aløe et al., 2005). Sharing environments with other organisms constitutes being part of a larger functioning ecosystem (Thompson & Barton, 1994). In this paper, the author explores the idea that high-risk nature-based sports can serve as a gateway to the discovery of eco-sensitive principles that encourages pro-environmental behaviour and ecological justice. The identified principles can then be applied in schools and sport organizations through the design of appropriate environmental educational programmes, with the hope to be a sustainable way of conserving our natural heritage.

Considering the high risks of injury and death involved during the nature-based sports participation, high-risk nature-based sports athletes are reminded of their own mortality and of their 'bodily-being-towards-death' during their activity (Heidegger et al., 1962, p. 179). Facing one's own death, in fear and seriousness, is a manner for the 'self' to become whole and authentic (Breivik, 2011). Authentic moments represent the times where humans are most at one with themselves, experiencing 'mineness' (Moran, 2000, p. 240). Becoming your true 'self' requires a mindful awareness of purposefully paying attention in the present moment to the unfolding of experiences, moment by moment in a non-judgmental manner (Kabat-Zinn, 1994). Living authentically further involves taking accountability for oneself and the life tasks embarked on (Breivik, 2011). The concept of the 'self' and its relation to the world is a focal point in this paper.

The sensitizing process of the 'self' in terms of the Eigenwelt, Mitwelt and Umwelt

The sensitizing process of the 'self' manifests in three surroundings worlds, namely the *Eigenwelt* (relation to the self, inner world), *Mitwelt* (social world) and the *Umwelt* (physical world) (Binswanger & Needleman, 1963). The *Eigenwelt* (inner world) signifies the individual's self-awareness and their ability to relate to their 'self' or 'being' (May et al., 1995). It is within the *Eigenwelt* that an individual has the opportunity to discover their true self. An individual's relationships and interactions with other people is characteristic to their *Mitwelt*, including their social and cultural environments. Within their *Mitwelt* (social world), individuals choose to either integrate or isolate themselves, to exist separately from society and distinguish themselves from others or to conform to social norms. The *Umwelt* (physical world) represents the environment and the physical world. An individual's physical environment branches into their built environment and natural environments, wherein they are able to tend to their biological needs (May et al., 1995). The natural environment typically includes bodies of water, mountains and rock, vegetations such as trees, plants, grass, and animal species.

Marcel (1961) explains the interconnectedness of the 'worlds' and the way the 'worlds' receive a person and connects to it. When a person wants to participate in and take responsibility of and for other people, allows an *openness* of the world to that person, which connects them. An openness means liberating the 'self' from any barriers between an individual and their surrounding 'world,' allowing for a pure vulnerability. Vulnerability permits individuals to build trust and become whole-heartedly engaged in an intimate relationship, where they are able to give and receive.

When a person wants to dominate others and views them as a means to satisfy their own wants and needs, the world *closes* to that person and they become disconnected. A closedness causes individuals to build up physical and psychological barriers that blocks any form of intimate interaction with their surrounding 'worlds.' The authors relate the openness to the 'world' to authentic living and a closeness to the 'world' as a display of inauthenticity.

Versfeld (1991, p. 205) clarifies the interconnectedness and synchronous nature of the *Eigenwelt, Mitwelt* and *Umwelt* in the following statement: 'It is a great and fundamental principle that whatever we do to things, we do to ourselves, and whatever we do to each other, affects what we do to things.' The origin of the dominating and exploitive relationship with nature can be traced back to the split in the *Eigenwelt* between the true self and 'egoistic self-love or *amor concupisentiae'* as labelled by Augustine (Versfeld, 1991, p. 223).

Essentially, the sensing organs of humans allow for an interaction between the *Eigenwelt* and the *Umwelt* (Versfeld, 1991). An example of a *sensitizing process* between the human body (*Eigenwelt*) and nature (*Umwelt*) through movement (utilizing the sensing organs including the eyes, ears, skin, nose and mouth) is described by Van den Berg's (1950) encounter with natural objects during mountain climbing. His experience is termed as *depasseren*, when he puts his pain and feelings into the mountain he climbs and becomes one with the natural elements (Van den Berg, 1950, p. 403). *Depasseren* requires a sensory sensitivity or kinesthetics sensation (Csikszentmihalyi, 1975; Van den Berg, 1950).

Merleau-Ponty asserts that being-in-the-world is inseparable from *embodiment* (Matthews, 2006). The focus is directed to the manner in which all of human subjectivity is articulated through the body: through seeing with one's eyes, hearing with one's ears, speaking as an interaction between one's tongue, breath and vocal cords, and moving with one's legs and arms

(Matthews, 2006; Merleau-Ponty & Smith, 1962). He further expresses that something perceived by an individual is an *inter-sensory entity*: 'any object presented to one sense, calls upon itself the concordant operation of all the others' (Merleau-Ponty & Smith, 1962, p. 317). Every sense is 'hitched' to all the other senses in the bodily being.

The first step in the phenomenology of embodiment is to differentiate between what Husserl terms *Körper* (physical body) and *Leib* (animate lived body) (Moran, 2013). Merleau-Ponty and Satre interpret the *Leib* as 'Flesh' and *Körper* as a physical, material object that is susceptible to the laws of nature such as gravity and impact (Moran, 2013). The English translation of 'corpse,' encapsulates this idea of an inanimate or 'thingly body,' compared to the 'living body' (*Leib*), which is experienced in a particular subjective and first-person manner, involving conscious thought. The living body is further conceptualised by Husserl as 'mineness,' since it is an organ of a person's will. Husserl makes it clear that the living body (*Leib*) also includes the physical body and through an embodiment or intertwining (*Verflechtung*) becomes a *Leibkörper* (Moran, 2013).

In high-risk nature-based sports, immediate and cognizant reactions to different environmental stimuli and its occurrences are essential to survival (Breivik, 2011). Van den Berg (1972, p. 51) interprets the way we perceive our bodies through reflection and pre-reflectivity. His interpretation of the body is similar to the traditions of *Körper* and *Leib*, and begins by distinguishing between *having* and *being* our body.

From a reflective stance, the body is viewed as a material object, which humanity attempts to understand through physiological dissection (Van den Berg, 1972). By *having* a body, a form of distance is created between the 'self' and the body part referred to. For example, I *have* a hand, which can be physiologically dissected into blood vessels, muscles, nerves and bones. A pre-reflective stance considers that the 'self' and their body are intertwined (*Verflecht*) (Van den Berg, 1972). Essentially, 'talking about one's body means talking about oneself' (Van den Berg, 1972, p. 50).

Embarking on a high-risk nature-based sports adventure affects the emotional, spiritual and physical spheres of an individual (Brymer & Gray, 2009). The transformational experience can only reveal an element of oneself when the individual is totally submerged in nature and relies on its forces (Brymer & Gray, 2009), and seeing it as an intimate partner and continuation of the 'self' (Birrell, 2001; Schultz et al., 2002). By way of *depasseren*, which allows for a profound immersion and *oneness* with nature, an individual can enter a state of flow (Brymer & Gray, 2009; Van den Berg, 1950).

Method

Design

A qualitative research design involving a non-probability key informant sample was selected as most appropriate for the purpose of this study. It involves the interpretation of an individual's lived experiences who possess specific knowledge and expertise on the studied phenomenon. The studied phenomenon included if and how high-risk nature-based sports participation can facilitate eco-sensitivity, as viewed from a South African context. Therefore, the research question: 'How do skilled South African high-risk nature-based sports participants develop an eco-sensitivity as a result of their participation?' is answered by following the theoretical underpinnings of Heidegger's and Merleau-Ponty's interpretative phenomenology and the

context it provides for the implementation of the Interpretative Phenomenological Analytical (IPA) method. For a more nuanced language, the term 'skilled' has been used, to distinguish high-risk nature-based sports participants from a beginner or non-participants of the sport.

Interview participants

Since an interpretative study's quality and depth of the identified themes are determined by its sample, it is kept small (Durrheim et al., 2002). Ten 'skilled' South African high-risk nature-based sports athletes in their respective fields, are selected. In this case, skilled opposes a novice (beginner) participant. These athletes participate in one or more high-risk nature-based sports activities and are above 18-years of age. Participants in this study included FIVE males (mean age = 36 years) and FIVE females (mean age = 34.4 years) ranging in experience level of two to 22 years in their respective high-risk nature-based sports activity/activities. These activities are practiced altogether at least three to four times a year, and include their preparation/training and expedition/tour/race.

White-water kayaking, downhill mountain biking, ocean rowing, high-altitude mountaineering, scooter safari, mountain running, rock climbing, adventure racing, ocean wave surfing, river canoeing, and mountain hiking encompassed the high-risk nature-based sports activities in this study. Each participant in this data set was assigned a name code, which was allocated to them based on the order in which an interview was conducted with them (e.g. High-risk Sports Participant 1 (male) – HRSP001 M; or High-risk Sports Participant 9 (female) – HRSP009F). The name coding ensures that their identities are kept anonymous and allows for privacy and confidentiality (Jones, 2015).

High-risk nature-based sports activities

With the many diverse meanings attached to the terminology of 'extreme sports,' this study sets its own criteria for 'high-risk nature-based sports activities' (Cohen et al., 2018). The criteria provide the reader with a better understanding of why these activities are categorized as high-risk sports, in the South African context. Some critics may argue that the above-mentioned activities cannot be classified as 'extreme' activities, since the 'risks' involved are similar to traditional South African sports such as rugby, cycling, football, or swimming. Nevertheless, the high-risk nature-based activities in this study, even in their lowest form are performed in an uncontrollable and unpredictable natural environment, with minimal societal intervention (Hawes et al., 2018), compared to traditional South African sports settings. These activities contradict the 'normal behaviour' of citizens, in which individuals would generally seek safety and avoid high-risk situations (Fletcher, 2008). Hence, in this study, 'high-risk' activities refer to a so-called deflection or deviation to what is typically considered as a 'normal,' 'traditional' or 'conventional' sport (Cohen et al., 2018).

Expeditions are performed in isolation from civilisation with minimal availability of human and medical resources in case of an emergency (Sirch, 2014). The emphasis is on 'nature-based,' which excludes activities in artificial settings. It includes wilderness and remote areas, where individuals are essentially removed from the modern technological society and civilisation involving cities, towns, roads, and infrastructures (Hawes et al., 2018). The spatial dimension of where the activities are performed, add to the notion of them being a higher risk (Tomlinson et al., 2005). These activities involve the interaction of natural elements, which are oriented towards a combination of endurance, adventure, risk, and action. Risk in sport equates to the probability of an individual encountering physical danger (Rossi & Cereatti, 1993). The

'high-risk' factor is embedded in the participant's ability to safely mitigate challenging and unpredictable environmental conditions; complete long intense distances; and endure long-lasting movement tasks in the ever-changing outdoors (Sirch, 2014). The likelihood of a mismanaged action can lead to serious injury or fatality (Brymer, 2005).

These nature-based activities are not readily or typically performed by the average South African citizen. Furthermore, participation requires the physical attainments of unusual body movements and body-positions via the utilization of specialized equipment and/or the disuse thereof (Sirch, 2014) Deliberate risk-taking is involved (Llewellyn & Sanchez, 2008; Slanger & Rudestam, 1997), in which the participant's survival depends on precautionary measures (Krein & McNamee, 2007; Pain & Pain, 2005).

Data collection

Data was collected through one-on-one semi-structured interviews, guided by a semi-structured interview schedule. Telephonic and face-to-face interviews were audio-recorded while concise hand-written notes were taken. Both open-ended and a few close-ended questions were asked during the interviews, which enabled data rich conversations with each participant. A five-to-eight-hour manual transcription of each recorded interview followed.

IPA is implemented to organize the transcribed data from the semi-structured interviews. The goal of this analysis was 'to explore in detail how participants are making sense of their personal and social world, and the main currency for an interpretative phenomenological analytic study is the meanings that particular experiences, events, and states hold for participants' (Smith et al., 2007, p. 54). In this case, the purpose was to peculiarly explore the high-risk nature-based sports athlete's understanding of their personal and social world in terms of their high-risk nature-based sports participation and the specific meanings their experiences hold. Hermeneutics (interpretation) and ideography (representation of ideas) is firmly rooted within this phenomenological analysis (Smith et al., 2009).

A four-stage iterative process was applied, encompassing the (1) searching of themes, (2) connecting of themes, (3) continuing of the analysis with the next transcript, and (4) the write-up of themes into concluding statements (Smith et al., 2007). The searching of themes involved the initial encounter with the data (text) and identification of preliminary themes. Connecting of themes required grouping the preliminary themes into clusters, which were then tabulated into primary (superordinate) and secondary (subordinate) themes, which represents a theme topic. The master list of themes, including applicable quotes from the high-risk nature-based sports participants, were linked to relevant literature, and interpreted by the researcher. Throughout the research process the researcher accepted and was aware of how her subjective role may influence the findings and interpretation (Merriam & Tisdell, 2016).

Results and discussion

Eigenwelt, Mitwelt and Umwelt

The psychological transformation of the 'self' can be clearly articulated by the synchronous and interconnectedness between the *Eigenwelt, Mitwelt* and *Umwelt*. To understand the relationship of the participants' 'self' in the articulation with their *Eigenwelt, Mitwelt* and *Umwelt*, they have to synchronise their 'self' (*Eigenwelt)* with other people *(Mitwelt)* and their natural world (*Umwelt)*. According to Esbjörn-Hargens (2009), the essential transformation is

a shift in understanding of just 'me' (ego-centric) in this world, towards an understanding of 'all beings' (planetcentric) and all of reality (kosmoscentric). This understanding is emphasised by participants who consider themselves part of or 'hitched' to the natural world and as part of a larger functioning network:

> There is no US without the [natural] WORLD. So, I saw this picture once, it is a circle it is about the egotistic and ecotistic or ego-centric versus eco-centric: A lot of people see themselves in the middle with the circle around them. But we are actually in the circle with nature. We are ALL in the same circle—you are not separate form it or it doesn't revolve around [just] you (HRSP007 M).

This belief of participants, permit them to see themselves as integrated beings, who are now able to value the integrity or wholeness of the Earth's fauna and flora. They recognize their *oneness* with the Earth, because they have come to realize that they are not the apex of all living organisms, but rather an integrated part of a whole. This is amplified by the remark that 'we are ALL in the same circle' and that humans are not separate from it.

The 'self' merges with the natural world

Participants spend a considerable amount of time in nature during their high-risk nature-based sports endeavours, which enable them to form an intimate bond and *Verflecht* with the natural elements. HRSP009F describes that the intimate but challenging bond she develops due to the extensive period of time she spends in nature during her adventure races, creates an appreciation and 'biophilia' (Wilson, 1984):

> Because you spend such a long time out there. You create a bond with nature. It is something you appreciate, but it also challenges you in the same breath.

HRSP004F further describes a *Verflechtung* with nature in that 'nature is a part of you and it becomes an extension of you.' HRSP003 M, notes a merge with nature in terms of sensing changes in weather, without any weather reports, but just by observing nature. The merge between the 'self' and nature is illustrated as 'blending' in with nature:

> You can actually sense when the weather is about to change. I have become so good at monitoring the weather, that I can look at it, even if there are no clouds, and I assume at a certain time, things are going to change … And at that time, it happens … it rains. I can [sense] and see how long it will take, with no weather reports, just looking at nature, right. So, you blend in nature.

White-water kayaker, HRSP001 M continues this sense of blend or becoming at one with nature, by stating that his feelings become in tune with the way the river 'feels.' The type of river elicits a certain emotion within him, similar to the character of the river:

> If I am out there on the river, I feel at one with nature. If that makes sense. It depends on what type of river it is. If it's a heavy white-water river, it makes it so much more exciting! If it's a calmer river, then it is more of a nature paddle on the river. You submerge yourself within nature … it's because of rivers you get to know like the palm of your hand. You know the different cracks and exactly where each crack leads to.

This calls for the participant to *depasseer* with the river, since he strives to experience and discover every aspect of the river and rapid, intimately:

> I want to experience every single aspect of that rapid to its fullest. So, I will scout it, I will go over left and right and will go back again and will try and catch 'Eddies' the whole time and catch waves or surf and do a cartwheel in the rapid. You want to live that rapid. You want to feel that water as it flows through that section. Even experience the rapid under water and hear the sound it makes.

The psychological connectedness to nature is thus portrayed by the participant as an experience of being *part* of the natural forces and energy. Another experience of the psychological inclusion of nature, is philosophically explained by high-altitude mountain climber, HRSP008F, who desires to be accepted by nature. She describes how the mountain, who is a girl and God's creation, allowed her to summit Her. In this way she acknowledges that the mountain (nature) is a 'being,' just like she is a being.

She approaches the natural world with an *I-Thou* attitude, which allows her to commune with the mountain. It is evident that she views the mountain through an eco-centric lens, as opposed to an ego-centric outlook, who would deem nature as a thing or object to be subdued:

> I almost feel the need to be accepted by this mountain. Everest is a girl, she can be temperamental, she can throw all these winds and blows at you, but she almost allows you to summit her. At the same time, I also know she is a mountain, she is God's creation. She almost identifies the respect she is approached by and lets in, and it's almost like you become one with her.

Her encounter indicates that she has an *openness* to the mountain, which permits the mountain to receive her. Acting with respect towards the mountain, suggests that nature is now intrinsically considered as *part* of the participant's scope of justice (Opotow & Weiss, 2000). To engage in a relationship with nature, she has to remove any barriers that might hinder her to build trust and be vulnerable with the natural elements. She demonstrates the removal of a barrier such as 'not putting on earphones,' with the intention to hear and listen what nature is telling her in terms of 'a little crack' in the mountain.

This allows nature to warn her when she is in danger, so that she is able to survive. The human-nature relationship between her and the mountain involves a *give-and-receive*. She gives all her senses over to nature, and in turn, she is able to feel the difference in air and pick up changes in the mountain before she can even see them, which can save her life:

> I don't put on earphones if I trek, that little crack, you hearing it in advance could save your life. Senses are heightened. The air feels different. Sense of hearing, I appreciate the most, because I can pick up stuff before I see them (HRSP008F).

A *oneness* between the 'self' and nature (*Umwelt*) is expressed, where nature 'lets you in,' because She is approached with respect. An intimate relationship with nature can start to bloom, since the 'self' has become sensitized towards their *Umwelt*.

Embodiment

Merleau-Ponty and Smith (2002) describes that we only get to comprehend the world because we are a mind with a body, rather than a mind and a body. As a result of their high-risk nature-based sports participation, participants have come to the realization that their mind and body are not separate entities, but rather a synergy that assists them in bringing about extraordinary physical and psychological transformations. Embodiment is well articulated through the high-risk nature-based sports participants' experiences through what they describe as a 'merge' with their body:

> I think I have MERGED with my body over the years. Where there was a time where I was looking at my body, where now I feel like you are your body. I saw it at a definite stage when I was younger and I might have been doing things for different reasons or whatever. You kind of see yourself as creating your body, you know you are making your body, it is almost like you are outside—you detach it from your person, because maybe you don't like your body or whatever psychological, you know. I definitely feel that I got to a point where I don't care about what people say or whatever or presumptions of what my body should be or look like. My body is now becoming the activities I choose and do. The more you do them, the naturally your body just becomes that, and then you start feeling one with yourself, I guess (HRSP007 M).

The merge the rock climber, HRSP007 M, experiences, with his body correlates to pre-reflective notions of *being your body*. A pre-reflective stance considers that the participant's 'self' and their body are intertwined (*Verflecht*) (Moran, 2013; Van den Berg, 1972).

The physiological perspective, where the participant has previously seen his body as a *Körper* by what he describes as 'looking at my body' and that 'it is almost like you are outside [of your body] – you detach it [body] from your person,' has now transformed into an understanding that he feels that 'you are your body' – an animate lived body who creates their 'self.' He, now, experiences his body as an active agent, which he interprets with regards to the type of situation and 'the activities he chooses and does' and that the 'more you do them, the naturally your body just becomes that' (Breivik, 2011; Merleau-Ponty & Smith, 1962).

The participant acknowledges that through his high-risk nature-based sports participation, he experiences an intertwining process of his bodily-being-in-this-world as a *Leibkörper* (Moran, 2013). Identifying his body as a 'being body,' rather than 'having a body,' creates a closeness with his *Eigenwelt*, since talking about his body means talking about his 'self' (Van den Berg, 1972). This closeness enables a self-discovery, self-acceptance and reaching self-actualization, where his mindset has transformed from being focussed on materialistic rewards to valuing and appreciating the intrinsic reward and being happy with who he is:

> You start to realize it starts getting better and you realize stuff about yourself and it is more of a self-driven, intrinsic reasoning behind it—and that I feel is also more sustaining. [Compared to] where the materialistic or the extrinsic goals kind of fade away … I think I strive to get to know myself better. The further I put myself into different scenarios and see how I react and I get to know myself better. So, a big benefit is literally being happy with who you are; accepting yourself and happy being out there, I guess—the freedom and happiness you get from it (HRSP007 M).

Self-acceptance leads to a 'transcendence of individuality' and 'fusion of the world,' where the participant becomes in touch with their own physical reality (Maslow, 1971). When the 'self'

is in touch physically and psychologically with their body and natural world, the true self emerges.

Finding her 'true self' is described by HRSP010F, who explains that ocean wave surfing has led her to become a 'happier, healthier, humble and more open version' of herself. She asserts that with participation, which allows being close to nature facilitates this authentic lifestyle:

> It becomes a lifestyle and surfing made me a much happier, healthier, humble and more open version of myself. My quality of life is better being so close to nature and I am exposed to so much more. The lifestyle is incredible and life-giving—an escape and safe place for so many people where class, age, status or race don't matter. I love that!

The 'open version' of herself suggests a *self-liberation*, which introduces the experience of transcendence as if becoming free of something or someone (Shapiro et al., 2006). Essentially, the participants have become free from the materialistic world that disconnects them from nature and encourages an ego-centric self.

Development of sensory sensitivity

Participants collectively utilize their senses during their high-risk nature-based sports activity and develop high levels of sensory sensitivity (Csikszentmihalyi, 1975). Participants demonstrate an enhanced ability to detect potential 'distracting' or 'uncomfortable' internal and external stimuli during their activity (mindful awareness), and apply actions that refocus and direct bodily senses on the present task (mindful attention) (Gardner & Moore, 2007):

> You become very aware of how you feel and how your body reacts to different circumstances. You put it under so much stress. At a point my body is going to show fear, and I need to be able to handle that (HRSP009F).

The participant is reminded of her finitude and bodily-being-towards-death when she says her body is going to show 'fear,' but since she handles it with seriousness, she is able to become her authentic and true 'self.'

Participants experience a sensitizing process of becoming highly sensitive and attentive to specific environmental stimuli through kinesthetics sensations. Downhill mountain biker, HRSP002 M, describes how all his senses are connected and the way they relay external stimuli enables him to direct his body accordingly. He perceives the environmental stimuli as an *inter-sensory entity*:

> For us, it is to think very quickly! Your visual sense always. Your memory—you know we pre-run a track using your memory. Your Body—understanding your body's position, processing. So, you process and deciding on evaluating the time, that is either made or gained on your feeling. And then try and better it or maintain it throughout the track.

Emotional self-regulation is part of the sensitizing process experienced by participants (Castenier et al., 2010). To some, having self-awareness in their activity considers 'knowing where [they are] coming form, knowing where [they are], and where [they are] going (HRSP007 M).' Participants direct their attention to bodily sensations felt during their activity, such as 'how [their] heart is beating, how [they] are breathing, pains and changes in [their] body (HRSP003 M).' Participants further state that they are 'being led to all of [their] senses, and led to all [their] emotions, spiritually' during their participation. Bodily awareness,

according to participants, require a 'presence to what is happening to [them] right now, around [them], inside and outside of [them] (HRSP003 M).'

Since their awareness to their internal conditions increases, participants have become more *private self-conscious* (Fenigstein et al., 1975). HRSP003 M provides an example of how he becomes in synch with his equipment during an ocean row, by recognising when something is wrong with the gear through *sensory sensitivity*:

> You can even feel if there is a crack in the ore, just by holding it. So, you do merge, they become part of you, you become one with it, because they now become an extension of you. Even if you are sitting, if something is wrong with your seat, you will feel it is not smooth anymore, and you must stop and do something about it. You always know if something is wrong, so you merge with the equipment. You become one with it, because you know.

Mindful awareness monitors the inner and outer environment of the participant, acting as a 'detector,' which consciously scans and records stimuli through their bodily senses (Brown et al., 2007). Mindful attention acts as a 'navigator' in which the consciousness is directed towards heightened sensitivity to a specific experience (Brown & Ryan, 2003). HRSP001 M explains how he safely navigates himself on water through mindful awareness and attention, through what he terms as 'reflex and focus:'

Reflex and focus are constantly in play with one another. You use them 90% of the time and that's because of balance in your kayak and to look where you want to go. If things don't work out with direction then you focus on doing a 'reflex,' which will allow you to change direction.

As a result of displaying mindful awareness and attention, an enhanced state of flow can easily be entered. The unification of mindful awareness and action is facilitated when participants centre their attention on a limited stimulus field (Csikszentmihalyi, 1975).

A 'narrowing of consciousness' is experienced by participants, when their focus is on the present moment, and the 'past and future' disappears (Maslow, 1971). The participants' memory input is so zoomed into the task, that they cannot be distracted by anything else:

> It was almost like, 1, 2, 3, it is steps, let's go, it is one way, I mean the summit is that way, I am not thinking about anything else, I am not thinking about how I put the first step, and when it became harder—I was like 'no, problem, I am not worried,' instead of not counting steps, now, I am going to count, I am going to do 20, and then when I do 20 I am like 'YES!,' and when 20 is starting to become tough, I am going to do 10, and there was a point close to the summit, I am just like 'okay, just 5.' So, that is really in the zone, it is almost like focused on this specific thing, and nothing else can distract me from this thing. You are not distracted and it just flows (HRSP008F).

Outcome of the sensitizing process

Participants in this study have evidently reached an environmental sensitivity or eco-sensitivity. Environmental sensitivity embodies a sense of care, compassion, respect and positive affinity towards the natural environment (Peterson as cited in Nunez & Clore, 2017). HRSP004F confirms an eco-sensitivity, which has been facilitated by her high-altitude mountaineering participation. She describes how the extensive period of being 'in touch' with natural elements has developed a greater appreciation and sensitivity towards rock:

> I didn't appreciate rock too much and that developed a much greater appreciation—perception of the texture of the rocks and layers. The more you work with rock you can differentiate between the quality of rock and what is nice rock or not so nice rock and the types of plants that grow in it.

Mindful actions are being carried through to participants' daily living, which address mindless actions of deteriorating the Earth. This is done through continuing environmental education, facilitated through high-risk nature-based sports participation, to communities with the aim to develop more environmental responsible citizens. HRSP003 M describes how his high-risk nature-based sports activity has changed his whole perspective towards the fauna and flora and how his sensitivity and awareness contributed to being a catalyst for change by educating those in his community:

> I mean I didn't care before. Actually, I grew up in an environment where even animal abuse was okay. And seeing what I have seen, doing what I have done, where I can see some of the things were okay are not okay anymore. And, that changes how I have seen nature. Now, I am an activist, although I am not active on social media. But if someone was to do something, I would go to them and say *are you aware what this does* – so I give out education now based on the education I have received.

Conclusion

From a South African context, high-risk nature-based sports participation seems to enable a transformational experience of the 'self' becoming sensitized towards their *Eigenwelt*, *Mitwelt* and *Umwelt*. The extensive period of time spent in the wilderness permits an extraordinary communion between nature and the participants, and brings forth a *Verflectung*. Through the sensitizing process and *depasseren*, participants are able to discover their true and authentic self and display mindful actions, that considers all living organisms as integrated beings. The above associated principles of an environmental literate being can be applied in schools and sports organizations through the design of appropriate environmental educational programmes. It can serve as a sustainable option that addresses mindless and environmental deteriorating behaviours of the South African society.

In final conclusion of this paper, Suzuki (2007) captures the essence of this *oneness* by referring to a deep identification that can transcend the academic dilemma with the duality-reality of human nature. Suzuki (2007, p. 92) quotes the following poetic words of Traherne to explain the fusion between the 'self' and world: 'You never enjoy the world aright, till the Sea itself floweth in your veins, till you are clothed with the heavens, and crowned with the stars: and perceive yourself to be the sole heir of the whole world, and more than so, because men are in it who are every one sole heirs as well as you.'

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Nicolette Human is a Master of Arts graduate in the field Sport and Leisure Studies specialising in Sport and Recreation Management, at the Department of Sport and Leisure Studies at the University of Pretoria, South Africa. Her research interests mainly include environmental education and management, high-risk nature based sports participation, and eco-sensitivity.

Barend Johannes Marthinus Steyn is an Emeritus Professor at the University of Pretoria. He is also a part-time lecturer and researcher in the Department of Psychology in the Faculty of Humanities at the University of Pretoria, South Africa. He is a sport psychologist in practice for 34 years preparing sport participants and teams for international competition. His main research focus is the reciprocal relationship between high performance and psychological well-being in the sport context, as well as in other performance-evaluative contexts. He has published numerous peer-reviewed articles.

References

Acar, H. (2013). Landscape design for children and their environments in urban context. In M. Özyavuz (Ed.), *Advances in Landscape Architecture* (pp. 291–324). InTech. https://doi.org/10.5772/55751

Aløe, H. F., & Kristensen, E. S. 2005. Organic agriculture in a global perspective. In J. D. Wulfhorst & A. K. Haugestad. Eds., *Buildinmunities: Ecological Justice and Global Citizenship* (pp. 131–144). Rodopi. Retrieved from http://orgprints.org/3855

Atchia, M. (2002). The coming of age of environmental education and its new tracks for the 21st century. *The International Journal of Humanities and Peace*, 18(1), 54–58.

Binswanger, L. (1963). *Being-in-the-World: Selected papers of Ludwig Binswanger*. (J. Needleman, Ed.). Harper Torchbooks.

Birrell, C. (2001). A deepening relationship with place. *Australian Journal of Outdoor Education*, 6(1), 25–30. https://doi.org/10.1007/BF03400741

Bosselman, K. (2006). Strong and weak sustainable development: Making differences in the design of law. *South African Journal of Environmental Law and Policy*, 13(1), 39–49.

Breivik, G. (2011). Dangerous play with the elements: Towards a phenomenology of risk sports. *Sport, Ethics and Philosophy*, 5(3), 314–330. https://doi.org/10.1080/17511321.2011.602585

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84(4), 822–848. https://doi.org/10.1037/0022-3514.84.4.822

Brown, K. W., Ryan, R. M., & Creswell, J. D. (2007). Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological Inquiry*, 18(4), 211–237. https://doi.org/10.1080/10478400701598298

Brymer, E. (2005). *Extreme dude: A phenomenological exploration into the extreme sport experience*. (Unpublished doctoral thesis). University of Wollongong,

Brymer, E., & Gray, T. (2009). Dancing with nature: Rhythm and harmony in extreme sport participation. *Journal of Adventure Education & Outdoor Learning*, 9(2), 135–149. https://doi.org/10.1080/14729670903116912

Brymer, E., & Gray, T. (2010). Developing intimate "relationship" with nature through extreme sports participation. *Leisure/Loisir*, 34(4), 361–374. https://doi.org/10.1080/14927713.2010.542888

Buber, M. (1987). *I and Thou* (R. G. Smith Ed.). 2nd. T. & T. Clark.

Castenier, C., Le Scanff, C., & Woodman, T. (2010). Beyond sensation seeking: Affect regulation as a framework for predicting risk taking behaviours in high risk sport. *Journal of Sport & Exercise Psychology*, 32(5), 731–738. https://doi.org/10.1123/jsep.32.5.731

Cohen, R., Baluch, B., & Duffy, L. J. (2018). Defining extreme sport: Conceptions and misconceptions. *Frontiers in Psychology*, 9, 1974. https://doi.org/10.3389/fpsyg.2018.01974

Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety: Experiencing flow in work and play*. Jossey-Bass Publishers.

Davies, M. (1996). Outdoors: An important context for young children's development. *Early Child Development and Care*, 115(1), 37–49. https://doi.org/10.1080/0300443961150104

Davis, J. M. (2008). What might education for sustainability look like in early childhood? A case for participatory, whole-setting approaches. In K. Yoshie & S.I. Pramling (Eds.), *The role of early childhood education for a sustainable society.* (pp. 18-25). UNESCO.

DeMares, R., & Krycka, K. (1998). Wild-animal-triggered peak experiences: Transpersonal aspects. *The Journal of Transpersonal Psychology*, 30(2), 161–177.

Duerr, H. P. (1985). *Dreamtime: Concerning the boundary between wilderness and civilization*. Basil Blackwell.

Dunbar, D. (2004). Eranos, Esalen, and the ecocentric psyche: From archetype to zeitgeist. The trumpeter. *Journal of Ecosophy*, 20(1), 21–43.

Durrheim, K. (2002). Research design. In M. T. Blanche & K. Durrheim (Eds.), *Research in practice: Applied methods for the social sciences* (pp. 29–53). Cape Town.

Education, A. (1990). *Environmental and outdoor education*. Retrieved from https://education.alberta.ca/media/3114964/eoed.pdf

Esbjörn-Hargens, S. (2009). An overview of integral theory: An all-inclusive framework for the 21st Century. *Integral Institute*, Research Paper no.1, 1–24.

Fenigstein, A., Scheier, M. F., & Buss, A. H. (1975). Public and private self-consciousness: Assessment and theory. *Journal of Consulting and Clinical Psychology*, 43(4), 522–527. https://doi.org/10.1037/h0076760

Fletcher, R. (2008). Living on the edge: The appeal of risk sports for the professional middle classes. *Sociology of Sport Journal*, 25(3), 310–330. https://doi.org/10.1123/ssj.25.3.310

Fromm, E. (1985). *To have or to be?*. Sphere Books Ltd.

Gardner, F. L., & Moore, Z. E. (2007). *The psychology of enhancing human performance: The mindfulness-acceptance-commitment (MAC) approach*. Springer publishing.

Gifford, R. (2007). Environmental psychology and sustainable development: Expansion, maturation and challenges. *The Journal of Social Issues*, 63(1), 199–212. https://doi.org/10.1111/j.1540-4560.2007.00503.x

Glendinning, C. (1994). *My name is Chellis & I'm in recovery from western civilization*. Shambhala.

Hardin, G. (1968). The tragedy of the commons. *Science*, 162(3859), 1243–1248. https://doi.org/10.1126/science.162.3859.1243

Hawes, M., Dixon, G., & Bell, C. (2018). *Refining the definition of Wilderness: Safeguarding the experiential and ecological values of remote natural land*. Bob Brown Foundation Inc.

Heidegger, M. (1962). *Being and time*. (J. Macquarrie & E. Robinson, Eds.). Harper & Row Publishers.

Jones, I. (2015). *Research methods for sports studies* (3rd ed.). Routledge.

Kabat-Zinn, J. (1994). *Wherever you go, there you are*. Hyperion.

Krein, K. (2007). Nature and risk in adventure sport. In M. J. McNamee (Ed.), *Philosophy, risk and adventure sports* (pp. 80). Routledge.

Llewellyn, D. J., & Sanchez, X. (2008). Individual differences and risk taking in rock climbing. *Psychology of Sport and Exercise*, 9(4), 413–426. https://doi.org/10.1016/j.psychsport.2007.07.003

Lundmark, C. (2007). The new ecological paradigm revisited: Anchoring the NEP scale in environmental ethics. *Environmental Education Research*, 13(3), 329–347. https://doi.org/10.1080/13504620701430448

Marcel, G. (1961). *The philosophy of existentialism*. The Citadell Press.

Martin, J. R., Maris, V., & Simberloff, D. S. (2016). The need to respect nature and its limits challenges society and conservation science. *Proceedings of the National Academy of Sciences*, 113(22), 6105–6112. https://doi.org/10.1073/pnas.1525003113

Maslow, A. H. (1971). *The farther reaches of human nature*. Arkana/Penguin Books.

Matthews, E. (2006). *Merleau-Ponty: A guide for the perplexed*. Continuum Books.

May, R., & Yalom, I. (1995). Existential psychotherapy. In R. J. Corsini & D. Wedding (Eds.), *Current psychotherapies* 5th ed., (pp. 262–292). F. E. Peacock Publishers.

McCluggage, D. (1999). *Centred skier*. Tempest Book Shop Publishers.

Merleau-Ponty, M. (1962). *Phenomenology of perception*. (C. Smith, Ed.). Routledge & Kegan Paul. Original work published 1945

Merleau-Ponty, M. (2002). *Phenomenology of Perception*. (C. Smith, Ed.). Routledge & Kegan Paul.

Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation* (4th ed.). Jossey-Bass Publishers.

Moran, D. (2000). *Introduction to phenomenology*. Routledge.

Moran, D. (2013). The Phenomenology of Embodiment: Intertwining and Reflexivity. In R.T. Jensen & D. Moran (Eds.), *The Phenomenology of Embodied Subjectivity* (pp. 285-303). Springer International Publishing, Switzerland. doi:10.1007/978-3-319-01616-0_15.

Muir, J. (1911). *My first summer in the Sierra*. Sierra Club Books.

Nunez, M. B., & Clore, M. A. (2017). Environmental literacy of K–10 student completers. *International Journal of Environmental and Science Education*, 12(5), 1195–1215.

Opotow, S., & Weiss, L. (2000). Denial and the process of moral exclusion in environmental conflict. *The Journal of Social Issues*, 56(3), 475–490. https://doi.org/10.1111/0022-4537.00179

Pain, M. T. G., & Pain, M. A. (2005). Essay: Risk taking in sport. *The Lancet*, 366(1), S33–34. https://doi.org/10.1016/S0140-6736(05)67838-5

Rosenberg, E., Nsubuga, Y., & Burtshows, J. (2009). Quality and relevance in South African schooling: Implications for human capital development in the environmental sector. Paper presented for Department of Environment Affairs. Rhodes University, Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwjigPCG1JnlAhVuQhUIHbogAPQQFjAAegQIABAC&url=http%3A%2F%2Fwww.greenmatterza.com%2Fuploads%2F9%2F1%2F5%2F3%2F91536866%2Fschools-quality-environmental-learning.pdf&usg=AOvVaw3Jl_WCJTJ9Z3rqwiA4JDLh

Rossi, B., & Cereatti, L. (1993). The sensation seeking in mountain athletes as assessed by Zuckerman's sensation seeking scale. *International Journal of Sport Psychology*, 24(4), 417–431.

Schroll, M. A. (2007). Wrestling with Arne Naess: A chronicle of ecopsychology's origins. The trumpeter. *Journal of Ecosophy*, 23(1), 28–57.

Schultz, P. W. (2002). Inclusion with nature: The psychology of human-nature relations. In P. Schmuck & P. W. Schultz (Eds.), *Psychology of sustainable development* (pp. 61–78). Kluwer Academic.

Shapiro, S. L., Carlson, L. E., Astin, J. A., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology*, 62(3), 373–386. https://doi.org/10.1002/jclp.20237

Sirch, S. (2014May 8-11). Extreme sports: An integral view and the quest for applications. Paper presented at the first Integral European Conference (IEC), Budapest, Hungary. Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwjJ0qfo2JnlAhVIWxUIHaK9DNsQFjAAegQIABAB&url=https%3A%2F%2Fwww.researchgate.net%2Fpublication%2F309374805_Extreme_Sports_An_Integral_View_and_the_Quest_for_Applications&usg=AOvVaw1SAlcrgYInlmXXn6A8CFp

Slanger, E., & Rudestam, K. (1997). Motivation and disinhibition in high risk sports: Sensation seeking and self-efficacy. *Journal of Research in Personality*, 31(3), 355–374. https://doi.org/10.1006/jrpe.1997.2193

Smith, J. A., Flowers, P., & Larkin, M. (2009). *Interpretive phenomenological analysis: Theory, method and research*. Sage.

Smith, J. A., & Osborn, M. (2007). Interpretative phenomenological analysis. In J. A. Smith (Ed.), *Qualitative psychology: A practical guide to research methods* 2nd ed., (pp. 53–80). Sage.

Steg, L., & Vlek, C. (2008). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology*, 29(3), 309–317. https://doi.org/10.1016/j.jenvp.2008.10.004

Suzuki, D. T. (2007). *Mysticism: Christian and Buddhist*. Routledge.

Tanner, T. (1980). Significant life experiences: A new research area in environmental education. *The Journal of Environmental Education*, 11(4), 20–24. https://doi.org/10.1080/00958964.1980.9941386

Thompson, S. C. G., & Barton, M. (1994). Ecocentric and anthropocentric attitudes toward the environment. *Journal of Environmental Psychology*, 14(2), 149–157. https://doi.org/10.1016/S0272-4944(05)80168-9

Tomkins, L., & Eatough, V. (2018). Hermeneutics: Interpretation, understanding and sense-making. *ResearchGate*. Retrieved from https://www.researchgate.net/publication/322169328

Tomlinson, A., Ravenscroft, N., Wheaton, B., & Gilchrist, P. (2005). *Lifestyle Sports and National Sport Policy for Research'. Report to Sport England*. University of Brighton.

Van den Berg, J. H. (1950). Menselijke lichaam, menselijke beweging. *Nederlands Tijdschrift Voor de Psychlogie*, 5, 400–429.

Van den Berg, J. H. (1972). *A different existence: Principles of phenomenological psychopathology*. Duquesne University Press.

Versfeld, M. (1991). *Sum*. The Carrefour Press.

Waghorn Lees, C., Fantetti, M., Ditzian, K., & Dunlop, L. (2013). *Litter reduction from a behavioural science perspective*. Hollin Consulting.

Wilson, E. O. (1984). *Biophilia: The human bond with other species*. Harvard University Press.