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Sensory sociological phenomenology, somatic learning and 'lived' temperature in competitive pool swimming

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Abstract

In this article, we address an existing lacuna in the sociology of the senses, by employing sociological phenomenology to illuminate the under-researched sense of temperature, as lived by a social group for whom water temperature is particularly salient: competitive pool swimmers. The research contributes to a developing 'sensory sociology' that highlights the importance of the socio-cultural framing of the senses and 'sensory work', but where there remains a dearth of sociological exploration into senses extending beyond the 'classic five' sensorium. Drawing on data from a three-year ethnographic study of competitive swimmers in the UK, our analysis explores the rich sensuousities of swimming, and highlights the role of temperature as fundamentally affecting the affordances offered by the aquatic environment. The article contributes original theoretical perspectives to the sociology of the senses and of sport in addressing the ways in which social actors in the aquatic environment interact, both intersubjectively and intercorporeally, as thermal beings.

Keywords

lived temperature, sociological phenomenology, sociology of the senses, sport and physical cultures, swimming

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Introduction

As Coleman (2017) highlights, sensory sociology, as broadly conceived, aims to focus on what has often tended to be bracketed out of sociological accounts, and to recognise how the world is experienced in a sensory way. Recent years have certainly witnessed a growing interest in sensory scholarship across a range of disciplines, including anthropology and sociology (Hockey & Allen-Collinson, 2009; McNarry, Allen-Collinson & Evans, 2019; Allen-Collinson & Owton, 2015; Low, 2013; Merchant, 2011a; Vannini & Taggart, 2014). Despite this increased interest in the sensorium, however, the lived experience of those senses beyond the 'traditional five', still remains sociologically under-researched (Vannini & Taggart, 2014), including in relation to the lived sense of temperature. This lacuna is perhaps surprising, given the importance of temperature in sustaining or threatening human life (Ong, 2012), as well as its critical role in fundamentally shaping socio-cultural and physical-cultural lifeworlds and practices (Allen-Collinson, Vaittinen, Jennings & Owton, 2018; Vannini & Taggart, 2014), which we discuss below in The Sensory Turn.

In this article, we seek to contribute fresh theoretical insights to a developing field of sensory sociology, and in doing so, directly address Back's (2012) call for an expansion of the sensory dimensions of sociological attentiveness, in turning our sociological focus toward the sensory dimension and particularly the sociological significance of temperature and 'temperature work' (Allen-Collinson & Owton, 2015), in this case as lived by performance swimmers. Here, we employ a phenomenologically-sensitive form of sociology or what has been termed 'sociological phenomenology' (Allen-Collinson, 2009) in order to address and subject to analytic attention the ways in which temperature is experienced and 'lived' by a social group for whom temperature – and specifically water temperature - is particularly salient: competitive, indoor-pool swimmers. Sociological phenomenology is particularly well-suited to our purpose here, given its attention to embodiment issues in everyday life, including the role of the senses, as lived within socio-cultural contexts (Allen-Collinson, 2011a). Utilising data from a three-year ethnographic project investigating the lived, embodied experience of competitive pool swimmers, we explore the interpretations, meanings and understandings surrounding the lived sense of temperature as constructed within the competitive swimming lifeworld. In doing so, we connect with and extend social-science debates on the lived experience and understandings of temperature (Allen-Collinson

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& Owton, 2015; Allen-Collinson et al., 2018; Ong, 2012; Vannini & Taggart, 2014), and contribute fresh perspectives to a developing body of literature that addresses the sense of temperature in physical cultures (Allen-Collinson et al., 2018), including contemporary dance (Potter, 2008), and marathon swimming (Throsby, 2013).

Within sociological and anthropological theorisations of the senses, temperature – and more specifically, heat - has been conceptualised in two distinct ways: as a particular form of touch (Geurts, 2002) or as a distinct sensory modality (Potter, 2008; Allen-Collinson & Owton, 2015). We explore these conceptualisations below in relation to the research findings, which highlighted how even very small variations in temperature so strongly shape pool swimmers' experiences of the water at both cutaneous and interoceptive[i] levels, how these temperature changes impact upon swimming performance, and the remedial measures required to return swimming bodies back to a point of homeostasis. Data also indicated how temperature affects the 'feel' of the water and swimmers' engagement with this particular medium. Our findings and analysis are structured into two key themes that were identified in the data and cohere around experiences of cold water and warm or tepid water: 1) the *frigidarium* or cold pool; 2) the *tepidarium,* or warm pool. Before proceeding to portray the study itself, we first provide a glimpse into the world of competitive pool swimming, followed by a brief overview of our theoretical perspective of sociological phenomenology, and how we draw on this particular tradition in exploring temperature and swimming embodiment.

Competitive Pool Swimming

Competitive pool swimming is one of the main sports in the modern Olympic era, where athletes compete at distances of 50, 100, 200, 400, 800 and 1500 metres in the pool or 10km in open water, using the four recognised racing strokes of frontcrawl, backstroke, breaststroke or butterfly, or all four together during individual medley events. Swimmers also have the opportunity to compete as a member of a team in relay events over distances of 100 or 200 metres. There are currently over 80,000 registered competitive swimmers in the UK, representing approximately 1500 swimming clubs. These pool swimmers compete in able-bodied, para and masters' events, covering junior, county, regional, national and international levels. Swimmers regularly undertake training practices that range from attendance at a couple of session per week to training twice daily, covering anywhere from

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25 to over 100 kilometres of swimming depending on their respective events. In addition to this volume of water 'work', swimmers will also engage in supplementary land-based training that often includes, weight-training, yoga, Pilates, spin cycling sessions, circuits and climbing. This amount of training is widely accepted as the norm within the competitive pool swimming lifeworld, with many athletes adopting this heavy training workload during their adolescent years. Swimmers therefore invest a significant amount of physical, emotional and economic capital in inhabiting this particular sporting lifeworld, making it a rich domain for sociological and phenomenological investigation.

Sociological phenomenology

Rooted in Husserl's descriptive and transcendental phenomenology, nowadays phenomenology comprises a rich fabric of different strands, including existential phenomenology, a tradition particularly apposite to the study of embodiment. With a focus on the *Leib*, or lived body, existential phenomenology emphasizes the mind-body-world nexus, held in an ongoing, fluid dynamic relationship. Sociologists and anthropologists utilising insights from this form of phenomenology highlight how the body is a 'sensate, suffering, skilled, sedimented and situated creature of flesh and blood' (Wacquant, 2015: 1). Merleau-Ponty's (2002) existential phenomenology is directly germane to our focus here, in emphasizing the centrality of the body in our world-self relationship, portraying the body as the point from which we perceive all things. For Merleau-Ponty our 'being-in-the-world' (*Dasein*) is a reciprocal position in which we both produce and are produced by our interactions with the world and others. As humans, we share the same 'flesh' (in terms of the tissue or fabric) of the world with our fellow world-inhabitants (Allen-Collinson & Owton, 2014).

Phenomenology has developed from its original philosophical roots to encompass what has been termed 'empirical phenomenology' (Martínková & Parry, 2011), including sociological phenomenology (Schütz, 1967), cultural phenomenology (Katz & Csordas, 2003), queer phenomenology (Ahmed, 2006), feminist phenomenology (Allen-Collinson, 2011b) and critical phenomenology (Chandler, 2019). By combining sociology and phenomenology, for example, greater analytic attention is accorded to the social 'situatedness' (Crossley, 2001) of lived, embodied experiences, and the importance of culture, social structure, gender, age,

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ethnicity and degrees of dis/ability in shaping our embodiment and experience (Allen-Collinson, 2009). As Chandler (2019) argues in relation to critical phenomenology, in focusing upon 'difference' and issues of power, this form of phenomenology offers a useful resource for sociologists to consider the effects of embodying a particular social position. In general, sociological phenomenology affords the opportunity to investigate and explore social-structural and cultural elements of lived experience, including politically and ideologically influenced, and historically-specific aspects (Allen-Collinson, 2011a). For our purposes here, sociological phenomenology is highly apposite given its existential focus on bodily aspects of lived experience in everyday life, including the salient role of the senses (see Merleau-Ponty, 2002) – and importantly, the senses as lived, experienced and communicated within socio-cultural and physical-cultural frameworks (Allen-Collinson et al., 2018). This sociological 'emplacement' allows us to consider and highlight the importance of the socio-cultural contouring of individuals' and social groups' sensory experience.

Of relevance to our purpose here are other phenomenologically attuned analyses, including Leder's (1990) notion of the 'dis-appearing' and 'dys-appearing' body, and Zeiler's (2010) portrayal of the 'eu-appearing' body. For Leder (1990), the body has two contrasting modes of appearance. In the dis-appearing mode, the body occupies a place in the background of perception, remaining largely absent from our immediate consciousness, or 'intentionality', in phenomenological terms. This mode of bodily being is usually present in our everyday life where we pay our bodies limited direct attention; for example, while out walking a dog we would not pay any specific attention to the movement of our own legs. In times of illness or injury, however, Leder (1990) argues that we thematise the body as it comes to occupy a place in the foreground of our consciousness and attention; for example, we are not overly aware of the inside of our cheek until we accidently bite it, whereupon it then becomes the object of our attention. In addition to Leder's (1990) 'dys-appearing' body, we draw upon Zeiler's (2010) conceptualisation of the 'eu-appearing' body. Zeiler notes how, for Leder, the 'dys-appearing' body occurs primarily in relation to negative or painful sensations. For her, in contrast, it is important to signal how the body can come to occupy a similarly foregrounded position in consciousness, but whilst we are in states of pleasure or enjoyment. Zeiler (2010) thus adds the concept of a 'eu-appearance'. For example, while receiving a massage, we may be distinctly aware of areas of the body where the masseur/se

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is applying considerable pressure, but this is often experienced as pleasurable. Both 'dys' and 'eu' appearance can also be classified under what Allen-Collinson and Owton (2015) have termed 'intense embodied experiences'; periods of heightened awareness of somatic experience, including those pertaining to temperature and other sensory domains.

The sensory turn and the lived sense of temperature

In recent times, a body of literature has begun to develop in the social sciences and humanities, marking something of a 'sensorial revolution' (Howes, 2005). Sensory scholarship is now being undertaken by historians, geographers, anthropologists and sociologists (Howes, 2006), for example, with writers in the latter three disciplines in particular sometimes seeking to challenge the 'traditional', Greco-Roman notion of a five-sense sensorium. Such a sensorium has been described as 'arbitrary' by Vannini, Waskul and Gotschalk (2012a), amongst others, for failing to take into consideration other cultural (and historical) sensoria, wherein, for example, senses of pain, proprioception, and temperature are as central to cosmologies and cultural experience as the five senses of sight, hearing, touch, smell and taste, familiar to European thought.

Furthermore, sensory and phenomenological scholarship has also challenged notions of sensory modalities as singular, and perceptually separated from one another. As Merleau-Ponty (2002: 257) argued: 'We say *a priori* that no sensation is atomic, all sensory experience presupposes a certain field, hence co-existences…'. Sensing, therefore, is a 'multisensory' or 'intersensory' process, a 'synaesthesia[ii]' (Allen-Collinson & Hockey, 2017) in its widest sense, where a combination of some, if not all, the senses are used to help us negotiate the environments we inhabit (Calvert, Spence & Stein, 2004; Hammer, 2015). The sensing body is therefore part of a total environment providing not only 'embodied knowing and skills that we use to act on or in that environment, but … the body itself is simultaneously physically transformed as part of this process' (Pink, 2011: 347). Throsby (2013: 12) notes how 'feeling at home' in an environment comes about, not because of the outcome of intellectualised technical mastery or overcoming of challenges, but by cultivating what Lewis (2000: 71) terms 'corporeal knowing'. In order for a body to become proficient in its physical-cultural field (swimming, running, dancing, etc), it must be transformed physiologically, functionally, sensorially, and – in most cases – socially, not only through a mind-body integration, but also in an emplaced way that involves 'the sensuous interrelationship of body-mind-environment'

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(Howes, 2005: 7). Phenomenologically-sensitive approaches are well-placed to produce accounts of embodiment grounded in the corporeality of the lived body and its sensory activities, including the sense of temperature.

As noted above the sense of heat (and temperature more generally) has been conceptualised as both a specialised form of touch and as a distinct sensory modality (see Allen-Collinson & Owton, 2015; Allen-Collinson et al., 2018; Potter, 2008). For Geurts (2002), heat is conceptualised as a proximal sense, requiring physical contact between the surface of the body and an external object. The portrayal of heat as a distinctive sense is perhaps somewhat less familiar to those working within the traditional, European, five-sense model. Amongst those who have argued for heat as a specific sense is Potter (2008), who draws upon her ethnographic research with professional dancers to highlight the trans-boundary capacity of heat, which can be perceived both within the human body and also at its margins, where it merges with the external world. Such body-world merger resonates strongly with Merleau-Ponty's (1969) problematisation of any neat distinction between the body and the surrounding environment, and his theorisation of a continuous 'flesh-of-the-world'. From a sociological-phenomenological perspective, too, the work of Allen-Collinson and Hockey (2011) has also focused upon the haptic dimension of temperature, thermoception and pressure in both aquatic and terrestrial physical cultures. These authors reveal how the texture, movement and temperature of the elements through which participants move are fundamental to their embodied experiences, requiring the development of a fine somatic attunement to temperature. The lived experience of temperature has also been investigated in four distinctive physical cultures (mixed martial arts, traditional Chinese martial arts, boxing, and running) where the researchers (to be named post-review) portray how bodies are sometimes touched by the elements of their environment, but where other forms of heat-sensing also come into play, including senses of inner heat and energy. The authors analyse the interactional production of the senses and how individuals and social groups engage with temperature, 'temperature work' (Allen-Collinson et al., 2018) and the somatic learning of thermoception. This involves learning how to engage with temperature as individuals are socialised into physical-culturally specific ways of knowing and contending with heat and cold (Allen-Collinson & Owton, 2015).

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Furthermore, and germane to the experience of temperature in the aquatic environment, Evans, Allen-Collinson and Williams (2017) analyse how mothers monitor their young children's corporeal displays of temperature, being keenly aware of their children's 'goose pimples' as a reaction to the cold. Understanding experientially that such corporeal indicators signal a state of being cold, their appearance often results in the cessation of aquatic activity and retreat towards warmer areas. Throsby (2013: 13), too, indicates how the touch of temperature is central to outdoor marathon swimming, describing vividly how, on entering the chilled waters for a lake swim, she experienced a 'powerful drive to hyperventilate, and a fierce "ice cream" headache', due to the intense cold, which meant she could not feel her lips, hands or feet, and goose bumps rose high on her skin. Over time, and with specialised training and 'somatic learning' (Allen-Collinson & Owton, 2015), she was able to stay safely in the cold water for longer periods, not only due to changes in the body's thermoregulatory systems (Makinen, 2010), but also changes in her bodily experience of cold.

Before portraying how the sense of temperature was lived within the physical culture of competitive pool swimming, we first delineate the research project from which our thermoceptive findings derive.

The research site and study

Our data are derived from doctoral research conducted by the first author, Gareth, which focused on an ethnographic and phenomenological-sociological investigation into the lived, embodied experiences of a group of competitive, indoor-pool swimmers participating in a swimming programme at one of the UK's top ranked sporting universities. At the time of data collection, the programme consisted of two performance groups, totalling 36 swimmers, aged 18-22, and was selected as a research site due to its long history of producing senior performance swimmers with numerous international representations and honours.

Following ethical approval by the University, and drawing inspiration from Giorgi's (1997) phenomenological method, data were collected via participant observation and interviews across three distinct 'immersions' in the field, strategically placed to correspond to significant points within a swimming season: early season and returning to the pool; mid-season, often encompassing the heaviest training load; end of season, including the taper into

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final competition. These temporal points were selected to provide maximum variation with regard to the sampling of training regimes. During the periods of observation, Gareth adopted the role of a volunteer assistant, allowing him privileged access to the swimmers and their training environment. This was a role with which he was highly familiar, having been both a competitive swimmer and then subsequently a swimming coach. In total, over 300 hours of observation were conducted, and were supplemented with semi-structured interviews, in order to explore the experience of competitive swimming from the perspective of those best placed to provide detailed, rich and bodily-grounded accounts. Nineteen individual interviews (with 12 male and 7 female swimmers) were conducted initially, during the first immersion, and inspired by Kvale and Brinkmann's (2009) 'semi-structured lifeworld' approach. These were recorded on a Dictaphone and transcribed verbatim by Gareth between immersions one and two, allowing then for a follow-up interview with each participant to seek further information or clarity on their responses. Three final group interviews were then conducted during immersion three as a form of member reflection (Tracy, 2010) allowing Gareth to share and discuss some early study findings with the participants, and creating an opportunity for questions, feedback, critique, and affirmation. This process, we should stress, is not about checking that interpretations of the data are 'correct', but is more about providing an opportunity to engage in further and deeper data collection and analysis (Bloor, 2001; Tracy, 2010).

Throughout the research, from inception to write-up, X engaged with the phenomenological process of *epochē* (a form of bracketing) by undertaking a variety of activities. These included returning to the pool to conduct a swimming training session, and writing a post-swim reflective statement highlighting the felt 'disconnect' between his current and former swimming selves, together with some self-elicited reflections on his time as a swimmer and a coach, and discussions with members of both his academic and professional-swimming colleagues (see McNarry et al., 2019). In so doing, X was able to identify potential areas for investigation early in the research process, as well as allowing him to (re)establish a critical distance from which to collect data when he found himself gravitating more towards his coaching self as opposed to his researcher self. These data were then analysed using Braun and Clarke's (2013; 2019) reflexive thematic analysis approach. Such an approach was well-suited to the phenomenologically-inspired framework adopted, and required much

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movement between the data and the analysis, refining and redeveloping the generated themes and concepts in order to represent the salient characteristics of the aquatic lifeworld.

One of the key challenges encountered throughout the research process, and one familiar to phenomenologically-inspired researchers in sociological and ethnographic studies, was the collection of data on what can be deeply corporeal and sensory experiences that are not usually translated into verbal - or indeed visual - format (Allen-Collinson & Owton, 2015; Merchant, 2011b; Sparkes & Smith, 2012). Such experiences have been deemed the 'unrepresentable' by Merchant (2011b) and are sometimes considered to be 'without – or beyond – language' (Allen-Collinson, 2011a: 53). It thus proved particularly challenging to elicit from the swimmers detailed accounts of their bodily feelings, especially when asking them to describe more visceral or internally felt sensations. To portray these experiences, we have used a combination of the swimmers' own words, along with some of the first author's embodied swimming knowledge and understanding of the pool-swimming lifeworld, in the hope of promoting a degree of sensory-intersubjectivity (Allen-Collinson et al., 2018) so that the text might resonate with others' lived experience of similar sensory experiences. Whilst the study was primarily ethnographic, as detailed above, nevertheless, autoethnographic and autophenomenographic (Allen-Collinson, 2011a) elements accorded the first author the opportunity to compare and contrast his own lived experiences with those of the participants, and also to engage in 'somatic empathy' (Allen-Collinson, Owton & Crust, 2016) with their sensory encounters. In the data extracts that follow pseudonyms are employed for all participants, whose characteristics are also disguised in order to afford anonymity.

Swimming and the lived sense of temperature

Participation in competitive swimming is a deliberate, highly specific and much practised activity, requiring a refined kinaesthetic awareness of the body as it moves, allowing swimmers to 'tune into' (Ingold, 2004: 332) and negotiate different environments. This body-senses-environment nexus is a fluid, mobile, ever-changing one, and especially so in a water-based sport such as swimming. In such a lifeworld, Merleau-Ponty's (2002) notion of sensory reversibility is particularly apposite with regard to the sense of touch, as the swimmers are touched by the water, but also actively touch it, using hands and feet to 'feel', 'grip', and 'hold' on to the water in order to facilitate locomotion. Swimmers thus build a two-way,

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embodied relationship with the water, which often requires a highly refined sense of temperature. In the following sections, we consider the role of temperature in shaping experiences of 'intense embodiment' (Allen-Collinson & Owton, 2015) in the aquatic environment, structuring the analysis around two key structures of experience: cold and heat, which emerged strongly during data analysis. We thus first take the plunge into the *frigidarium* or cold pool, before entering the *tepidarium,* or warm pool[iii].

The frigidarium – 'you can see that the water is cold'

For the swimmers, moving from the warm, humid environment of the poolside into the normally tepid pool water (at around 28 degrees centigrade) usually drew little reaction, due to the mundanity and regularity of this experience. On days where the temperature fluctuated, however, even by a single degree, the swimmers were instantly aware of this change, and upon entry often commented on the pool being either 'roasting' or 'freezing', along with displays of such corporeal discomfort, such as gasping, grimacing, shivering, tucking into a ball or jumping up and down from the bottom of the pool to generate heat. In 'colder' conditions, Scott, along with other participants, highlighted the discomfort of going from the warmth of his bed where he was happily dreaming, to the acute bodily 'dys-appearance' (Leder, 1990) engendered by plunging into cold water particularly during early morning sessions that began at 5:30 or 6:00 am:

> …especially in the morning when you just get out of bed and you're still quite asleep and you jump into the pool, it's like the worst thing you could really think about doing…Going from the warmth of your bed and your mind being completely shut off and dreaming and then switching from that to having to focus on what you are doing, or a tough set that's going to hurt a bit, you know you are going to have to be switched on the whole time…But yeah, this pool's quite consistent. I think having it quite cold – it's not *really* cold, but having it quite cold just wakes you up.

In this regard, Stephen indicated being able to 'see' that the water was cold even before entering the pool, using visual indicators from other swimmers:

> ***Stephen***: So yeah, you've hardly had any sleep. It's back to the pool again. You can barely keep your eyes open. Erm, you've got to do your pre-pool. You're stood there, the waters cold, it's very cold. This is the worst-case scenario, I like training, but you know what I mean. You can see the water is cold.
> ***Gareth***: Did you say that you can see the water is cold?
> ***Stephen***: Oh, you know when it's cold. When you, you can tell. You can just, someone will put a hand in, or someone will jump in and it's freezing and it's

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> just, yeah. So, you jump in, everything hurts, you get the chills, goose bumps from the cold.

The social production of temperature work became evident, for once in the water, any lower than normal temperatures generated surprised looks, directed to those still on poolside as a way of signalling how chilly the water actually was. If the water was felt to be especially cold, this was often conveyed to other swimmers via some form of expletive such as: 'Jesus Christ, that's cold!' or 'fuck me, that's fresh!'. The first few strokes or metres would then be completed at a higher speed than normal, to try and raise the swimming-body temperature, in order to acclimatise to the lower temperature. This 'remedial temperature work' (Allen-Collinson & Owton, 2015) was noted by several participants, including Jessica:

> …if it's cold you've gotta like sprint the first 2 lengths to warm up, and you don't want to be doing that at 5 o'clock in the morning. You don't even want to be doing that at night. So, when you dive in and it's cold, it's horrible, it's like one of the worst things, but you get used to it pretty quickly. But yeah, I think that's what scares swimmers the most. Not scares, but worries them before getting in, it's cold and I'm gonna [have to] swim fast if it's cold [laughs].

Another swimmer, Frank, indicated that unless the reduced temperature was extreme, the associated bodily state of dys-appearance from the initial cold shock was usually overcome within the first 100 metres or so of swimming, returning the body to a state of dis-appearance as the swimmers became acclimatised to the temperature of their aquatic environment:

> I'm a bit apprehensive diving in at first because I'm like, oh no, it's cold. I'm going to wait a bit. I'm going to wait 'til it warms up, 'til everyone's in. But then, you have to get over it and jump in. But then, you sprint the first 20 metres just to warm up and then you start swimming normally again, but by the time you've reached 100 metres, you don't feel it anymore unless it's particularly cold, unless it's freezing (Frank).

Corporeal warming-up within a training session is significant in terms of helping the swimmers acclimatise and overcome not only the effects of the sudden touch of cold water, but also in preparing the swimmers physically, and mentally for the intensity of the workout to follow. This resonates strongly with Potter's (2008) portrayal of contemporary dancers, and Allen-Collinson and Owton's (2015) analysis of boxers and runners, for both of whom effective corporeal *and* psychological warming up are crucial in preparing and energizing the body-mind for the imminent physical demands of training and performance. For the

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swimmers, if the water was particularly cold - 'freezing', as many described - no amount of warm-up is effective, and acclimatisation to the reduced temperature is not possible. This usually leads to a continued state of dys-appearance, often highly unpleasant, which negatively affects the swimmers' ability to perform at the desired or required level, as both Eddie and Natasha noted:

> ***Eddie***: So, in Samoa [Commonwealth Youth Games] it was super cold and as soon as I got in all I wanted to think about was getting out. And, you can't be like that when you're training, and I just got goose bumps everywhere, and just trying to swim, you can't get warmed up, your muscles can't get, you always do a warm-up set if you're running or anything like that, but you just physically can't get warm, nothing's working the way it should be. Then you get frustrated with yourself because you're not going the times you're meant to be going. And it's just a cycle of, I feel shit, I want to get out, I feel shit, I want to get out.
>
> ***Natasha***: …but also erm, Manchester actual pool, like underneath they have a pool underground and when you'd swim in that, that would be that cold that sometimes when I was younger, I'd do 200 and I'd have to get out because I'd have blue lips so, definitely a big thing temperature. It can affect your mood.
>
> Definitely, if it's too cold, people just can't be bothered. You feel stiff…If it's too cold your muscles get really tight cos you're so cold you're shivering and then you're just being too tense.

Conversely, if the pool is adjudged to be pleasantly warm upon entering (an increase of just one or two degrees was detected as substantial), this gave rise to a 'eu-appearance' in Zeiler's (2010) terms, via bodily indicators of positive sensations and affect that were also contextually framed. Jessica described how her expectations of encountering relatively cold water on a Monday morning were pleasurably challenged when on one occasion the pool was 'hotter' than normal:

> Yeah, this morning was a lot hotter than it usually is and normally on a Monday morning it's worse because you haven't been in the water for, Sunday, you haven't been in the water at all. But I got in this morning and I was like, "aww it's quite nice" [laughs].

Such instances of eu-appearance in relation to substantially warmer water were usually short-lived, however, unless the session being undertaken was an easier, recovery session. For the purposes of a hard, rigorous workout, however, tepid water was not experienced – or constructed in social interaction - as pleasurable, as we next explore.

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The tepidarium – sweat in water

The relationality of the water temperature to the purpose of the training session emerged as highly salient for the swimmers. The tepidarium, the warm/tepidus bathing room in the Roman baths, was designed to produce a pleasant feeling of constant warmth. For the performance swimmers, however, any notion of a warm pool being 'quite nice' (as Jessica described) would rapidly be challenged as the swimmers started the hard work of swimming. The level of bodily labour required for an intensive training session (referred to as a 'quality' or 'key' session) would soon cause the swimmers to overheat in tepid water, making the 'doing' of swimming arduous and highly unpleasant work. This engendered a condition of dys-ease (Leder, 1990), with feelings of lethargy and corporeal heaviness, as Jean and Natasha both described:

> …if it's too hot, I feel too lethargic, just too physically hot, you feel too warm to swim. Erm, you feel sluggish in the water, you don't, you fill like you are slipping the water, you don't feel like you are catching anything, and it just makes, warm water just makes swimming a lot harder. Erm, yeah, it's not nice, it's like being in a bath when you just want to relax but you're actually telling your muscles no, you need to go (Jean).

> We went to a pool that was 30 degrees [laughs], was 30 degrees right and you got in and it was like steaming, it was so hot and like you were swimming along and you felt really heavy and you did 25 and you were out like panting for breath cos it was just so draining…you feel gross, especially if it too hot, like I've not experienced it [like that here], but if a pool is too hot you feel really groggy and like heavy (Natasha).

The tepid water temperature was initially detected and registered at the cutaneous level, but also subsequently brought on a heightened sense of intra body heat. Movement generates heat, and the normal and expected sensations of inner heat for the swimmers corresponded to specific levels of exertion and water temperature. Although normally welcomed, with sensations of inner heat being experienced as a sign of effective performance, when accompanied by an increased water temperature, the swimmers' normal sense of thermoception was thrown into disarray. This rendered it much more challenging to regulate their temperature, and consequently impacted negatively on performance. Maintaining homeostasis thus became problematic due to the tepid water negating the normally cooling effect of water on skin. In everyday life, normally we can simply add or remove layers of clothing, making a 'situational adjustment' (Becker, 1977: 279) for

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temperature conditions. For the swimmers, however, their near-naked bodies were enveloped in the water, obliging them to stop swimming altogether, or to train through the conditions and risk injury or illness, or to find other remedial ways of cooling down, such as temporarily stepping outside the pool in search of cool air, dousing themselves with cooler water, or jumping under a cold shower.

The effects of a hot pool also brought on what was, for the swimmers, the strange bodily response of sweating; a sensation that swimmers rarely encounter due to their immersion in an already liquid environment. As Matthew indicated, this was highly uncomfortable, giving rise to a state of considerable dys-ease and feelings of weakness:

> I think it was a pool in Germany and it was just roasting. You just keep going for your water bottle, even if it's indoors and it's roasting which is probably worse because it's muggy[iv] as well. You keep going for your water bottle, but you feel like you are continually sweating, and you get that weak feeling. Your energy is sapped, just getting sapped out of you constantly. So that's terrible, so you can get that sometimes if you're in very high temperature outdoor pools as well. Like the sun is baking, I've been to Australia, I've swam out there and, on the days it's high 30s, you're like I can't go anywhere, I can't do this. Because, you might, let's say you're in the middle of the set and you've ran out of your last bottle, you've three bottles of water and you've run out of that one. You're peeing constantly, but you're also sweating constantly, you feel like a hot mess in soup. It's just not easy going (Matthew).

Indeed, so strange was the sensation of sweating when immersed in water that some swimmers struggled to describe the feeling, and reported being unsure as to whether they actually were sweating under the hot conditions. Wade described this unfamiliar sensation:

> I just remember this one night it was roasting, like the pool was just so hot and like I felt like I was physically sweating in the pool. It was like, you know when your body just feels, like, 'flush'. Like you know when you go red on your face, it felt like that but your whole body… It's a strange feeling like you honestly feel, you feel like [pause] yeah, I mean obviously, you probably are sweating but like it felt like there was sweat coming off me. It was probably just the water but it…yeah it just felt like it was sweat. It felt like I'd just done a big session like running or something, yeah, it was weird (Wade).

In other physical cultures, sweat can be perceived as having a positive moral dimension, being visually representative of corporeal immersion in the hard physical labour of training and performing (see for example, Allen-Collinson et al., 2018; Atkinson, 2017). Conversely, due to the swimmers' immersion in water this bodily signal was not usually socially evident,

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and therefore the swimmers were denied one avenue of displaying the fruits of their labour. In contrast, they employed a variety of different markers to evaluate their own and others' efforts, including the degree of fatigue they felt, how 'out of breath' they were, and in some cases, how hot a shower was required post-session. Following a hard session, with high effort, a cold shower was needed to cool down, whilst lower intensity sessions led to a warmer shower being enjoyed. During the swimmers' weekly circuit class, which was conducted in the poolside conditioning room, the swimmers were usually clad in nothing more than a swimming costume, and so sweat was highly visible. Individuals often had to towel down during breaks in the circuit to remove sweat from their bodies and from the floor mats. For some, this sweaty experience was portrayed as highly unpleasant; for example, Clint referred to it as 'sticky and horrible and uncomfortable'. For others, male and female alike, sweat was worn as a badge of honour, with some even creating the forms of 'sweat angels' on the mats as visible evidence of their bodily labours. Sweat therefore became valorised in the land-based context, demonstrating its moral dimension and even respectability (see also Atkinson, 2017).

The water temperature affected not only how the swimmers felt in terms of being hot/cold, but also their performance. Charles, for example, described how hotter water raised his heart-rate, deleteriously affecting his speed:

> If I was to do a 200… I might be like 5 seconds slower than what I would do here…you'd be swimming along and you'd, you'd expect to come in and get the same time as you'd be used to…and then like you get that slower time… So, you're swimming along and thinking like 'why am I feeling shit?' and then you realise that the temperature is a lot hotter and then you're like think 'aww hang on me heart-rate must be high cos it's hotter'.

Furthermore, temperature shaped the very 'feel' of the water. Cold water was often reported as more compact, crisp, or hard, resulting in the swimmers believing they could 'catch' or 'hold' more water, and therefore swim faster or more efficiently. As Matthew and Jean both noted:

> If a pool is really cold it usually feels really fast. Like the water usually feels crisp and hard, cold water's harder…You feel like you've got a good catch in the water. Well you usually race in colder temperature pools as well…I always seem to feel faster in colder temperature pools and feel like I can push my body more and try harder…I have an analogy for when it's colder: I feel like the water is turning into

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> boxes and I can pull the boxes, but when it's hot, it's like custard and [I feel] I'm not really pulling much (Matthew).
>
> Like the water usually feels crisp and hard, cold water [feels] harder (Jean).

'Hot' water, in contrast, was described as like custard, treacle, or a bit slimy. Hence, tepid water resulted in a loss of 'feel' and the sensation of hands slipping through the water, leading to reduced 'catch' or 'hold', and negatively impacted performance and speed. The role of different sensory ways of knowing has been sociologically explored in relation to occupations (Hockey & Allen-Collinson, 2009) and also vis-à-vis other physical cultures. As outlined by Lewis (2000: 71), for example, climbers can develop a tactile understanding of the rock through their hands so that 'knowing is made corporeal by the sense of touch replacing that of sight as the primary mode of gathering data'. Similarly, our group of competitive swimmers developed a feel for the water through their whole body.

Discussion and conclusion

In this article, we contribute original theoretical insights to a developing field of sensory sociology, and directly address Back's (2012) call for an expansion of the sensory dimensions of sociological attentiveness, in turning our sociological focus toward the significance of temperature and 'temperature work' (Allen-Collinson & Owton, 2015; Hockey & Allen-Collinson, 2019), as lived by performance swimmers. By utilising a sociological-phenomenological theoretical framework, we combine two powerful perspectives: the existential phenomenological focus on bodily aspects of lived experience in everyday life, including the role of the senses (see Merleau-Ponty, 2002), with a sensory-sociological perspective that emphasizes the senses as lived and communicated within socio-cultural and physical-cultural frameworks (Allen-Collinson et al., 2018), rather than as purely individual, 'private' and internally experienced. This sociological 'emplacement' underlines the importance of the socio-cultural shaping of individuals' and social groups' sensory experiences, and, further, the specificities of the physical-cultural contouring of the senses. We have explored in detail the importance of thermoception and 'temperature work' (Allen-Collinson & Owton, 2015) in the sporting lifeworld of performance swimmers.

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As exemplified by the findings, performance-swimming bodies are fundamentally linked to their aquatic environment, where swimmers must engage in sustained temperature work in order to interpret and make sense of the shifting temperature of water, and to convey this to others in social interaction. During mundane, routine encounters with the water, the swimmers are predominantly in a state of bodily disappearance, with attentional focus directed towards the activity of swimming, rather than on the body. Where the temperature varies, even by a single degree, however, the water itself becomes a focus of intentionality, as does the feel of the body-in-water, engendering a state of bodily dys-ease and dys-appearance (Leder, 1990). Swimming bodies are then thrust back into consciousness as 'extremes' of temperature generate corporeal consequences, such as 'goose bumps' or sweating. In addition to skin-felt reactions, there are interoceptive bodily effects and affects, such as 'tight' or 'sluggish' muscles, and experiences of inner-heat.

The instances portrayed above also highlight how the pool-swimmer's body is engaged in both an outward projection to the world *and* an interoceptive focus, a fluctuating shifting of intentionality (Allen-Collinson et al., 2018) from outside to inside and back. Temperature experiences were found to be highly context-dependent for the swimmers, and are perceived and felt 'by', as well as 'within', the swimming-body where it touches and merges with its aquatic environment. This renders temperature much more than a specific modality of touch. As Potter (2008) notes, thermoception has a trans-boundary capacity, which can be experienced as 'blurred' due to the shifting interaction between internally-felt and outwardly-orientated senses (Allen-Collinson & Owton, 2015).

The research illustrates the ways in which humans learn how to inhabit and work within aquatic environments, but elements can also be generalized more widely, including to other physical-cultural environments. For specific environments and their inhabitants afford us opportunities from which to learn and develop a level of somatic knowledge (and ways of knowing) that may be unknown or unfamiliar to cultural 'outsiders' (Allen-Collinson, Crust & Swann, 2019). Thus, the swimmers in this study began to understand and appreciate how highly nuanced changes in water temperature affected their performance, through a process of socio-cultural and physical-cultural socialization and attunement (Allen-Collinson & Owton, 2014), learnt via embodied experience, and incorporated into their body-selves. This process

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of somatic and sensory learning in competitive, pool swimming reverberates with research on other physical cultures, such altitude mountaineering, where qualities of air and ground, more than water, have to be rendered perceptible via socialisation, then identified, learnt, acknowledged, and their possibilities and consequences understood (Allen-Collinson et al., 2019). This mode of being-in-the-world can only be acquired through time spent in these specific environments, and also via the transmission of somatic ways of knowing between skilled and less experienced lifeworld inhabitants. This emplaced sensory skill development can also be found in other physical cultures, for example, in skateboarding, where Borden (2001) refers to 'skateboarder's eye' and in parkour, where Clegg and Butryn (2012) consider 'parkour vision'. We interact with our socio-cultural and physical-cultural environments in an active and reciprocal way, both shaping and being fundamentally and corporeally shaped by these environments. Such embodied practical skills are thus learnt, developed, and refined through direct lived experience, but also fundamentally shaped by shared socio-cultural beliefs, practices and habits operating within distinctive lifeworlds.

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[i] Relating to internal bodily states

[ii] As Allen-Collinson and Hockey (2015) note the term 'synaesthesia' is commonly used to indicate a 'confusion' of the senses, where someone experiences one sensory modality (e.g. the auditory) via another modality (e.g. the visual).

[iii] In the Roman baths, the order would most probably be reversed, with bathers first entering the pleasant conditions of the tepidarium or warm pool.

[iv] Muggy refers to a hot and humid environment

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