

Social media, apps, and wearable technologies

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DOI:

[10.1080/2159676X.2017.1303790](https://doi.org/10.1080/2159676X.2017.1303790)

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Document Version

Peer reviewed version

Citation for published version (Harvard):

Goodyear, V 2017, 'Social media, apps, and wearable technologies: navigating ethical dilemmas and procedures', *Qualitative Research in Sport, Exercise and Health*, vol. 9, no. 3, pp. 285-302.
<https://doi.org/10.1080/2159676X.2017.1303790>

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Social media, apps, and wearable technologies: navigating ethical dilemmas and procedures

Abstract

There is a growing body of literature dealing with the ethical issues of conducting digital and Internet-based research, yet relatively little has been written about social media, apps, and wearable devices. By using three empirical case studies of ethical challenges and dilemmas in the context of physical education, this clear gap in understanding is addressed. The case studies reveal that ethical issues unique to digital research are, (i) the questionable involvement of human subjects, (ii) the traceability of individuals and data, and (iii) the diverse interactional capabilities of digital technologies. Large numbers of participants, the international nature of research and legal matters are also ethical issues intensified by the use of social media, apps, and wearable devices. To address such ethical issues, a culturally responsive relational and reflexive approach to ethics is signposted as one way forward. New insights from the case studies were also provided on the types of ethical procedures researchers might follow. Yet despite this paper providing novel understandings on digital and Internet-based ethics within sport, exercise and health, in order to advance research and practice the importance of embarking on a professional wide digital research ethics debate is stressed.

Keywords: ethics, social media, digital, Internet, apps, FitBits, GoPro's, consent, anonymity, risk

There is a growing body of literature dealing with the ethical issues of conducting digital and Internet-based research in a range of disciplines (see James and Busher, 2016; McKee and Porter, 2009). In diverse contexts and settings, ethical issues have been identified with regard to public vs private and if, how and when informed consent is required to gather digital data or enter specific online spaces (Hudson and Bruckman, 2004; McKee and Porter, 2009). Another issue relates to anonymity and whether it is appropriate to quote passages and/or represent data as screenshots from, for example, blogs, multiplayer games or emails (Hewson, 2016; McKee and Porter, 2009). While there is a developing understanding of the types of ethical issues that might arise (see Hewson 2016 for an overview), the ethical complexity of digital and Internet-based research is intensified with the ‘new and emerging technology-mediated social spaces’ of social media, mobile applications (apps) and wearable devices¹ (Henderson et al., 2013, p. 547). These digital spaces, that are highly mobile and promote mass socialisation, normalisation, and self-tracking – to only name a few functions - have been described as an “ethical minefield” (Barnes *et al.*, 2015, p. 112). Yet, and across social media, apps, and wearable devices, relatively little has been written on the topic of ethics (see Barnes *et al.*, 2015; Henderson *et al.*, 2013; Wallace and Townsend, 2016) and very few discussions have occurred within the fields researching sport, exercise and health.

The gap in understanding about the ethics for social media, apps, and wearable devices is a clear and contemporary problem for several interrelated reasons. First, it is becoming increasingly difficult to distinguish between digital and non-digital worlds and neglect the role of digital technologies on the researched (Hewson, 2016); checking in on Facebook, taking a selfie, tracking diet on a mobile-health (m-health) app, or monitoring steps on a fitness device are daily practices for many (Lenhart *et al.*, 2015; Lupton, 2015; Selwyn and Stirling, 2016; Wartella *et al.*, 2015). Second, the technological architecture of

¹ For example, commercial wearable Fitness trackers such as FitBits or wearable cameras, such as GoPros

social media, apps, and wearable devices provides different and particular forms of interaction that disrupt conventional ways of thinking about the researcher and the researched (Bond and Agnew, 2016; Hewson, 2016; James and Busher, 2015). Third, due to limited ethical guidance and direction in this area, many researchers are not equipped to understand the ethical implications for their practices and are reported to be, (i) turning away from digital research, (ii) applying ill-informed ethical practices, and/or (iii) (closely linked to (ii)) failing to disclose ethical procedures that were followed (Henderson *et al.*, 2013; Shilton and Sayles, 2016). Fourth, because the ethical issues appear too complex to resolve, high levels of regulation are currently being endorsed by ethical committees (Halford, 2016; Kouppanou and Standish, 2013). According to Sparkes and Smith (2014), such high levels of regulation discourages researchers from engaging in ground-breaking, flexible, difficult and sensitive work that, in turn, stunts the development of innovating, exciting and valuable research. There is widespread agreement, therefore, that further attention toward the ethical implications of social media, apps, and wearable devices is urgently required (see Halford, 2016; Hopkins, 2012), particularly within the fields researching sport, exercise and health (see Bundon, 2016; Rich and Miah, 2016)

The purpose of this paper is to address two key questions: (1) *what ethical dilemmas might researchers face in using social media, apps, and wearable devices?* and (2) *what types of ethical procedures should be considered?*. By addressing these questions, this paper aims to initiate discussions about the ethical implications of social media, apps, and wearable devices in sport, exercise and health contexts and contribute to a developing evidence-base on digital ethics across disciplines. The discussions that follow are divided into three sections. First, an overview of the case-based reflexive approach to the consideration of ethics is provided. Second, a critical analysis of key ethical principles is presented in relation

to social media, apps, and wearable devices. The third section considers the ethical implications and offers future directions for practice and further research.

A Case-based Reflexive Approach

Halford (2016) recently stated that we need to do more than problematize ethics and begin to devise new types of ethical principles to guide digital research. Similar to McKee and Porter (2009) and Kouppanou and Standish (2013), Halford (2016) claimed that ethical principles would be best informed by case studies of ethical challenges and dilemmas that researchers have faced. As Kouppanou and Standish (2013, p. 114) emphasised, without a case-orientated approach ‘our attempts to grapple with the practical problems new technology presents will be hopelessly blinkered and we will fail to see the extent to which technology changes our world and ourselves’. Although bias and generalisation are standard criticisms of case studies (Flyvbjerg, 2006), and the unique idiosyncratic nature of information gathered are reported as key limitations (Bryman, 2015; Hodge and Sharp, 2016), case studies strengths rest in the ability to provide ‘real life’, in-depth and holistic understandings (Dzikus, Fisher and Hays, 2012; Flyvbjerg, 2006). According to Flyvbjerg (2006, p.221), in-depth contextual information enables people to move from ‘rule-based beginners to virtuoso experts’. Similarly, Hodge and Sharp (2016) argued that case studies offer naturalistic generalisations and transferability. Transferability refers to when readers feel as though the research overlaps with their own situation and they can intuitively transfer the research to their own action (Tracy, 2010). Given that ethical practice is a ‘continuous, active process that involves constant questioning and responsibility’ (Pope and Vasquez, 2011, p.2), case studies are an effective mechanism to increase awareness of ethical dilemmas and support researchers in adopting proactive and reactive approaches (Dzikus *et al.*, 2012; McKee and Porter, 2009).

Three case studies are presented in this paper focused on social media, apps, and wearable devices in physical education (PE). Quality and transferability have been addressed according to Tracy's (2010) criteria of: (i) offering a vicarious experience; (ii) providing a rich description; and (iii) ensuring that case studies are written in an accessible format. A vicarious experience is provided through a reflexive account on my (author) experiences of ethical practice. While bias is a limitation, a reflexive account represents the voice of a researcher and can provide direction for other researchers (Mauthner and Doucet, 2003), particularly when navigating ethical dilemmas (Dzikus *et al.*, 2012; McKee and Porter, 2009). Moreover, and through a reflexive approach, key recommendations for practice are based on knowledge that is socially constructed in-practice and within socially and culturally relevant contexts (Mauthner and Doucet, 2003). The case studies are, therefore, based on the 'real dilemmas' and 'real issues' that I as a researcher faced and aim to support readers in making connections to their research contexts. A rich description of the three case studies is provided in Figures 1, 2, and 3. Each case study provides a description of: (i) the aims of the research; (ii) the research design, context and methods; (iii) key ethical dilemmas; and (iv) details of the ethical procedures that were followed. It should be noted that, in order to present the case studies in an accessible format, a limitation of this structured approach concerns the exclusion of some information about the wider context and outcomes of the research.

<Insert Figure 1, 2, and 3 here >

Case study 1 (Figure 1) is of PE teachers' uses of Facebook and Twitter within a continuous professional development (CPD) programme. Case study 2 (Figure 2) is of adolescents' uses of the FitBit wearable device and the FitBit app. Case study 3 (Figure 3) is of researchers' uses of Twitter to interpret youth and teachers' opinions of PE. Each of the cases share common features: (i) the contexts were school-based and in PE; (ii) under 18s

were involved; (iii) data gathering was digital and non-digital; (iv) data was personal and/or health-related; (v) informed consent, anonymity, risk and harm, and legality were considered; and (vi), the Institutional Review Board (IRB) approved all procedures. The cases differed by: (i) the researcher(s) involvement as active participants (case study 1 and 3) or outsiders (case study 2); (ii) individual (case study 1) and/or multiple schools and institutions (case study 2 and 3); (iii) local (case study 1), national (case study 2) and international contexts (case study 3); (iv) the procedures for consent, anonymity, risk and harm, and legality varied.

Although the case studies provide empirical and practice-based examples of ethical dilemmas and procedures, the case studies do not form the sole basis of discussions. A key limitation in many of the decisions and deliberations about ethical practice is that there is little connection to the work of others (Halford, 2016; McKee and Porter, 2009). Although ethical decision making should be based on situation and context (Hewson, 2016), negligence to previous literature and other cases reinforce ad-hoc particularism and limits the development of overarching ethical guidelines (McKee and Porter, 2009). According to McKee and Porter (2009, p.158), guidelines for digital and Internet research ethics need to entail more than ‘general rules to articulate specific issues and problems’. McKee and Porter (2009) recommend that guidelines need to highlight problems and provide example procedures, all of which can be drawn from an analysis of multiple case studies and connections to previous literature. In the following sections, the ethical dilemmas and procedures drawn from the case studies are discussed alongside non-digital/Internet-based ethics and digital/Internet-based ethics.

Ethical Dilemmas and Procedures

A critical analysis of ethical dilemmas and procedures is now provided under the headings of four key ethical principles: informed consent, anonymity, protection from risk and harm and legality. These key principles have been selected because, (i) regardless of the

ethical position researchers adopt (for example, utilitarian, principlism, feminist ethics, virtue ethics, relational ethics etc.), informed consent, anonymity, risk and harm and legality are prominent considerations (AoIR, 2011; Bryman, 2015; Ryen, 2016; Sparkes and Smith, 2014); (ii) the key principles are often used by IRBs, ethical committees, ethics associations and research funders to guide and assess ethical practice (AoIR, 2011; BPS, 2014; Wallace and Townsend, 2016); (iii) the key principles are internationally recognised (McKee and Porter, 2009; Ryen, 2016); and (iv) researchers are reported to be challenged in dealing with the key principles when using social media, apps, and wearable devices (Hewson, 2016; Housley *et al.*, 2013; Jauhki *et al.*, 2015).

Informed Consent

Informed consent refers to providing individuals, gatekeepers or key stakeholders with as much information as possible to make an informed decision about whether they wish to grant permission for themselves or others to participate in a study (Bryman, 2015; Ryen, 2016). Informed consent is largely related to risk and harm; if individuals are fully informed then it is assumed that risk and harm will be minimised (Bryman, 2015; Wallace and Townsend, 2016). Deciding when, how, and who to obtain informed consent from, however, is a complex issue.

Across varying codes (for example, British Sociological Association, Social Research Association, and American Sociological Association), it is agreed that if research involves human subjects then informed consent should be sought (Bryman, 2015). For under 18s, parental/guardian consent is considered necessary due to heightened levels of vulnerability and deficiencies in young people's decision making (Barnes *et al.*, 2015; Bond and Agnew 2016; Davis and James, 2013). Yet a notable critique of informed consent is the extent to which researchers can predict what will happen during a study and, in turn, the extent to which participants (and parents/guardians) can be fully informed (see Corti *et al.*, 2000;

Sparkes and Smith, 2014). While this has led some authors to position consent as a process, rather than a singular event (Atkinson, 2011; Pheonix, 2010; Sparkes and Smith, 2014), unexpected events can arise that are simply not possible to inform participants of prior to or during the research. Another concern relates to covert research. Although covert research is often regarded as unethical, in some cases it is necessary to not obtain informed consent to protect participants from harm and/or for the scope and impact of the research to be realised (Bryman, 2015; Ryen, 2016; Sparkes and Smith, 2014). Determining the most effective processes for consent is, therefore, problematic.

In digital and Internet-based environments, it is agreed that where possible, efforts should be sought to obtain informed consent (Hewson, 2016; Jouhki *et al.*, 2015; Townsend and Wallace, 2016). Hudson and Bruckman (2004, p. 135) provide empirical evidence for this view in reporting that ‘individuals in online environments such as chat rooms generally do not approve of being studied without their consent’. A different dilemma reported for research concerning social media, apps, or wearable devices involves determining whether human subjects are involved in the research and, consequently, if consent is required (Jouhki *et al.*, 2015; Moreno *et al.*, 2013).

To determine if human subjects are involved in the research, Moreno *et al.* (2013) compared observational vs interactive research. If the research is observational, conversations (or posts) are treated as text (or artefacts) and consent is not required (Moreno *et al.*, 2013). An example of observational research is content analysis of publically available YouTube videos (see for example, Quennerstedt 2010; Syed-Abdul, 2013; Yoo and Kim, 2012). If discussions and posts are treated as interactive, such as research that explores how a teacher educator/researcher interacts with teachers through Twitter (see case study 1 and Wesley, 2013 as examples), human subjects are directly involved in the research and informed consent is required (Moreno *et al.*, 2013).

The distinction provided by Moreno *et al.* (2013) is a useful starting point to determine if informed consent should be sought in digital research. Moreno *et al.*'s. (2013) view, however, largely ignores the needs, expectations and wishes of those being studied. For example, while teachers may provide consent for their tweets to be accessed, they may share sensitive information about themselves, the school or their pupils that they would not expect or want to be reported on. A further critique of Moreno *et al.* (2013) concerns the constantly evolving and changing ways in which digital technologies are used in society and, in turn, the difficulties associated with separating online and offline worlds. Adolescents, for example, manipulate social media to construct an identity, develop intimacy and exercise their imaginative powers (boyd, 2014; Gardner and Davis, 2014). By consequence, adolescents are described as being tethered to the online world, with social media being an intrinsic and embodied part of their lives (boyd, 2014; Tuckle, 2011). Virtual reality environments and games are another example. Through avatars, that are often a representation of the 'real life' self, the binary between human and non-human becomes difficult to distinguish (McKee and Porter, 2009; Kirwan and Power, 2014). These examples challenge the idea that social media, apps, and wearable devices can be treated as text or artefacts. If the view is taken that technology is an intrinsic and embodied part of people's lives, where sites and devices are used in particular ways to portray a representation of self, humans are directly involved in the research and consent would be required in all cases.

Different forms of consent were sought across the cases; active, silent (or passive), and/or none. Active and written consent were sought in case studies 1 and 2, which was possible because these studies were connected to school-based data gathering (for example, interviews and observations). Active and written consent was also important because sensitive information was gathered; social media posts contained information about the teachers' school, students and their practices (case study 1) and data gathered from FitBit was

related to adolescents' personal health and bodily functions (case study 2). In case study 2 parental consent was also sought as the participants were aged 13-14. Case studies 1 and 2, therefore, demonstrate comparable procedures to non-digital research for gaining informed consent (see Bryman, 2015; Sparkes and Smith, 2014).

Procedures for informed consent differed in case study 3 (Figure 3). In this study consent was not sought from youth or parents/guardians and silent consent was sought from teachers. It could be suggested that a utilitarian position was appropriate in this case, given that it was not practical to gain written and active consent from the large numbers of participants, minimal harm was identified, and the benefits of the study outweighed any harm. The approach of passive consent for teachers is also similar to Carlén and Maivorsdotter (2016) in their exploration of runners' engagement with a social media site, and Palmer's (2016) work that used a head mounted wearable camera (GoPro) to interpret runners' experiences of a charity event. Due to a large number of participants, Carlén and Maivorsdotter (2016, p. 8) posted a message of intent to the social media site to 'ensure participants were informed about the study and had an opportunity to react and to accept or decline involvement in the study'. Palmer (2016) also provided a large running group with a project briefing, prior to her, as a running-researcher, wearing a GoPro to conduct video-interviews. Information statements posted to specific sites and group announcements, therefore, appear to be an appropriate procedure for informing large numbers of participants about the research.

An ethical dilemma that case study 3 exemplifies relates to verification. Specifically, verification of, (i) youth age 13 or over, (ii) if teachers had read and understood the consent statement, and (iii) if the teachers were able to provide consent. This ethical dilemma is similar to the central issues of social media research identified by Hewson (2016, p. 209): (i) 'ensuring, verifying and documenting that participants have actually read and understood

consent information’, and (ii) ‘ensuring and verifying that participants are eligible to give consent, for example they are not underage, or unable to give consent for some other reason’.

As suggested in face-to-face and visual research methods (Bryman, 2015; Pheonix, 2010), the development of trust and respect and the constant negotiation of consent could eliminate some of the problems associated with verification. Yet in online environments trust and respect can be difficult to establish through digital identities and with large numbers of participants (Aresta *et al.*, 2015; Halford, 2016; Ramirez and Palu-ay, 2015). A researcher’s presence in an already existing and naturally occurring online environment can also obstruct authentic and naturally occurring discussions (Hudson and Bruckman, 2004; McKee and Porter, 2009). The potential for consent obstructing interactions between participants was seen in case study 1. Following informed consent, the teachers began to ‘talk’ in different ways by highlighting their ‘outstanding practice’ and by portraying themselves as ‘star performers’ (Author, 2014). While it cannot be directly attributed to informed consent, in the third and fourth year the teachers also stopped tweeting about their practice. Given that social media was used as a space for teachers to access additional and compensatory CPD (Author, 2014), it could be argued that informed consent had a negative impact on teachers’ professional wellbeing, as they no longer had the opportunity to learn from others experiences if practice was no longer reported. Tweeting about ‘outstanding practice’ may have also impacted negatively on other teachers’ self-perception and stress by perceiving that they were not matching the standards of the ‘star performers’. Thus while informed consent is possible to obtain, researchers must consider, (i) the extent to which participants can be fully informed, (ii) if consent could obstruct the research, and (iii) if participants could be subject to any harm if consent was sought.

The nature of ‘fully’ informed is another issue arising from the case studies. Although it is difficult and often unachievable in non-digital research to fully understand the culture of

the participants (see Hopkins, 2014), the diverse ways in which individuals use and engage with digital technologies (see Selwyn and Stirling, 2016) adds a further layer of complexity for predicting how individuals will use and engage with sites and devices. This was particularly evident in case study 1, where social media emerged unexpectedly as a form of CPD. Case study 2 also provides an example of the challenges associated with ‘fully’ informed consent with digital research concerning youth. For example, Bond and Agnew (2016) argued that youth have different and divergent ways of expressing themselves. Metaphorically, Malaguzzi (2016) went on further to suggest that each child can speak 100 different languages. In digital and online environments, these 100 languages are undoubtedly multiplied through the diverse forms of expression available; for example, status updates, selfies, emojis, hashtags etc. (boyd, 2014; Gardner and Davis, 2014; Selwyn and Stirling, 2016). A key challenge concerns understanding these forms of expression. As Gardner and Davis (2014) report, adults use social media, apps, and devices in different ways and ascribe different meanings to status updates, selfies, emojis, hashtags etc. For example, a Facebook relationship status of marriage holds very different identity, communicative and self-expression meanings to youth (Gardner and Davis, 2014). As such, we do not yet, if we ever will (given the pace of change), understand digital youth culture (boyd, 2014; Gardner and Davis, 2014). In case study 3, it can be concluded that it was difficult to inform parents about how their children would use the FitBit device and app and only predictions could be provided.

The discussions in this section show that the varying needs and expectations of participants, different types of data, the age of participants and the objectives of the research are all areas to consider for informed consent. Unique problems for social media, apps, and wearable devices are based around verification and deciding upon whether humans are involved in the research. Issues related to whether participants can be ‘fully’ informed about

the research and whether covert research is unethical are somewhat similar to traditional face-to-face research ethics. Yet the diverse ways in which individuals can use and engage with social media, apps, and wearable devices, adds to the complexity of deciding when, how, and who to obtain informed consent from.

Anonymity

Anonymity refers to not uncovering a person's name or details of the research context (Sparkes and Smith, 2014). Similar to informed consent, anonymity is associated with protecting individuals against any risk or harm (Ryen, 2016; Sparkes and Smith, 2014). Typical anonymisation strategies include the use of pseudonyms and cleansing the data by modifying quotes (Bryman, 2015; Ryen, 2016). Although it is normal practice to offer some degree of anonymity (Henderson *et al.*, 2013), there are several key issues: (i) participants who do not want to be treated anonymously; (ii) the ability to provide a rigorous account of the context; (iii) how reporting on the traits of an individual can make them identifiable; and (iv) the validity and representation of data that has been cleansed (Henderson *et al.*, 2013; Ryen, 2016; Sparkes and Smith, 2014). Due to these issues it is recommended that dissemination strategies are negotiated with participants prior to, during, and following data gathering (Phenoix, 2010; Sparkes and Smith, 2014).

When research is digital and online it is difficult to achieve anonymity, let alone negotiate or promise anonymity (AoIR, 2012; Jones, 2011). Everything is traceable, regardless of privacy protection rules (Halford, 2016; Taylor and Romney, 2016). Large search engines, such as Google or Yahoo, permit new ways of accessing information (Halford, 2016; Henderson *et al.*, 2013). In addition, data capture and analysis software are available for purchase; for example, twitonomy.com can be used to access public posts made

to Twitter and reliket.com can be used to access data from FitBit groups². Researchers also have access to or can design specific software for data capture (Procter *et al.*, 2013) and commercial businesses are designing apps for researchers to harvest data. Apple³, for example, recently introduced ResearchKit⁴, an app designed for medical researchers to gather data on health from users iPhones. These tools, that range from a Google search to an app for researchers, make posts highly traceable. Importantly, it is not only the post, such as a tweet, that is traceable. Meta-data captured from posts provides details of time, location of post, location of origin, email address, device used (e.g. iPhone or Android) and a whole host of other metrics (see twitonomy.com as an example). As Barnes *et al.* (2015, p. 100) pointed out, ‘never before has it been possible to have so intimate a window into people’s lives as they publish their experiences in short snippets’.

Given the advanced traceability capabilities, pseudonyms and data cleansing strategies are largely ineffective (Barnes *et al.*, 2015; Halford, 2016; Hewson, 2016; McKee and Porter, 2009). Case study 1 provides an example. In this study pseudonyms were used for teachers’ Twitter handles and tweets were published verbatim (Figure 1). Drawing on Halford (2016), pseudonyms were ineffective as a Google search would reveal the teachers’ Twitter profiles. For the Facebook posts, a certain level of anonymity was maintained due to the privacy settings of Facebook (Barnes *et al.*, 2015; Halford, 2016). While it must be questioned the lengths individuals would go to identify teachers (Carlén and Maivorsdotter, 2016), by using advanced data capture software it would still be possible to identify the teachers from their Facebook posts (Halford, 2016). Although using both pseudonyms and data cleansing strategies could be a plausible solution, if the research is associated with a

² FitBit is a wearable technology that can be used to track physical activity and health data. Users can synchronise their data with the FitBit app, and join particular FitBit groups to share their physical activity and health data

³ Apple is a multi-national technology company

⁴ Further information on ResearchKit can be found here <https://www.apple.com/researchkit/>

particular group of individuals, previous publications of the individuals and/or group, a researcher or research group, and/or an institution, participants of the research are still traceable (Barnes *et al.*, 2015; Hewson, 2016; McKee and Porter, 2009). In this sense, case study 1 illustrates how it is difficult to maintain anonymity in social media research.

Case study 3 presents an alternative approach to anonymity as teachers' Twitter handles were not anonymised in the reporting of the findings (Figure 3). This approach may be perceived as un-ethical, particularly as narratives and case studies of discussions in public forums have used pseudonyms for participants (see Dzikus *et al.*, 2012; Enright, Rynne and Alfrey, 2017). The decision to not adopt anonymization strategies in case study 3, however, can be justified through the minimal harm that would be expected from identifying teachers. In contrast to Dzikus *et al.* (2012) and Enright *et al.*'s (2017) research papers on conference discussions on sexual abuse and researcher's professional career journeys, the research did not explore sensitive topics or personal information. Instead, participants were asked to discuss fictional characters from a blog. A further justification for identifying participants comes from the consent statement published to the blog informing participants that their name, Twitter handle and tweets could be used in the reporting of the findings. Case study 3, therefore, exemplifies that in some cases anonymization strategies may not be required. Instead, an assessment of the sensitivity of information and the vulnerability of participants can be used to guide decision making (AoIR, 2011; Bundon, 2016; Jouhki *et al.*, 2015).

Relevant to the case studies in this paper, personal and health information are sensitive topics and youth are defined as vulnerable subjects (Bond and Agnew, 2016; Henderson *et al.*, 2013). Yet defining what is sensitive and who is vulnerable is a complex task (McKee and Porter, 2009). Firstly, perceptions of what might be regarded as sensitive health information are highly contextual. Individuals discussing headaches on Twitter vs individuals posting videos of their cancer treatment to YouTube are examples of different

types of health information that can be shared through social media (McKee and Porter, 2009). The complexity of determining the sensitivity of information is furthered when the differences between social media platforms are considered. For example, a video posted in a private group of Facebook vs a video posted to the public spaces of Twitter will likely lead researchers to arrive at different conclusions about anonymization. The type of information shared, the medium to convey information and the platform, therefore, all need to be considered with regard to anonymization.

Determining whether youth should be considered as vulnerable is also contentious. Many agree that there is a need to disrupt the notion that young people 13 or over are deficient in their decision making about their participation in online environments (Barnes *et al.*, 2015; Bond and Agnew 2016; Davis and James, 2013; Henderson *et al.*, 2013). Davis and Jones (2013), for example, report that youth are aware of and care about privacy risks online and demonstrate the same attitudes and behaviours as adults. Providing young people 13 or over with autonomy in how they use digital technologies is also reflected by key providers, given the minimum age of use is 13 or over on many social media sites (for example, Facebook, Instagram and Pinterest) and wearable devices (for example, FitBit), and this age is further endorsed by the US Children's Online Privacy Protection Act (COPPA, 1998). Although minimum age requirements are in place, a survey across 25 European countries indicated that one third of 9-12 year olds use the Internet and have their own social media profiles (Livingston *et al.*, 2011). Moreover, although adolescents may be aware of privacy risks, they hold different interpretations of private and personal information (boyd, 2014; Taylor and Romney, 2016). In a US survey, 84% of adolescents were reported to freely share health information online (Wartella *et al.*, 2016) and youth are reported to be frequently posting selfies that often provide quite revealing displays of their body (Casey *et al.*, 2017).

Thus while youth over 13 may be considered less vulnerable, a younger population are online that are willingly sharing sensitive personal and health information.

Although there is no definitive guidance on sensitive health information and the age of vulnerability, the case studies provide examples of anonymization strategies that could be followed if the data is sensitive and if participants are considered to be vulnerable. Case study 2 addressed both issues of sensitive information and vulnerable participants; participants were aged 13-14 and data from the FitBit and the FitBit app was health-related (i.e. steps, location, distance, calories) and personal (i.e., meta data of location, device, email address). The anonymization strategy in this study involved reporting on collective findings rather than individual results. While reporting on collective findings is not always appropriate for interpretative and qualitative paradigms (Halford, 2016; McKee and Porter, 2009), the novel anonymization approach of writing a fictional blog based on collective tweets (case study 3) could be considered. A fictional blog ensured that youth were not identifiable and their tweets were not traceable.

The discussions in this section show that anonymity is a complex issue. The traceability of data raises questions as to whether anonymity strategies should be applied. Similar to informed consent, anonymity practices should be guided by protecting against risk or harm. As such, key guiding principles for researchers are an assessment of the sensitivity of information and the vulnerability of participants.

Risk and Harm

The potential for risk and harm requires careful consideration. Key risks include vulnerable groups, sensitive topics and research that is invasive, involves deception and is biomedical in nature (Atkinson, 2011; BPS, 2014; Bryman, 2015). Harm can be classified as physical, social, psychological, emotional, financial, or legal (Atkinson, 2011; Bryman, 2015). Consequently, researchers are encouraged to complete risk assessments and devise

pre-emptive, preventative and responsive interventions to address concerns (Atkinson, 2011; BPS, 2014; Bryman, 2015). A key issue, however, involves establishing the extent to which harm is probable (Bryman, 2015). While in most sport, exercise and health research designs harm is identified to be minimal (Atkinson, 2011), high levels of regulation are often endorsed by ethical committees, particularly when the research is innovative in nature and new methodological practices are employed (Halford, 2016; Sparkes and Smith, 2014).

Risk and harm in digital and Internet-based research is often associated with determining if online behaviours, cognitions and emotions could produce negative consequences to individuals when they are offline (Barnes *et al.*, 2015; Denecke *et al.*, 2015). As Romney and Taylor (2016) emphasise, researchers need to consider whether information accessed and/or behaviours developed through digital technologies can influence offline behaviours. Yet, and as with most research, there is potential for both positive and negative effects. For example, in a physical activity and health intervention, “tweeting to health”, Chung *et al.* (2016) reported that physical activity levels increased and healthy eating habits improved as a result of participants using Twitter, the FitBit device and FitBit app. Positive effects were attributed to behaviours of self-monitoring, access to social support, and social comparison promoted by these sites and devices (Chung *et al.*, 2016). However, the behaviours of self-monitoring and social comparison have been reported elsewhere to result in harmful consequences (Gard, 2014; Lupton, 2015; Rich and Miah, 2016; Williamson, 2015). For example, social media use has been associated with body dissatisfaction (Fardouly and Vartanian, 2016; Lee, Lee, Choi, Kim and Han, 2014), where individuals with body image discrepancies are likely to experience negative mood states from using social media (Fardouly, Diedrichs, Vatanian and Halliwell, 2015). In a survey of US women’s uses of Pinterest, Lewallen and Behm-Morawitz (2016) reported that women who followed fitness boards, and used this site to engage in social comparisons of the body, were more likely to

engage in extreme weight loss behaviours. Similar to non-digital research, therefore, identifying the extent to which harm is probable is difficult to navigate.

Further comparisons for risk and harm between non-digital research are evident from case study 2. The clear comparison relates to the high levels of regulation that were endorsed, that could have limited the scope and impact of the research. As seen in Figure 2, the high number of pre-emptive and preventative procedures signals an approach to ethics informed by principlism. In other words, where actions are judged by their intent and decisions about risk and harm are driven by honesty, justice and respect (Sparkes and Smith, 2014). Unlike most accounts of principlism (see Sparkes and Smith, 2014), however, ethical procedures for risk and harm were not endorsed by solely the IRB. Prior to my application for ethical review, members of the IRB and I met to discuss the ethical challenges presented by adolescents uses of the FitBit and FitBit app. I prepared for this meeting by listing every eventuality – as I saw it – for risk and harm. Consequently, the ethical procedures constructed and followed were based on the negotiation between myself and the IRB. In an attempt to reflect on and question my highly regulated approach, a critical discussion on the procedures adopted is now provided.

The FitBit device and app enabled adolescents to track their bodily functions, interact with their peers, and upload their physical activity and health data to the app. Through such actions, I considered adolescents to be at risk from cyberbullying and obsessive exercise, and concerns were identified that adolescents could be contacted by others external to the study. To navigate against such risks, key procedures included the use of a bespoke email account, briefing and de-briefing lessons and adolescents were encouraged to only become online friends with peers in their class. In considering digital youth culture (Gardner and David, 2014), youth's awareness of online privacy (Davis and Corrie, 2014), and the positive potential of wearable technologies (Chung *et al.*, 2015), the necessity of these procedures

must be questioned. Drawing on Gardner and Davis (2014), while sending a taunt message on the FitBit app may be perceived by adults to represent a form of cyberbullying, adolescents may perceive this form of expression differently. It should also be noted that the actions promoted by the FitBit device and app are similar to learning tasks and lessons within PE. Indeed, many teachers use heart rate monitors and pedometers in lessons to further young people's learning about physical activity and health (Casey *et al.*, 2017; Kretchmar, 2015). So, it might be asked, why were these practices harmful when the FitBit could provide more credible and personalised information about the body?

The inclusion/exclusion criteria for case study 2 further exemplifies a highly regulated approach to ethics. Students with identified eating disorders were considered to be "at risk" from the FitBit device and app. To protect these adolescents, they were excluded from the research; if classes had students with these identified disorders different classes were selected for the study. Yet the FitBit and app could have brought positive effects to health eating behaviours (see Chung *et al.*, 2015). In addition, the support and monitoring strategies, at home and school, could have minimised risk and harm. In this sense, the study privileged adolescents who were considered to have 'normal' physical activity and health behaviours and excluded the students who could have benefited, in different ways, from using the FitBit.

It should also be noted that the focus on students with identified disorders may have excluded other 'hidden' students who may have benefited from the research. As discussed by Quarmby (2014), hidden students may include looked after children (or children in care) who have different social and emotional needs. For these students, the uses of digital technologies are important due to enhanced opportunities to strengthen social and affective development (Author 2016; Gilligan, 1999). The example of looked after children further demonstrates that inclusion/exclusion criteria failed to acknowledge difference and diversity, where exclusion may have limited the inclusion of those who may have benefited from the research.

In summary, case study 2 provides a clear example of how high levels of regulation were adopted to navigate against the potential for risk and harm. Similar to Casey *et al*'s. (2017) arguments, the dominant pessimistic views about wearable devices in PE (see Williamson, 2015) manifested themselves into assumptions about the potential for harm rather than good. The ethical procedures adopted limited adolescents' autonomy for using the FitBit to learn about their health, where adolescents' competency in online environments was not respected and tracking and monitoring were associated with risk rather than opportunity. What we learn from this section is that researchers need to be aware of the opportunities and risks that result from the use of social media, apps, and wearable devices. Researchers must aim to balance opportunity with risk in order for the benefits of the research to be possible.

Legality

Legal matters of copyright, freedom of information and data protection hold specific regulations that control what is possible in research designs; specifically, how data can be accessed, used, and reported on (Barnes *et al.*, 2015; Cohen *et al.*, 2013; McKee and Porter, 2009; Parry and Mauther, 2004). Although not limited to, these legal matters are typically associated with documentary, historical, and naturalistic research (see Cohen *et al.*, 2013). Two central issues, however, challenge researchers in addressing these legal matters, (i) determining ownership, and (ii) working across international laws and regulations (Cohen *et al.*, 2013; Parry and Mauther, 2004). Indeed, copyright regulations are often difficult to determine due to multiple layers of ownership; for example, ownership could be related to spoken words, the person who recorded the spoken words, the institution where the data is held or the research funder who commissioned the research (Parry and Mauther, 2004). For research that crosses international borders, abiding to different copyright, freedom of information and data protection laws is difficult to achieve (Cohen *et al.*, 2013). Thus, legality is an additional and yet complex aspect to ethics.

In digital and Internet-based research legal issues primarily relate to abiding to the terms and conditions of the site, app, or device (Halford, 2016). Terms and conditions often state regulations for copyright, intellectual property, and age of use (Halford, 2016; McKee and Porter, 2009; Wallace and Townsend, 2016). On Facebook, for example, the terms of service⁵ state that “you will not use our copyrights or Trademarks”, meaning that copying and publishing data from a Facebook profile is not possible. Facebook also state that users must be over the age of 13 and if the site is used for research, researchers must post a privacy statement:

If you collect information from users, you will: obtain their consent, make it clear you (and not Facebook) are the one collecting their information, and post a privacy policy explaining what information you collect and how you will use it.

Although researchers should aim to follow Facebook’s terms of service, case study 1 shows how Facebook’s requirement to post a privacy statement prior to the research is difficult to comply with when social media emerges, unexpectedly, as part of the research. The approach for informed consent, however, highlights how this legal issue might be navigated (Figure 1). Yet given Facebook’s regulations for copyright, other social media sites might be considered for research. On Twitter, for example, the terms and conditions place more responsibility on the researchers. Twitter encourages users to consider international law and respect the sensitivity of information within users’ tweets⁶. Twitter’s copyright policy⁷ also states that “Twitter respects the intellectual property rights of others and expects users of the services to do the same”. Twitter also does not restrict age of use. Due to greater levels of flexibility on Twitter, legal matters for case study 3 were easier to navigate. The intellectual property rights of tweets were respected through publishing names with tweets (Figure 3). Moreover, and in contrast to both Facebook and FitBit (Figure 2), Twitter’s terms of service

⁵ <https://www.facebook.com/legal/terms>

⁶ <https://support.twitter.com/articles/20171959>

⁷ <https://twitter.com/tos?lang=en>

did not alter the research by restricting the age of participants. Twitter is an example of a social media site that could be used for research due to the less restrictive regulations.

The difficulties in addressing different international contexts, rules and regulations is a legal matter that becomes more complex in digital and Internet-based environments (McKee and Porter, 2009), particularly in the case of social media (Townsend and Wallace, 2016). Case study 3 is an example, as the research involved participants from five different continents. Given that copyright and data protection laws in the EU, for example, greatly differ from those in the US (McKee and Porter, 2009), it was near impossible to meet all international laws. As identified in Figure 3, the approach taken was to treat the context of the research as the UK, and abide to UK laws for copyright.

Regulations of use and laws of context are important considerations. While issues of ownership and abiding to international law are not unique problems to digital research, the devices used and the ability to work more freely across international borders intensifies the issues researchers may experience. The case studies reiterate the importance of consulting regulations for social media sites, apps, and wearable devices prior to research beginning.

Ethical Procedures

In our global times, we will need to be more aware of variations in ethics and research ethics.

Ryen, 2016, p. 42

Building on Ryen (2016), the discussions have demonstrated that a more nuanced approach to ethics is required for research that uses social media, apps, and wearable devices. Traditional ethical principles of informed consent, anonymity, protection against risk and harm and legality are difficult to navigate and apply. The questionable involvement of human subjects, the traceability of individuals and data, and the diverse interactional capabilities of digital technologies - which are largely unknown - creates unique ethical problems. Moreover, large numbers of participants, the international nature of research and the

challenges associated with addressing legal matters are intensified through the use of social media, apps, and wearable devices. In agreement with Henderson *et al.* (2015, p. 546), the ethical dilemmas are ‘complex, multifaceted, and resist simple solutions’.

Similar to other innovative research (see Sparkes and Smith, 2014), a common response to new and emerging technology-mediated social spaces has been to adopt and adhere to highly regulated ethical procedures (Halford, 2016). The case studies exemplified this regulatory approach where the potential for risk and harm were favoured over opportunity. In particular, a pessimistic view was adopted that limited the scope and potential of the research, and had the potential to cause harm to some participants. Such a pessimistic approach also had clear consequences, given that the context of all case studies was educative and sought to promote the learning and wellbeing of the participants, alongside informing future educative health and physical activity programs. The discussions in this section will, therefore, begin to consider what a more nuanced approach to digital research ethics might entail and offer directions for practice and further research.

Drawing on the work of Gardner and Davis (2014, p. xii), there is a clear need to ‘move beyond the idea that technology is neither inherently benign nor inherently evil’. The same argument could be made about any object; a pencil could be used to write poetry or it could be used as a weapon (Gardner and Davis, 2014). A shift from the rhetoric of good vs evil requires an appreciation of the social and cultural uses of technology and how an individual’s uses of technology shape particular outcomes (Bundon, 2016; Gardner and Davis, 2014; Veletsianos, 2016). While it is important not to glorify the capacity of emerging technologies and be unaware (or plead ignorance) of the implications (Casey *et al.*, 2017), there is a need to appreciate that checking in on Facebook, taking a selfie, tracking diet on a mobile-health (m-health) app, or monitoring steps on a fitness device are daily practices for many (Lenhart *et al.*, 2015; Lupton, 2015; Selwyn and Stirling, 2016; Wartella *et al.* 2015).

There is also a need to acknowledge the digital youth culture by appreciating under 18s digital competency and respecting young people's autonomy in online environments. Ethical procedures that do not acknowledge such social and cultural practices can, as seen in the three case studies, cause harm, obstruct the research process, and as Sparkes and Smith (2014) suggest, stunt innovating, exciting, and impactful research.

One appropriate way forwards would be to adopt a culturally responsive relational and reflexive approach to ethics. This approach recognises that researchers will not be able to fully understand the perspective of the varied cultures with whom they interact (Lahman *et al.*, 2011; Sparkes and Smith, 2014). The international nature of social media, apps, and wearable devices (McKee and Porter, 2009; Wallace and Townsend, 2016), the ever-changing digital culture of youth (boyd, 2014; Gardner and Davis, 2014), and the varying uses of digital technologies (Casey *et al.*, 2017; Wartella *et al.*, 2015) makes this ethical approach highly relevant. Indeed, because we do not yet fully understand the interactional dynamics of social media, apps, and wearable devices, a culturally responsive relational and reflexive approach is useful because it does not base ethical procedures on assumptions of risk (Lahman *et al.*, 2011).

In applying a culturally responsive relational and reflexive approach to practice, ethical decision making would be guided by 3 R's (Lahman *et al.*, 2011; Sparkes and Smith, 2014). R1: a culturally responsive researcher recognises and values cultural differences and acknowledges that traditional research methods are not always appropriate. R2: a relational researcher balances their research with the obligation for and care for the participants they research. R3: a reflexive position is where the researcher is, (i) sensitive to the interactions of self, others and situations, (ii) notices the reactions to a research situation and adapts in a responsive, ethical and moral way where the participants safety, privacy, dignity, and autonomy are respected, (iii) pays attention to the power imbalances between the researcher

and the researched, and (iv) uses their writing and other forms of representation as a tool to be transparent so that their work can be understood not only in terms of what was discovered, but how it was discovered. Through the 3 R's, therefore, it is clear that ethical decision making is a process that occurs throughout the research where ethical decision making is highly contextualised, guided by a focus on culture, participants and context.

Based on the 3R's, definitive or text book guidelines for informed consent, anonymity, risk and harm and legality would not be helpful for researchers. Consequently, and similar to Halford (2016) and Townsend and Wallace's (2016), exemplar ethical procedures drawn from case studies would support researchers in making judgements about how they might attend to their participants, the context, and the culture in which the research is situated. Figure 4 presents example ethical procedures for research concerning social media, apps, and wearable devices drawn from the discussions in this paper and the case studies. In using the 3 R's as an overarching framework, researchers could select the most appropriate ethical procedure from Figure 4 that is relevant to their participants, context and the culture in which the research is situated.

It is important to emphasise that Figure 4 does not represent definitive guidelines and should be positioned as a 'working document'. Indeed, a key aim of this paper was to initiate discussions in sport, exercise and health about digital research ethics. It is hoped that the procedures identified will be critiqued, added to, and developed by further research. Thus, and similar to propositions outside of sport, exercise and health (see Halford, 2016; Shilton and Sayles, 2016), to move understandings of digital and Internet-based ethics forwards, there is a need to (i) identify how ethical issues have been addressed within research articles and (ii) work with IRB boards to address concerns. By disclosing ethical procedures and how challenges are navigated (see Carlén and Maivorsdotter and Palmer, 2016 for examples) we can begin to generate a comprehensive evidence-base on ethical procedures researchers might

follow. Digital and Internet-based researchers should also consult with IRBs prior to and during ethical review and/or consider serving on IRB boards to navigate against high levels of regulation (Halford, 2016; McKee and Porter, 2009). Ultimately, however, given the unavoidable nature of digital technologies and the Internet within research and within the lives of the researched, as a profession, we need to be engaging in ongoing debates about digital and Internet-based research ethics.

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