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‘My Smartphone is an extension of myself’: A holistic qualitative exploration of the impact of using a smartphone

Abstract

Six billion people worldwide will be using smartphones in 2020 (Jonsson et al., 2017). The devices pose convenient solutions for leisure and work-related activities (Kuss, 2017). However, psychometric and addiction based guidelines increasingly align smartphone over-use with technological addictions (Billieux et al., 2014). A more holistic exploration of smartphone use might help to highlight how everyday use interacts with or underpins more addictive forms of behaviours. Thus, this study aimed to explore in-depth experiences of smartphone use to understand from a holistic perspective what the perceptions and experiences of the devices are to smartphone users, using a qualitative focus group study ($n=21$, 11 females). Data were analysed using constructivist grounded theory. Results indicated smartphones were entwined with users’ lives as they formed an ‘*extension of the self*’. Subcategories highlighted that the devices hold value by ‘*externalising identity*’, ‘*constant connectivity*’, ‘*mediating intimacy*’, ‘*authenticating experiences*’, and ‘*forfeiting agency*’. In conclusion, the usability of the smartphone may create an interactive relationship with the sense of self. Close relationships with smartphones appear to shape interpersonal relationships. Additionally, participants held an expectation that the user has agency over their actions, which is at odds with evidence of un-autonomous, compulsive behaviours. Regarding the study’s public significance, this false perception of control may pose challenges for interventions which aim to reduce problematic smartphone use. Further research should contrast user perceptions using real-time smartphone data to understand the degree of true insight users have over their own behaviours.

244 words

Keywords: Interpersonal communication; Social Media; Smartphone; New technologies; Social Identity; Qualitative.

Public significance of this research:

The present study explored how everyday smartphone use holistically impacts the lives of people using them. We found that smartphones can be considered an extended part of “the self”, infiltrating personal identities, romantic and social relationships, professional settings and how authentic people perceive their everyday activities to be. To build a better understanding of how to support healthy smartphone use, our study highlights that the simulative positive elements of smartphone use need to be considered in research and clinical contexts together with, rather than in contrast to, potential problematic uses of the devices.

Introduction

In 2020, approximately 6.1 billion people will be smartphone users (Jonsson et al., 2017). In North America, Great Britain, and Canada, 77%, 70%, 66% of the adult population use smartphones, respectively (CRTC, 2016; Office for National Statistics, 2017b; PEW Research Centre, 2017).

Technology advances have prompted an explosive growth in the functionality of mobile phones. By 2016, smartphones and tablets had become the primary technology used to access the Internet (StatCounter, 2016). Smartphone users have become regular online consumers of news, media, shopping, and social networking through their devices (Office for National Statistics, 2017). British Telecoms regulators have called the UK a ‘Smartphone Society’ (Ofcom, 2017). Thus, there is increasing evidence that smartphones may have a profound impact on daily activities and everyday life.

Smartphones offer access to a landscape of information, entertainment, and communication applications and provide beneficial opportunities for society. Psychological research has paid particular attention to the communicative and social affordances of smartphones. From the perspective of the stimulation hypothesis, smartphone apps and social media allow individuals to both connect with existing friends and family (Church & Oliveria, 2013; Tali, 2016; Valkenburg & Peter, 2007) and to form new relationships with individuals belonging to different social groups through online social media and networks (Aretz et al., 2010; Sajuria et al., 2014). Email access and ‘hands free’ calling can support working practices out of traditional working settings, thus increasing productivity (Mellner, 2016). Smartphone communication can be versatile; allowing messages, images, audio and visual media to be shared with other individuals, within group conversation, and uploaded within select digital communities. Further, in a study of teenagers with chronic illness, online communication via smartphones increased individuals’ ability to communicate with more individuals, who live in diverse locations and come from differing social groups (van der Velden and Emam, 2013). Thus, smartphone and social media apps in particular can increase societal social capital and psychosocial support (Ellison, Steinfield, & Lampe, 2007; Park, Han, & Kaid, 2013).

As an alternative to the stimulation hypothesis, internet researchers and theorists have expressed concerns about the potential for smartphones to influence society negatively through facilitating engagement in problematic behaviours (see e.g., Kuss et al., 2017). Valkenburg and Peter (2007) referred to this as a displacement hypothesis, whereby the internet displaces offline social and identity benefits. For instance, individuals can become preoccupied with updating and maintaining social media profiles, developing a greater reliance on weak ties formed online, and reducing time interacting offline with friends and family (Caplan & High, 2006; Kraut et al., 1998; Kwon, 2012). More recent evidence highlights that monitoring other social media users' updates can cause anxiety and an experience referred to as the 'fear of missing out' (or FOMO) (Przyblyski et al, 2013). Similarly, there has been increasing attention to the phenomenon of 'nomophobia', or the discomfort and anxiety in the absence of a smartphone (Han, Kim, & Kim, 2017). FOMO and nomophobia are believed to be reinforced by constant on-the-go access of smartphone technology and the proliferation of social media applications (Buglass, Binder, Betts, & Underwood, 2017; Kuss & Griffiths, 2017). Moreover, updates, notifications, reminders, and similar features of the device may exacerbate a preoccupation with the apps hosted within the smartphone (Yoon et al., 2014). This may result in individuals feeling obliged to check and respond to the device (Kanjo, Kuss, & Ang, 2017; Kuss et al., 2018). Smartphones impact individuals' ability to separate work from home life, contributing to work burnout, and detrimentally impacting wellbeing (Derks & Bakker, 2014; Mellner, 2016; Reinke & Chamorro-Premuzic, 2014). Such negative impacts on personal, professional and social spheres add growing credence to the argument that negative emerging smartphone experiences are indicative of problematic use and behavioural addictions (Billieux et al., 2014). Accordingly, in line with the components model of addictions (Griffiths, 2005), smartphone addiction may derive as a consequence of biopsychosocial processes akin to those experienced in substance-related addictions, including mood modification, salience, tolerance, withdrawal, relapse and conflict.

Smartphone addiction is often discussed in terms of overuse, pathological use, obsessive use, symptoms of impulsivity and lack of control (e.g., Beranuy, Oberst, & Carbonell, 2009; Billieux & Linden, 2008; Kwon, Kim, Cho, & Yang, 2013). A comparison of smartphone addiction in European

countries has revealed that individuals from Western European countries report higher symptoms of smartphone addiction when compared with Eastern European populations, with 3.9%, 3.5%, and 3.4% of the samples in Belgium, UK, and France, respectively, reporting the maximum level of smartphone addiction (Lopez-Fernandez et al., 2017). Studies (e.g., Lopez-Fernandez et al., 2017) offer a valuable overview of addiction on consistent measures of smartphone use in large cross-sectional samples. However, measures used to assess smartphone addiction are often developed based on definitions of substance and gambling addictions (Billieux et al., 2014; Kuss, Harkin, Kanjo, & Billieux, 2018; Kwon et al., 2013). Conversely, as smartphones are becoming intimately integrated into many aspects of everyday lives (Kuss, 2017), the line between ‘overuse’ and ‘necessity’ use may become blurred. It has been suggested that smartphone technology and social media have become the “extensions of man” in the 21st Century as they support interpersonal connections via our behaviour, thinking, and ways of relating (Kuss, 2017).

Despite the rapid expansion in smartphone ownership worldwide, there is limited holistic oversight of how the various uses impact lived experience. Whilst we have observed smartphone integrating with social relations, cognition, and wellbeing (Baker & Algorta, 2016; Best, Manktelow, & Taylor, 2014; Kuss et al., 2017), it is valuable to reflect on the overarching experience this produces for an individual using the technology in various domains of life. After all, if individuals perceive smartphones to be beneficial for their lives, they may use smartphones in spite of potential problematic impacts their use can have on cognition and wellbeing. Thus, to gain a nuanced oversight of the significance of smartphones to individuals, we must understand the user experience in everyday life and examine their judgements over their use in all pertinent contexts. The purely psychometric approach in the prevailing smartphone use literature may overlook the holistic impact of smartphones in the lives of modern users, which is a gap in knowledge the current study aims to address.

Accordingly, this study aims to explore user experiences of smartphones and to explore the perceived impacts this use has on everyday lives.

Methods

Study design

This qualitative group interview study was guided by constructivist grounded theory. Qualitative research allows in-depth insight into underexplored phenomena (Denzin & Lincoln, 2011). Focus groups encourage participants to describe perceptions of shared phenomena (Charmaz, 2014) and therefore focus groups were considered a time-efficient method for eliciting insights and understanding into smartphone experiences. Constructivist grounded theory analysis was used as it allowed analytical consideration of how shared meaning concerning smartphones is constructed by individuals and within focus groups (Bryant & Charmaz, 2007; Charmaz, 2014).

Participants

Invitations to participate in a focus group study were shared via a mailing list of smartphone users generated following a quantitative project investigating smartphone use (Pivetta, Harkin, Billieux, Kanjo, & Kuss, 2019). This mailing list was created via a recruitment both online (via research recruitment websites, online forums, Twitter, Facebook, and online student portals) and offline (via posters in university communal areas and cafes). The mailing list contained individuals who consented to be contacted for a face-to-face focus group. Individuals were eligible to participate in a focus group if they owned a smartphone and were available to attend a focus group in person.

Three focus groups were attended by a total of 21 individuals (group one $n=9$, group two $n=6$, group 3 $n=6$), with each session lasting an average of 95 minutes (ranging from 93 - 96 minutes). Average participant age was 26 years ($SD=8.86$ years, range=19-47 years). Participants were highly educated men ($n_{\text{male}} = 10$) and women ($n_{\text{female}} = 11$), with all participants educated to at least a background in further or vocational education and 43% of the sample educated beyond postgraduate degree level. A total of 14 participants were students, and seven participants were members of staff at the university. Students included undergraduate, Master's and PhD students, and the staff roles varied from research assistant, teaching associate, lecturer, to academic professor. To ensure participants could not be identified, the roles have been simplified in the participant demographic table as either student or staff, see Table 1.

[Insert Table 1 here]

Procedure

Three focus groups were held in university rooms designed for qualitative research, and recorded using Dictaphones. The rooms used were eleven persons capacity meeting rooms with a table to hold the recording equipment, a circle of chairs, and a presentation screen. Focus groups were conducted within a six-week period, scheduled at intervals to allow analysis of focus group data between each session, in accordance with theoretical sampling principles. Thus, data were transcribed and preliminary analysis informed subsequent focus group discussions. The authors ran each focus group. The facilitators were experienced qualitative researchers.

Focus groups were scheduled for 90 minutes and were semi-structured to facilitate discussion. The schedule began with an ice-breaker task discussing favoured and least favoured apps. Following this, participants were encouraged to discuss their personal experiences and perceptions of smartphones using questions exemplified in Table 2. Focus group discussions were supported by a short slideshow of six images portraying smartphone use. Visual aids are a useful focus group tool to elicit in-depth data in comparison to simple questions (Wilkinson, 2006). Images used in this study contained no text and were selected by the research team to portray different settings of smartphone use. The images were used as an aid to facilitate group coherence, having a focus to discuss and gain depth by greater group cohesion. Thus, prompts included “what do you think this image portrays?” and “how do you feel about this?”

[Insert Table 2 here]

Ethics

Informed consent was obtained from all individual participants included in the study. To assure participants’ confidentiality and anonymity, all identifying information was removed from the transcripts, and participants were referred to according to identification codes. These codes included the unique participant number (P#) and the focus group (FG#) in which they participated (e.g., P1, FG1), which are used in the findings section to evidence the source of quotations. This study received ethical approval from the host institution’s ethics committee.

Data analysis

Focus groups were audio recorded, transcribed by the research team and data were input into the data analysis software QSR-NVIVO, which hosts qualitative data to support the organisation of analysis. Data analysis was conducted concurrently as focus groups were scheduled and conducted (Bryant & Charmaz, 2007).

Analysis followed a systematic coding strategy informed by principles of Constructivist Grounded Theory (Charmaz, 2014). Initially, transcripts were openly coded line-by-line using QSR-NVIVO, with attention paid to construction of smartphones by individuals and how group conversations shaped the perceptions and reflections of smartphone use in the lives of users. Secondly, focused codes were produced by drawing together previously identified open codes with common logical underpinnings. Thirdly, data were further grouped to form categories which represented participant constructions of smartphone use. During this process, one category was identified as influential to all, and named as a core explanatory category, comparative to surrounding categories exemplifying experiences. This formed a relational diagram (presented in figure 1) which facilitated a holistic overview of the central perception of participants when describing their smartphone use, and the proliferating ways their smartphones impacted their everyday (Chamberlain-Salaun, Mills, & Usher, 2013). Finally, the data, categories, and relational diagram were reviewed by the research team to ensure the findings were grounded in the data.

Findings

The focus groups produced lively discussions about the integration of smartphones in participants' lives. Grounded theory analysis revealed an overarching category labelled 'an extension of the self' which represented how smartphones influenced participants' lives. The concept of the smartphone as an extension of the self underpinned the further five categories in the data. Therefore, these five categories were considered subordinate categories, which defined different aspects of participants' smartphone use. The subordinate categories were labelled 'externalised identity', 'constant connectivity', 'mediating intimacy', 'authenticating experiences', and 'forfeiting agency'. The structure of the categories is reflected in Figure 1 and is described below.

[Insert Figure 1 here]

An extension of the self

Most participants considered smartphones as integral to their daily lives. Smartphones unlocked access to a wide range of features and applications (or apps), such as alarms, calendars, emails, banking, communication and social media. These apps transformed ordinary, daily experiences. For instance, smartphones were used by individuals on a commute to work or university. Apps aided travelling with updates on public transport status and route plans. Thus, most participants felt that they were stimulating and educating themselves in a setting which they believed they would be disengaged in, such as when sitting on a public transport journey. As participant six in focus group three noted, smartphone apps gave them access to information they might not otherwise have, such as engaging with breaking news, literature, games, or friends. Therefore, the groups believed that smartphones extended what individuals were capable of achieving without portable smartphone technology. Consequently, smartphones were commonly kept within reach and used throughout the day. This regular and consistent presence made smartphones more than an addition to daily lives. Smartphones were conceptualised as a part of or an extension of one's body.

P5 "It is basically like a man-made extra sense for you. You can, you know, [know] what is going on. You can be completely connected in the same way you can kind of [use your senses], you have hearing, sight, taste, smell, touch. You have your phone. It is really, it is like an extra sense. It might sound absurd, but it really is." FG2

P4 "I will admit I am probably one of those people ... I am constantly [on it]. If I am just at home I will have it in my hand ...I don't know why but, I just do. It is weird, like it has become part of you almost... it really is like an extended part of you. But just in a device form I guess." FG2

In each focus group, several individuals had attempted to reduce the time and reliance they had on their smartphones. Participants deleted apps which they perceived as time-consuming, including

social media and gaming apps. Similarly, several participants limited the hours or places in which they used their phone. For instance, phones were prohibited before bedtime or in restaurants. Each of the participants remarked on the difficulty and restraint required to reduce their smartphone use. Indeed, changes in smartphone behaviours were described as temporary, and individuals expected to return to regular smartphone use. Nonetheless, several participants noted that they felt a sense of freedom from removing the influence of the smartphone or apps from their lives. Thus, the exertion required to reduce smartphone interactions indicated the extensive influences the devices have on individuals' cognitions and routines.

P6 "I'm a compulsive checker because I check the whole time. So I'm using it a lot, so I'm a prime example of constant checking... so I'm, I'm really trying to, to control it in a way and not to um... So it can be very liberating as well ... not to have it, but if I don't have it I feel naked..." FG3

P4 "Now that we've gone three weeks without it, it is quite freeing not having a social media account... But I'll admit I've never ever gone, definitely not a month without social media since I was like 11, 12, ... that's bad, ... and that's 8 years of just constant social media all day every day checking your phone and this is the first time I've gone without it I think I'll fall back into it." FG2

The concept of the smartphone as an extension of the self was present in most participants' perceptions of the device. Thus, five distinct categories were constructed to explain how this extension impacted individual's lives and daily interactions, representing a holistic view of smartphone use. These five categories were considered subordinate categories to the core category. The subordinate categories were labelled 'externalised identity', 'constant connectivity', 'mediating intimacy', 'authenticating experiences', and 'forfeiting agency'.

Externalised Identity

Many participants personalised their smartphones to suit their identities or host a representation of themselves. Phones accumulated information, pictures, and music that were relatively unique to each

individual. In focus group two, participants four and six explained that by installing and deleting apps which suited their lifestyles, their phones reflected their likes and dislikes. This seemed to increase the affinity and connection individuals had to their phones. Similarly, several participants chose images for their smartphone background that were significant to themselves, their relationships, their family, or their sense of humour. Social media were further described as applications which allowed individuals to present their character to the world through their device. The smartphone was integral to managing this online persona, as individuals could project their identity across many apps, throughout the day, from a single device.

P6: "Do you ever go on someone else's phone and just look through their home screen and stuff? See how it is different to yours, 'oh you have got that' or that is not in a normal place, why is that there. Press something and it is not like your thing. It is really weird how you just-

P4: "Yes, it is like, it really is like an extended part of you. But, just in a device form I guess." FG2

Across focus groups, participants debated whether smartphones reflected an honest account of the individuals' identity. Notably, secondary and often idealised versions of their friends and family were observed within smartphone apps, particularly on social media. Moreover, participants were concerned about how an inaccurate portrayal could affect other social media users. Several participants felt in competition with other online social profiles. Apps such as Instagram presented idealised body images, which both male and female participants compared their bodies with. This raised anxiety when individuals considered how their own profiles, and thus their identity, might be judged online.

P8 "Yes so, they like kind of dichotomise our lives into like, the digital self and the real self." FG1

P5 “If you’re going through there [for] five hours a day looking at your friends, you want to make sure that what you put out there is something that people aren’t going to judge you on.” FG2

Constant Connectivity

Instant communication and social interactions were central to participants’ smartphone use.

Smartphones allowed instantaneous contact in multiple forms: by call, text, or over social media. This gave participants the impression that they were never alone. For several participants, this helped to combat periods of loneliness. Related to this, participants valued that smartphones enabled them to keep in touch with family and friends living at a geographical distance. For instance, in focus group three, participant six had relocated to the UK with her children. For this participant, smartphone apps allowed her children to communicate with their friends from home. In turn, believe she could better support her children’s adjustment by providing smartphones that allowed regular international communication.

P6 “I think it does serve a very big function, so for example, I was talking about my children ... they had to adjust, but I think part of what kept them going and made it easier, for them was the fact that they could keep in touch, so they almost felt they hadn't gone... the fact that they could keep, uh, could be in constant contact, could be constantly online with their friends, ... I remember my daughter saying ‘Mom, you know, you brought us here, y'know, at least let us use our phones because this is the way we keep in touch’” FG3

P9 “[you are] never alone with a phone.” FG1

Alternatively, participants discussed work-based communication in a more negative frame. Instant communication and connection over email raised concerns that individuals would be expected to communicate out of working hours. This could be overwhelming, and yet accessing work emails, documents, and communications out of hours was described as an easy habit to get into. Our participants were from an academic background and expressed concern that their working lifestyles

could mediate the overuse of smartphones at inappropriate times. As such, the constant connectivity of smartphones was presented as a motive for regular smartphone use, whilst presenting a rising challenge in workplace contexts.

P1 “I think if you didn't have a phone it would be quite hard to have that, like, instant communication ... So I think for me that's what my smartphone is it's my way of people contacting me and me contacting other people, just like that (Snaps fingers).” FG3

P1: “it gives you the ability to do work outside of work ... it is very easy to kind of get into just checking emails in the middle of the night, you know. So it may, it extends the working hours I think. And erm, maybe that person was checking their email when they should have been enjoying themselves watching the movie or something like that... It is a constant thing. And it is a never ending thing. So you, you know, you have never quite done enough. For the week. So it is very easy to, you know be doing work outside of hours and academics tend to work outside of hours anyway. So this just erm, unfortunately encourages us to do that.” FGI

Mediating Intimacy

Smartphone communication, for most participants, did not replace or outweigh face-to-face communication. However, there was consensus that smartphones had an increasing impact on offline interactions. For some participants, smartphone communication supplemented offline interactions. Smartphone apps allowed individuals to keep abreast of their friends' wellbeing and activities when they would otherwise be unable to communicate with or visit them. In addition, several participants regularly viewed smartphones when with friends and partners. This had a mixed reception amongst focus group participants. The more positive reflections showed that smartphones facilitated intimacy between couples. Smartphone use, such as playing games or reviewing news together in an evening, was an activity that brought individuals closer together. Similarly, participants observed positive

emotional reactions to messages and images shared over social media, such as participant one's grandmother receiving supportive 50th Anniversary messages on Facebook.

P4 "we are quite happy to sit like, when we are at home, we will sit next to each other both just playing games, or Reddit or whatever. And it, it doesn't feel like it is a bad thing. Because like, sometimes we will, we'll be like, oh look at this funny thing like. Because you are still thinking of the other person. You are not, it is not like this is solely for me." FG1

P1 "my grandma had a 50th anniversary and my mum put up [on Facebook] this long paragraph with nice pictures, and she spent loads of time writing it ... then my grandma read it, ... and my grandma started crying...its, there is two sides to the coin on the whole showing intimacy online ... if you do something special like that then, it's a good thing." FG2

On the other hand, some participants perceived the smartphone as an unwelcome third person in their relationships. All three focus groups discussed instances where notifications had interrupted conversation amongst romantic partners or friends. This appeared to be the most minor and common intervention of a smartphone in interpersonal relationships. Several participants had reacted to their partner's smartphone use with jealousy. The devices were described as stealing the partner's attention from their own intimate moments, such as in a restaurant or when watching television together. In the most extreme instances, participants explained that the device and particularly social apps could enable and mediate jealousy and conflict in relationships. This conflict was characterised by monitoring the partner's interactions with others on social media, or 'cyberstalking' (P6, FG3).

P5: I mean my friend gets really miserable when her boyfriend likes other girls' pictures [on Instagram] (Sounds of group agreement) like it really winds her up, like I think he does it to wind her up as well" FG1

P6: There's also sort of a triangulation there, it's like as if it's, um you know it's a couple and there is um, the phone.

P4: The phone is a third person

P6: Yes, there's sort of, I mean it's uh like a mediator in their relationship ... it's strange because there's sort of a lack of intimacy because there's just, somebody else with them. And that's the phone" FG3

Authenticating Experiences

Smartphones impacted participants' perceptions of the world around them. This was sometimes discussed jovially, in a mocking reflection of friends or partners using their phones. Participants joked that taking photos and sharing experiences on social media made the experiences more "real" or authentic. Similarly, relationships were not recognised unless they were 'officially' stated on social media apps. However, despite the comical tone of these comments, aspects of smartphone apps impacted individuals' thoughts and feelings. In focus group two, participant four highlighted that, by following fashion accounts on Instagram, his sense of style and the clothes he wore altered. In focus group 3, participant two explained that watching comedic videos and discovering humorous community groups through apps shaped what she found amusing and the jokes she shared offline. Thus, participants showed an awareness that smartphone apps moulded individuals' tastes and perceptions of themselves.

P8 "I feel that people need to take the picture of it (food or activity) because they need to inject themselves into this digital realm and do some talking to the people.

I feel that it doesn't quite exist unless it has been posted." FG1.

P2 "it kind of changes your sense of humour as well, like moulds it, so same way TV would if you use it as a source of entertainment and if you create friendship groups based on common interests. You all have a shared sense of humour and you'll find friends who share that sense of humour on social media ... you all have like one common joke and you want to share these senses of humour and then that

not only affects your online persona but also genuinely your actual character.”

FG2

Smartphones implicitly affected how participants moved through the world. Having a smartphone accessible made individuals feel safe in risky situations, such as when walking alone at night. The smartphone could be used to call for help when unsafe. Furthermore, smartphones appeared to alter some participants' experience of time. Many participants actively chose to use their phones to 'kill time' when they were bored. This could be when at home in an evening, or even when catching spare moments during the day, such as when walking in the street. However, many participants commented that they were surprised at the amount of time they lost using smartphones. Furthermore, this was the most common reason individuals tried to control or reduce the time they spent using phones.

P3: “You're just so used to, like that little bit of spare time ... walking to a place you're like oh, I'll just quickly check my phone now, if you're, yeah, like going from one lecture to another, it's just easy to get it out and check, I suppose, like you're used to doing it in your spare little bit of time you get in the day.” FG3

P6 “Sometimes like, my mechanism would be y'know I totally take it out sometimes so I don't know what has happened, might have been a bomb has fallen next to me and I don't know about it because I prefer not to touch it because if I touch it I know I'll lose time” FG3

Forfeiting Agency

Focus groups discussed whether individuals had control and responsibility for their smartphone actions. Most participants emphasised that they had personal autonomy with their smartphones; problematic actions were the fault of individuals who had a lack of control over their behaviours. For instance, asocial behaviours, such as using smartphones during lectures and face-to-face conversations, reflected poorly on the individual. Similarly, there was group consensus that smartphone use while driving or crossing the road was poor responsibility from the smartphone user. In focus group one,

participant seven raised the possibility of developing smartphone technology to prevent use in dangerous situations. Specifically, smartphones could be disabled within a car. However, the group discussion concluded that agency should sit within the hands of the individual.

P9 “[automatically disabling smartphones in cars] is too controlling.... it is, that is moving civil liberties again. What if you are a passenger? What if you need to access something?”

P1 “isn't that about taking the control out of our hands. So if you want your phone off when you go into your car there is erm, a special thing that is called an 'off button'. And you can push it.” FG1

Despite discussion of smartphone agency, participants across all focus groups referred to instances where they automatically or inadvertently used their smartphones. Most participants described the Facebook app as one which they looked at, or checked, without active purpose. Similarly, individuals described itching to check notifications, particularly in contexts where they were bored or disinterested, such as at work or in the library. Through discussions of both habitual and purposeful smartphone use, participant nine (focus group one) suggested that the line between the two behaviours could be blurred. If smartphones and their behaviours reflected agency and responsibility, then uncontrolled behaviours could reflect a pathological lack of agency with smartphone use.

P9 “What if someone feels compelled to, like, reply to people on like social media ... again, where is the line between. I agree, usually it is the person's fault. But when does one behaviour become pathological? Or become a problem for them where they can't put things down, you know. You know how engaging mobiles are, and you know you can be on apps or whatever, and you can be lost in the zone. So definitely there is a, a role of erm, someone's own action and volition.” FG1

Discussion

This study aimed to explore user experiences of smartphones and the impacts these activities were perceived to have on everyday lives. This holistic insight revealed ways that smartphones were entwined with everyday life. Smartphones impacted the sense of self, social and romantic relationships, agency, and experienced authenticity of the physical world. This insight extends prior problematic use perspectives to incorporate the features which are valued by individuals. (Baker & Algorta, 2016; Best, Manktelow, & Taylor, 2014; Kuss et al., 2018) Moreover, this study confirms theoretical proposals that smartphones have an extensive influence over ordinary lives and behaviours (Billieux, 2012), offering stimulation, but at the same time contributing to displacement and problematic behaviours (Valkenburg & Peter, 2007). In the following discussion, we consider the significance of smartphones impacting identity, social communication, interpersonal relationships and smartphone agency. We consider the extent to which our findings provide support for the stimulation theories vs. displacement and problematic device use perspectives, and potential implications for future research.

Firstly, smartphones channelled the participants' sense of self. This extends qualitative evidence by Fullwood et al. (2017), who highlighted that smartphones can take on an anthropomorphic persona in the eyes of their owners. In the present study, self-presentation was achieved through multiple smartphone behaviours, including selective use of images on the smartphone background, social media apps, and by retaining apps which represented the users' best interests. From the perspective of the stimulation theory of technology use, disclosing personal information online may offer a positive form of self-expression which can work to reduce social anxiety and enhance wellbeing (Valkenburg & Peter, 2007; 2009). On the other hand, gaming literature suggests that individuals with lower psychological wellbeing are more likely to create digital selves based on ideal identities, and subsequently to rate their digital identity as more favourable to their own (Bessièrè, Seay, & Kiesler, 2007). Thus, for individuals with poor self-esteem, it may be that the identity created and presented through multiple channels in smartphone apps displaces an individual's self-esteem in the offline world. Klimmt, Hefner and Vorderer (2009) theorise that a media environment with greater opportunities to manipulate the presentation of an identity has greatest impact on lived identity

because this environment allows individuals to simulate the cognitions of the idealised self, and to alter their own self-concept (Klimmt, Hefner, Vorderer, Roth, & Blake, 2010; Przybylski, Weinstein, Murayama, Lynch, & Ryan, 2012). Thus far, research investigating the effect of smartphone apps on self-esteem have only considered applications in isolation. Therefore, it may be prudent to quantify smartphone impact on self-presentation through multiple apps, particularly when examining self-esteem patterns in relation to device use.

Secondly, the findings of this study have illuminated a double-edged nature of increased social smartphone communication vis a vis the stimulation vs. displacement theories (Grinols & Rajesh, 2014; Johnston et al., 2015; Nguyen, McElroy, Abecassis, Holl, & Ladner, 2015; Valkenburg & Peter, 2007; Yun, Kettinger, & Lee, 2012). On the one hand, the smartphone stimulates existing social networks by connecting individuals separated by geographical distance (Madianou & Miller, 2011). This also provides a regulated environment in which users can craft messages and maintain relationships where commitments or mental health difficulties can otherwise impact relationship maintenance (Simoncic, Kuhlman, Vargas, Houchins, & Lopez-Duran, 2014). On the other hand, participants in the present study reported experiences of smartphone intrusion and overuse through constant connectivity, particularly where connectivity concerned work-related activity. This finding is in line with proponents of the *present-absent paradox* and the *freeing-enslaving paradox* (David & Roberts, 2017; Turkle, 2017). That is, individuals are burdened by obligations to check and respond to the device (Kanjo et al., 2017; Kuss et al., 2018), which may lead to work burnout, detrimentally impacting wellbeing (Derks & Bakker, 2014; Mellner, 2016; Reinke & Chamorro-Premuzic, 2014) and leading to displacement (Valkenburg & Peter, 2007). This may explain why smartphone overuse has been linked to depression, increased stress and lowered self-esteem (Elhai, Dvorak, Levine, & Hall, 2017; Lup, Trub, & Rosenthal, 2017). The present study adds credence to the argument that it is the nature and quality of constant communication which determines problematic constant communication patterns of behaviour (Davila et al., 2012). Evidence from the present study suggests that for a holistic understanding of the mental health impact of smartphone addiction, both the stimulation and displacement theories should be considered.

Thirdly, the present study found that the influence of smartphones extended to the participants' personal and romantic relationships. A multitude of features available on the smartphone can support and maintain intimacy with romantic partners (Krasnova, Abramova, Notter, Baumann, & Krasnova, 2016; McCormack, 2015). This supports a key tenant of the stimulation theory of technology use, as the smartphone can act as a stimulant for enhancing existing relationships (Valkenburg & Peter, 2009). Moreover, the social affordances of smartphones are valued by their users, with a US survey highlighting that 83% of adolescent users reported feeling more connected to their friends via social media (Lenhart, Smith, Anderson, Duggan, & Perrin, 2015). However, this study provided insight into asocial patterns of use which have recently been linked to evidence of problematic and compulsive behaviours (Billieux et al., 2015; Kuss et al., 2018). Individuals can come into conflict over smartphone use in a relationship, feeling rejected or 'phubbed' if they are ignored in preference for a smartphone (David & Roberts, 2017). Moreover, instances of cyberstalking were reported in this study. Cyberstalking behaviours have been linked to narcissistic personality in men (Ménard & Pincus, 2012) and a motivation to obtain intimacy in women (Purcell, Pathé, & Mullen, 2001; 2010). Thus, stalking and cyberstalking have both been connected to negative relationship experiences with individuals narcissistically wounded with a need for control or experiencing anger (Ménard & Pincus, 2012). The nature of the romantic relationship could be a key predictor of problematic or positive smartphone behaviours within a relationship. Given the nature of this small-scale qualitative study, it would be prudent for future studies to quantitatively examine the impact of relationship styles on problematic smartphone behaviours. With this evidence, future therapeutic interventions aimed at reducing problematic smartphone behaviour may need to focus on smartphone use and relationship quality in order to successfully address the development of problematic behaviours.

Finally, participants revealed a tension regarding having agency over their smartphone actions, while performing behaviours which were automatic and potentially compulsive. Habitual behaviours described in the focus groups matched criteria for behavioural addiction (Griffiths, 1995, 2005). Smartphones were highly salient to participants in this study. Focus group discussions indicated a tolerance for behaviours with negative impacts on social relationships. Participants experienced

unpleasant feelings when they withdrew from apps or their smartphone. Many relapsed after periods of abstinence. Finally, smartphones produced conflict in some relationships and friendships. This aligns with Griffiths' (2005) six key indicators of behavioural addictions. Furthermore, expectations of agency might reveal implications for how individuals seek help to adapt or alter habitual behaviours. Studies have suggested that habitual behaviours, such as smartphone-checking, may be resistant to change, and self-motivation may not be enough to change more obsessive behaviours (Oulasvirta, Rattenbury, Lingyi, & Raita, 2012). There has been a growing interest in interventions designed to reduce compulsive smartphone behaviours (Kim, 2013). The dynamic role of individual agency should be explored in the context of such interventions.

This study has provided in-depth insight into the impact of smartphone use, holistically accounting for impacts which are appreciated by individuals, and elements which are perceived as problematic. A key limitation of this study is a reflection on the small qualitative nature of this study, in addition to the source of the study sample. The qualitative nature of the study means that the results may not be generalizable to other populations, particularly individuals who may have different expectations or needs from their smartphones, and thus different holistic experiences of the devices. It is worth reflecting on the nature of the present sample being drawn from an academic setting; our participants were highly educated, from a workplace setting in which smartphones are prevalent in both working and personal life. This follows the direction of the field, as smartphone use is overwhelmingly studied in adolescent and student samples (Vahedi & Saiphoo, 2018), often in conjunction with reflection on the academic impact of device use (e.g., Grinols & Rajesh, 2014). Therefore, the results of the present study may not represent the growing population of smartphone users from alternative employment and cultural backgrounds, for whom smartphone use is not a daily necessity within workplace and personal interactions. Thus, we strongly recommend that future research explore the impact of smartphone use within other employment populations, such as self-employed and retired individuals.

Conclusions

The findings of this study have revealed both the potential of smartphones to enrich lives and to have a negative impact on wellbeing due to the close connection smartphones can have to an individual's

sense of self. Smartphones were found to have a symbiotic relationship with identity, agency, social relations, and interactions in the physical world. In these domains, as highlighted by our themes, we suggest that it is possible for existing relationships, self-esteem and identity to be stimulated, in support of the stimulation theories. However, participants also identified pathways where smartphone behaviours can lead to problematic outcomes, such as displaced activity online and technological addiction. In conclusion, we propose that theoretical understandings of smartphone use could benefit from holistically accounting for both stimulation and displacement pathways of behaviour. If we can better understand how to enhance stimulation and limit displacement, we could encourage and better support individuals to lead healthy relationships with their smartphones.

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Table 1: Demographic information for Focus Group participants

	N
Focus group 1	9
Gender	
Male	4
Female	5
Prefer not to say	0
Employment status	
Student	3
Staff member	6
Highest Education	
GCSEs	0
Further / vocational education	1
Higher education	1
Postgraduate degree	7
Focus group 2	6
Gender	
Male	5
Female	1
Prefer not to say	0
Employment status	
Student	6
Staff member	0
Highest Education	
GCSEs	0
Further / vocational education	5
Higher education	1
Postgraduate degree	0
Focus group 3	6
Gender	
Male	0
Female	5
Prefer not to say	1
Employment status	
Student	5
Staff member	1
Highest Education	
No formal qualifications	0
GCSEs	0
Further / vocational education	4
Higher education	0
Postgraduate degree	2

Table 2: Focus groups schedule

Topic covered in focus group schedule	Specific question	Corresponding image prompt
Ice breaker discussion	Tell us your name, your favourite and least favourite smartphone application What patterns do you see in the types of applications we like / dislike How is your behaviour with your phone influenced by your favourite/ least favourite apps?	None
Dependence on smartphones	What do people think about the amount of time spent on a smartphone?	Image of a smartphone and a hand
Interpersonal relationships and the smartphone	How do smartphones contribute to the ways you communicate?	Image of a romantic couple both individually looking at smartphones
Limits of smartphone behaviours	Can anybody think of places where mobile phones should not be used?	Group of commuters individually using smartphones, image of a smartphone in a library, in a cinema
Smartphone dangers	What might be risky about smartphones? How might smartphones provide safety/ security?	Image of a smartphone user crossing the road, image of a smartphone user exercising
Summary	How would you summarise your relationship with your smartphone?	none

Figure 1: Categories Representing the Construction of Smartphone Use in the Context of the Self.

