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1 **EXPLORING BRITISH ADOLESCENTS' VIEWS AND EXPERIENCES OF**
2 **PROBLEMATIC SMARTPHONE USE AND SMARTPHONE ETIQUETTE**

3
4

Abstract

5 Smartphones are now a ubiquitous part of daily life for adolescents in the UK, who use
6 their phones for a multitude of reasons beyond calling or texting. To date, there has been
7 little qualitative research conducted with adolescent smartphone users about their
8 experiences of smartphone use, particularly problematic or excessive use. This study
9 directly explores the topics of problematic use and smartphone etiquette with 13 British
10 adolescents aged 16 – 18 years across three focus group discussions. An inductive thematic
11 analysis resulted in the development of four themes relating to users' experiences: *The*
12 *Comfort Bubble*; *Digital Native Etiquette*; *The Extended Self* and *Defining Dependency*.
13 These themes encompass the different drives underlying potentially excessive or anti-
14 social smartphone use and how young people seek to minimize these risks by monitoring
15 both their own and others' smartphone phone use. The findings of this study demonstrate
16 the complexity of disentangling functional and enjoyable smartphone use from problematic
17 use in an era where smartphones are embedded so deeply in modern life. Implications of
18 these findings are discussed in terms of potential future measures of problematic
19 smartphone use and ways of promoting education about healthy smartphone use using
20 some of the strategies suggested by the young people in this study.

21 **Keywords:** adolescents, behavioural addiction, dependency, focus group interview,
22 problematic technology use, qualitative research, smartphones

23
24

25 **Introduction**

26 Smartphones are used by approximately 85% of the UK population (41 million people)
27 rising to 96% for 18 to 24 year olds (Deloitte, 2017). Smartphones allow individuals to
28 stay connected to each other and the wider world, however some of the risks of their
29 increased prevalence are beginning to emerge such as: increased accidents caused by using
30 smartphones whilst walking or driving (Hyman, Boss, Wise, McKenzie & Caggiano, 2010;
31 Lamber & Muratori, 2012; RAC, 2016; 2018) reports of increased sleep disturbance,
32 increased stress, lower academic performance and lower satisfaction with life (Lepp,
33 Barkley & Karpinski, 2014; Samaha, & Hawi, 2016; Thomée, Harenstam & Hagberg,
34 2011). There is also significant evidence linking excessive smartphone use with
35 psychopathologies such as depression and anxiety (Cheever, Rosen, Carrier & Chavez,
36 2014; Demirci, Akgonul & Akpinar, 2015; Elhai, Levine, Dvorak & Hall, 2017b;
37 Harwood, Dooley, Scott & Joiner, 2014).

38 The emergence of these issues is substantial enough for mainstream media articles to refer
39 to excessive or prolonged smartphone use as an ‘addiction’ which presents researchers with
40 a number of decisions as to how problematic smartphone use is defined and measured
41 (Dredge, 2018; Titcomb, 2018). Terminology such as ‘*problematic*’ ‘*dysfunctional*’
42 ‘*compulsive*’ use and smartphone ‘*dependency*’ and ‘*nomophobia*’ are also used
43 interchangeably within the literature to highlight the negative aspects of excessive
44 smartphone use (Elhai, Dvorak, Levine & Hall, 2017a). Smartphone apps such as *Offtime*,
45 *Moment* and *BreakFree* have emerged onto the market to help users limit their screen time
46 and manage their smartphone use (Goldman, 2015). Social media app developers have also
47 highlighted how many smartphone functions illicit reward-seeking behaviours from users
48 (Lewis, 2017) by activating the dopaminergic pathways associated with reward-related
49 cognitions, similar to other substance or behavioural addictions (Everitt & Robbins, 2005;
50 Gilroy-Ware 2017).

51 Whilst there is no clinical diagnosis for smartphone addiction or problematic smartphone
52 use, the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American

53 Psychiatric Association, 2013) does refer to ‘non-substance addiction’ as a psychiatric
54 diagnosis. Behavioural addictions are typically signified by loss of control over behaviour,
55 which persists despite negative consequences and withdrawal symptoms induced by a
56 reduction in the behaviour (Cheever et al., 2014; Clayton, Leshner & Almond, 2015). A
57 pertinent and related example would be that of Internet Gaming Disorder, which was
58 included in 11th revision of the International Classification of Diseases (ICD-11) and in
59 the DSM-5 in the section recommending further research (American Psychiatric
60 Association, 2018; World Health Organization, 2018). Both the ICD-11 and DSM-5
61 emphasize key aspects of this behavioural disorder such as: impaired control over gaming,
62 prioritization of gaming over other interests and daily activities and escalation of gaming
63 despite negative consequences. The inclusion of such similar behavioural disorders
64 highlights the need for researchers to parse functional use of these types of technologies
65 from problematic or disordered use. Researchers have already begun to use some of these
66 underlying features of behavioral addiction to inform scales that measure aspects of
67 problematic smartphone use such as the Smartphone Addiction Scale (SAS; Kwon, et al.,
68 2013) a 48-item self-assessment scale which includes items relating to withdrawal,
69 tolerance and daily life disturbance e.g., missing planned work due to smartphone use,
70 feeling impatient or fretful when not holding smartphone and feeling tired/lacking adequate
71 sleep due to smartphone use.

72 Today’s adolescents growing up in developed Western countries such as the UK where
73 smartphones are widely available, appear to be particularly at risk of problematic
74 smartphone use and the related negative outcomes. Those born after 1995 have been
75 dubbed the ‘iGen’ generation due to their exposure to and adoption of Apple smartphones
76 and related products (Twenge, 2017). For teenagers, sleep is especially important for
77 physical and emotional development, maintaining good mental health and for good
78 academic performance (Sleep Foundation, 2020). Yet it is estimated that at least a quarter
79 of 16-19-year-old smartphone users in the UK have responded to messages they have
80 received in the middle of the night (Deloitte, 2017). Longitudinal evidence also shows that
81 adolescents who own a smartphone report significantly more sleep disturbances than non-

82 owners and they sleep less on school nights (Schweizer, Berchtold, Barrense-Dias, Akre &
83 Suris, 2017). Other studies have also highlighted the co-occurring rise in depressive
84 symptoms and suicide rates of adolescents, with those who spend more time on
85 smartphones more likely to experience mental health issues (Twenge, Joiner, Rogers &
86 Martin, 2018).

87 Clearly there are some implications for young people today who are growing up with
88 smartphones, however only a handful of studies to individual age

89 have explored the experiences of younger smartphone users directly in order to gain a
90 deeper understanding of the ‘push factors’ (i.e. loneliness, stress, anxiety) and appealing
91 ‘pull’ factors behind excessive smartphone use (Lapointe, Boudreau-Pinsonneault &
92 Vaghefi,; 2013). One study by Russo, Bergami and Morandin (2018) focused on the
93 experiences of graduates over the age of nineteen who reported feelings of anxiety,
94 difficulty sleeping and Fear of Missing Out (FOMO) when separated from their
95 smartphones. Another study by Fullwood, Quinn, Kaye and Redding (2017) conducted
96 focus groups with young adults (with an average age of 25.9 years) who appeared to largely
97 use their phones to alleviate boredom and felt the majority of their smartphone use was
98 habitual rather than conscious. Smartphone use is multifaceted in nature but the qualitative
99 studies that have been conducted with young adults clearly highlights some of the
100 experiences of young smartphone users, problematic or otherwise.

101 This study therefore aims to address a lack qualitative literature exploring the views and
102 experiences of problematic smartphone use with individuals aged eighteen and younger.
103 The research aims of this paper are to provide rich insights into adolescents’ perceptions
104 and experiences of smartphones by adolescents to answer the following questions:

105 **RQ1.** What experiences and attitudes characterise adolescents’ relationships with their
106 smartphones?

107 **RQ2.** Do users consider any aspect of their smartphone use to be problematic?

108 **Methods**

109 This study used an exploratory qualitative approach underpinned by a constructivist
110 epistemology, acknowledging the interactive link between the researcher and participants
111 to distil information and produce a sophisticated consensus about the topic of investigation
112 (Guba & Lincoln, 1994). Three focus groups with 13 adolescents (5 M, 8 F) were
113 conducted in the spring of 2018 to gain a range of young people's experiences. This
114 particular method was chosen in order to produce a stimulating discussion where both
115 researcher and participants could explore and challenge ideas about adolescent smartphone
116 use and dependency. Focus groups were the preferred format for data collection to
117 encourage participants to help each other discuss smartphone etiquette and potentially
118 problematic use. The researchers wanted to provide a more open, less formal setting where
119 participants felt encouraged to share both with the interviewer and each other in a
120 judgement-free setting.

121 Convenience sampling was used to recruit participants from a state high school in the UK.
122 The local area of the school was suburban with students who are predominantly white,
123 from middle-class and upper working class families. The school is rated Outstanding by
124 OFSTED (Office for Standards in Education, Children's Services and Skills) with students
125 typically achieving national average grades or higher. The researcher and students were
126 introduced via their grade 12 & 13 psychology classes, where the researcher and project
127 were introduced to students by their teacher. The researcher and students did not know
128 each other prior to the study however the researcher worked directly with students in the
129 lower school (grades 9-11) and therefore was familiar with the school itself and able to
130 gain permission from the school principal and governors prior to conducting the research.
131 Students were given a participant information sheet and consent forms and were asked to
132 sign up to one of three focus group sessions.

133 13 participants formed three focus groups comprised of five (2 M 3 F), two (2 M) and six
134 (1 M, 5 F) participants. Participants were ages 16-18 given however their individual ages
135 was not recorded as part of the study data collection. The size and gender make-up of each

136 group was dependent on the availability of students during the period of fieldwork and
137 access to the research setting.

138 **Materials and Protocol**

139 A private interview room at the students' school was used for the discussions. All
140 participants returned their signed consent forms and were given the opportunity to re-read
141 the participant information sheet and ask any additional questions. The researcher then
142 established a group culture and introduced group expectations including respecting one
143 another's opinions and not discussing the group conversation outside of the meeting room.
144 Participants were assured that no opinion was right or wrong and encouraged to disagree
145 with each other in a respectful way in order to gain a multitude of viewpoints.

146 A focus group schedule was devised in order to cover a broad range of smartphone
147 experiences. The discussion was split into two sections: 1) Smartphone usage, habits and
148 meaning and 2) Problematic smartphone use, dependency and separation. Each section had
149 12 questions which the researcher worked through systematically in each focus group
150 discussion, sometimes coming back to certain topics or questions which elicited more
151 animated discussions. Examples questions in each section are outlined below:

152 -----

153 Table 1 here

154 -----

155

156 Participants were probed further on their answers however the precise wording of these
157 questions remained flexible throughout the research process in order to allow for the novel
158 themes to emerge (Bryman, 1984; Braun and Clarke, 2005). The focus groups concluded
159 once all questions in the focus group schedule had been asked in addition to anything else
160 participants wished to contribute at the end of the discussion. Participants were thanked for
161 their time, given a debrief sheet outlining the nature of the study and recordings of the

162 interviews were stored securely following Northumbria University data storage guidelines.
163 The first group (5 participants) lasted 71 minutes, the second group (2 participants) lasted
164 32 minutes and the third group (6 participants) lasted 46 minutes.

165

166 **Data Analysis**

167 Interviews were recorded and transcribed verbatim to accurately capture participant
168 dialects and vernacular in line with Braun and Clarke's (2013) notation system. Data was
169 analysed via thematic analysis in line with the guidance for rigorous practice set out by
170 Braun and Clarke (2006). Given the novelty of the research topic, the analysis carried out
171 was inductive and highly flexible in nature in order to allow for potentially novel themes
172 to be identified. The transcripts were then coded manually by the researcher using
173 comments and colour coding until no new codes emerged and a final list of codes was
174 refined or combined if they were found to overlap. Codes were then grouped into initial
175 themes; a thematic map was then generated. It is important to note that themes and
176 sub-themes were generated both in terms of prevalence within the data as well as how
177 significantly they pertained to the research questions.

178 **Ethical procedure**

179 This study received Research Ethics approval from Northumbria University.

180

181

182 **Results**

183 Inductive analysis produced four main themes with several sub-themes shown below in
184 Figure 1. The themes were *'The Comfort Bubble'* (sub theme: *'Filling the Void'*); *'Digital*
185 *Native Etiquette'*; *'The Extended Self'* and *'Defining Dependency'* (sub themes: *'Utility'*
186 and *'Dependency'*). This thematic model highlights the way in which the key themes form
187 independent, important aspects of adolescent phone use but combine to create a picture of
188 the respondents' overall experiences and attitudes which will be addressed in detail during
189 the results discussion.

190 -----

191 Figure 1 here

192 -----

193

194

195

196

197 Table 2 below gives a brief overview of each theme, including how initial themes were
198 incorporated into the final thematic map.

199 -----

200 Table 2 here

201 -----

202

203 **Theme 1: The Comfort Bubble (Sub-theme: Filling the Void)**

204 The Comfort Bubble encapsulates the safety and security having a smartphone offered
205 participants in situations where they felt socially awkward, lonely or stressed. Many
206 participants referred to this phenomenon both directly and indirectly; this appeared to be a
207 primary driver behind phone use that did not relate to a specific function like sending a
208 message or performing an internet search. Instead, this experience was more closely related
209 to meeting an emotional need for comfort, reassurance or a perceived sense of belonging.
210 This allowed users to soothe negative emotions such as low mood or loneliness either by
211 providing them with connection through social media platforms, direct correspondence
212 with contacts or simply a distraction that enabled them to ‘retreat’ from uncomfortable
213 emotions. This type of smartphone use often seemed automatic i.e. without the need for
214 prior planning, and was particularly alluring during times of uncertainty or restlessness:

215

216 ***SAMMY:** ...If I'm doing something that I'm really enjoying and it's like complete*
217 *occupying my mind then I can completely forget about my phone and that's not just in the*
218 *moment like if I'm in a good mood I'm often less likely to go on my phone because I don't*
219 *feel like I need it so much... if I'm in one of those moods where I'm just taking out my phone*
220 *every two seconds it usually means I'm that I'm either bored or just like not in a good mood.*

221

222 For others, the Comfort Bubble wasn't necessarily an escape from negative internal states
223 but from external circumstances, often typified by a degree of social awkwardness or
224 feeling the desire to withdraw from others. Smartphones therefore also appear to serve as
225 a signal to others that the young person does not want to engage or be approached and
226 allows them a degree of control over their environment:

227 ***EILEEN:** ...If I go to town on my own by myself I'll have my phone and I'll*
228 *constantly be on my phone and I'll have my headphones in and I won't be like*
229 *acknowledging anyone else and it's like a comfort thing.*

230 ***JORDAN:** I do that when I'm walking to lessons by myself... I just don't look at*
231 *people and I don't know why... Like I won't be actually looking at what I'm doing I'm just*
232 *scrolling... It makes your hands look busy so it makes you look like you're not wandering.*

233

234 By having the smartphone in close proximity, respondents felt like they could discreetly
235 withdraw to a place they felt welcome or engaged without physically leaving. Instead they
236 were able to remain physically present without experiencing the same intensity of negative
237 feelings:

238 *SAMMY: It's kind of like taking yourself from a place where you're not welcome*
239 *to a place where you always are because you get to kind of control what you're doing and*
240 *that so... so it is a really attractive option when something's going on that you're not*
241 *enjoying*

242 *ROBIN: ...I think like if you're around people that you don't really know that well*
243 *like I'll check my phone more because I don't really know what to do with myself*

244

245 **Sub-theme: Filling the Void**

246 Another significant aspect of this type of habitual smartphone use is the need to fill time
247 or to try to avoid feelings of boredom. Respondents were very reflective on the times that
248 they found themselves scrolling without a specific purpose:

249

250 *SKYE: ...Even if I've checked Instagram or Twitter five minutes ago and there's*
251 *nothing I'll still go on there and I'll still just refresh it just... I don't even think about it I*
252 *just pull it out.*

253 *JAY: ...If I was just walking for like a straight thirty minutes I just think I would go*
254 *insane like just walking with yourself for thirty minutes (general laughter) what do you*
255 *even like do? ... I think just being left alone with yourself for like that long just to like think*
256 *is just horrible*

257

258 **Theme 2: Digital Native Etiquette**

259

260 All participants highlighted that their smartphone use and habits were very much context
261 dependent i.e. there were specific rules and etiquette that they adhered to, whether this was
262 imposed by themselves, family or friends in addition to the more formal and visible phone
263 use rules set by school and workplaces. A few examples of these included muting
264 conversations, putting phones on ‘night mode’ or ‘do not disturb’ in order to create barriers
265 for when they wanted to be contacted. Respondents had very clear conceptions of what
266 they considered good and bad phone etiquette:

267

268 *SAMMY: I think I can kind of usually understand people being on their phones like*
269 *in a group I think the only time I like don't make exceptions for it at all is one-to-one*
270 *communication 'cause if you're talking to someone face-to-face and like you're the only*
271 *other person you have kind of made a commitment to like y'know talk to them and*
272 *reciprocate what they're saying otherwise y'know like they don't anyone else to talk to...*

273 *SKYE: If it's just me and another person I never go on my phone like... [we've]*
274 *got this like a family rule if there's only two people in the car and you're sitting in the front*
275 *you don't go on your phone you talk them-*

276

277 Most participants could vividly recall a time when a smartphone had presented a barrier or
278 resulted in someone neglecting a face-to-face interaction. For many participants, they felt
279 having grown up with these technologies that good smartphone ‘etiquette’ (i.e. appropriate
280 use in social situations) seemed mostly intuitive. However several of the young people in
281 these focus groups highlighted the tension felt between responding to a message on their
282 phone in a timely manner, and giving their attention to the people they were socializing
283 with in person. Many participants felt that antisocial phone use was easy to spot in others
284 and that their generation perhaps understood this delicate balance better than older or
285 younger generations such as their parents or siblings:

286 *ZARA: My (mum) takes longer to have conversations and if she's like using her*
287 *phone like it almost takes up more of her attention than if I use my phone though I think*
288 *cause she's like less used to it... and definitely with my grandparents as well...*

289 *LOGAN: ... my sister can quite happily stay in bed all day and like go on her phone*
290 *and stuff where I feel like that's what she's used to doing to pass the time and stuff like that*
291 *because she was introduced to it at a younger age and it's already so much more developed*
292 *now she's grown up as well.*

293

294 **Theme 3: The Extended Self**

295

296 The multi-faceted nature of smartphones allowed users to stay constantly connected to their
297 social circles and meant they could start friendships, build familiarity and maintain social
298 ties. Many participants addressed how using their phones actually allowed them to try
299 communication styles or express themselves differently than they would in person:

300

301 *SKYE: ...I mean everybody over a text or Messenger app is always really will*
302 *always be really confident about all different types of stuff and they'll always seem like*
303 *this... but I'm like a quiet person in real life so it does definitely... It's almost like you've*
304 *got two personalities in terms of your phone personality and your actual social personality.*

305 *LORNA: Just you can be more confident you know it's not just something you're*
306 *saying on the spot it you've got more time to construct what you want to say if you're quite*
307 *nervous it can help you can spend a long time writing messages*

308 *TAYLOR: I think as well for like us going to university next year it's like we're*
309 *not going to like completely lose contact with people we've been friend with from high*
310 *school...*

311

312 Not only did participants feel their smartphones allowed them to build their relationships
313 but without their smartphone many felt they would be 'out of the loop'. Social isolation
314 appeared to be the main concern if users had to be without their smartphone for an extended
315 period of time. Smartphones therefore represented a way to stay connected not just to others
316 but to a wider social and cultural landscape:

317 *FRANKIE: I think as well like you get a bit paranoid as well like I haven't got my*
318 *phone... people are making plans and someone's text me to do something and you feel like*
319 *you're being ignorant towards them but you haven't got a phone so you can't reply...*

320 *LOGAN: ... and you kind of feel that pressure to stay up to date and I feel like that*
321 *anxiety stems from that fear of being left behind...*

322

323 As well as extending participants' social and cultural reach, some felt that their
324 smartphones were an extension of their personality; somewhere to store memories in the
325 form of messages, photos and music:

326

327 *SKYE: I think the reason why people become so nervous is because that phone*
328 *from the time you get it is pretty much you... it details everything it details everything so*
329 *your phone number your friends it shows how you speak to people your personality it shows*
330 *what you're like...*

331 *FRANKIE: I think it stores a lot of memories because I think memories are in*
332 *photographs and in text messages or even like the notes of your phones...*

333

334 The flip side of this particular experience was therefore that this made phones more
335 valuable in terms of what they stored and could therefore be a cause of anxiety if lost or
336 accessed by someone without permission.

337

338 **Theme 4: Defining Dependency (Subthemes: Utility; Proximity)**

339

340 Participants discussed their views on the concepts of smartphone dependency and addiction
341 and the majority of participants were conflicted as to whether the term 'addiction' was
342 appropriate in relation to smartphones; they felt this term carried a level of stigma often
343 associated with addiction to drugs or alcohol. Many reflected their smartphones did not
344 cause them harm or withdrawal symptoms and therefore 'addiction' seemed like an
345 inappropriate term but many felt that excessive smartphone use could still be problematic:

346

347 *SAMMY: ...I guess the only way you could decide whether it's an addiction or not*
348 *is whether the good things about it outweigh the bad things about using them and like*
349 *whether people are aware of that because cars obviously they've done a lot of harm but*
350 *overall they've probably helped more and but like on the other hand cigarettes have*
351 *probably done a lot more harm than good... I think for smartphones to be classified as an*
352 *addiction or not you have to answer that question...*

353 **ZARA:** *I'd say it like could be [addiction] though because if you think like*
354 *something like alcohol like some people could have it... it's like despite harmful*
355 *consequences so you could have a little bit of alcohol and it's not really that bad for you*
356 *and like people can manage it but then you could use phone so excessively that like it*
357 *becomes bad like you get withdrawal... so I don't think it's impossible... I don't necessarily*
358 *think it happens all the time... I feel like it could be possible*

359

360 As one participant highlighted above, thinking of smartphone use in terms of 'harms' and
361 'withdrawal' were helpful to some of these young people when considering which terms
362 they felt might be most appropriate for identifying problematic smartphone use.

363

364 ***Utility & Proximity***

365 Dependency on smartphones was seen by participants as a need for the practical uses of a
366 smartphone in everyday life. Some participants likened their relationships to their
367 smartphones as the same as needing any useful service or technology i.e. driving a car.
368 When asked how their days would be different if they had to go without their smartphone
369 for 48 hours, many individuals asked specific questions about whether they would still be
370 able to use their iPad, laptops and music players etc. indicating phones were framed in
371 terms of their multiple uses rather than an attachment to the device itself:

372 **EILEEN:** *It's not an addiction to the phone it's like because if you don't have the*
373 *phone you are isolated that's just simply how it is... it's more like an addiction to like being*
374 *connected to everyone rather than it is the phone like it's not the handset like it could be*
375 *like anything like as long as like you kept in touch with people... it's just cause if you didn't*
376 *have the phone if you were the only one who didn't you would be isolated*

377

378 Dependency was also indirectly referred to by participants in terms of needing their phones
379 in close proximity. Many participants felt they could resist checking or using their phones
380 but preferred to have them in sight and view notifications so that they didn't feel the need
381 to constantly pull phones out of their bags or pockets:

382 **SKYE:** *I dunno if anyone's noticed this but everybody in sixth form will always*
383 *have their phones on the desk and just by having their phones on the desk like for me I do*
384 *it but I pay less attention to it if I can see it than if it's in my pocket... if it's in my pocket*
385 *I'll take it out and scroll through it*

386 **EILEEN:** *My phones like always out on the desk but I never touch it but like if it's*
387 *in my bag I'll take it out and put it on the desk but I don't even use it so I don't know why*
388 *I do that*

389

390 Although some participants were aware of the evidence of smartphones interfering with
391 sleep, some reported that their phones helped them fall asleep (e.g. watching movies on
392 their phone) and nearly all slept with their phones in the same room. Several participants
393 acknowledged the contradiction of saying that being without their phones would not affect
394 them and but simultaneously needing them in the same room whilst they slept despite some
395 of the known health risks:

396 **SKYE:** *I realised I am quite addicted to my phone because I fell asleep with it...*
397 *and I've obviously dropped it [and] I've not known cause I've fallen asleep while holding*
398 *it up and it like fell down the side of the bed and like went under the other boxes... and*
399 *about five o'clock in the morning cause I couldn't find it I just tore my room apart until I*
400 *found it-*

401 **LOGAN:** *Mine's really bad I normally fall asleep with mine in the bed like if I've*
402 *got my headphones in I fall asleep and mine's still in my bed... I don't like doing it though*
403 *cause I wake up and won't know where it's gone cause it's gone flying off the bed or it's*
404 *still lying there under the covers somewhere...*

405

406 **Discussion**

407

408 This study utilised responses from 13 high school students aged 16-18 years old to gain a
409 deeper understanding of adolescents' experiences of smartphones and their attitudes
410 towards problematic smartphone use. The four themes outlined above represent the
411 different aspects of the participants' smartphone experiences, together they provide
412 answers to the following research questions:

413

414 *RQ1. What experiences and attitudes characterise adolescents' relationships with their*
415 *smartphones?*

416 *RQ2. Do users consider any aspect of their smartphone use to be problematic?*

417

418 To succinctly answer the first research question of this study, the first three themes
419 identified capture large aspects of the respondents' relationships with their smartphones.
420 *The Comfort Bubble* highlighted the safe space and relief provided by smartphone usage,
421 whereas *The Extended Self* showed aspects of teenage smartphone use relating to
422 maintaining relationships, staying 'in the loop' and the ability to store memories and media
423 important to the participants. *Digital Native Etiquette* was a somewhat surprising finding
424 as a theme, as the respondents spoke openly and with great insight as to how they navigated
425 the social rules of appropriate smartphone. This theme also served to pose an answer to the
426 second research question of how participants found strategies to safeguard themselves from
427 problematic or excessive phone use. The last theme, *Defining Dependency* also highlighted
428 the views of participants with regards to problematic smartphone use. Some potential
429 problematic aspects for these respondents included: the need to have their phones in close
430 proximity even at night, anxiety at having misplaced their phones or when they became
431 distracted by their phones when socializing in-person.

432

433 The sense of comfort and escapism provided by smartphones appeared to help participants
434 avoid unpleasant thoughts, emotions or experiences by providing a variety of novel stimuli.

435 Many of the respondents therefore seemed to highlight instances of ‘sensation seeking’
436 (Zuckerman; 1964) in an attempt to distract from unpleasant experiences, awkward social
437 situations or boredom. This is supported by previous work which found that individuals
438 with mobile phones who experienced high levels of leisure boredom and sensation seeking
439 are also more likely to experience symptoms such as feeling anxious, lost and seeking
440 escapism (Leung, 2008). The risk of this type of behaviour becoming more problematic
441 occurred when sensation seeking was paired with low perseverance and high levels of
442 urgency as users are much less likely to defer phone use, particularly in highly emotional
443 situations (Billieux et al., 2008). This ‘attention impulsiveness’ also means users are unable
444 to focus on the at hand which is where the allure of smartphones can become potentially
445 dangerous when users are distracted from activities such as driving (Billieux, Van der
446 Linden, d’Acromont, Ceschi & Zermatten, 2007; Roberts, Pullig & Manolis, 2015). Whilst
447 the sensation seeking reported by participants in this study was not particularly
448 problematic, their experiences indicate that young people who are more impulsive could
449 be less likely to defer their smartphone use, leading to more problematic or compulsive
450 use.

451 The design of certain smartphone apps and processes can encourage compulsive
452 behaviours through Pavlovian (1960) positive reinforcement using notifications and ‘likes’
453 that affect user’s reward-seeking behaviour (Lewis, 2017; Sherman, Payton, Hernandez,
454 Greenfield & Dapretto, 2016). Techniques such as Variable Schedule Reinforcement
455 (Ferster & Skinner, 1957) also encourage compulsive checking so users are rewarded with
456 likes and notifications on an unpredictable schedule so return frequently to check for
457 updates. The social endorsements offered by others through these smartphone platforms
458 are particularly powerful motivators for young people who at this life stage highly value
459 the opinion and validation of their peers (Sherman et al., 2016). Many of the participants
460 identified the conflict between wanting to be constantly connected so as to not miss out
461 whilst also trying to set healthy boundaries by using features such as ‘night mode’ and ‘do
462 not disturb’ on their phones. This pressure to stay ‘on top of’ or attend to their social world
463 has been highlighted as one of the main frustrations for many smartphone users who are

464 often bombarded with notifications and have to make multiple decisions on how and when
465 to respond (Bombardi-Bragg, 2017). This is why many participants felt happier when they
466 were able to see previews of notifications on their phones home screen as they came
467 through and could then screen which ones they wished to respond to and which ones could
468 wait. The rules and smartphone etiquette and rules reported by participants in this study
469 could potentially protect users from the negative affect associated or anxiety reported
470 linked to the pressure to constantly check notifications (Kanjo, Kuss & Ang, 2017). By
471 using their phone in such a way to sift through urgent vs. less important notifications, some
472 of the participants in this study were able to then look to make priorities between their
473 smartphone notifications and in-person obligations such as school work or time spent in
474 person with family and friends.

475 Participants' experiences of problematic smartphone use largely related to anti-social
476 phone use. Impulsive smartphone use therefore could be impacted by negative social
477 feedback from others, particularly the disapproval of close peers or family (Romer, 2010).
478 The responses from participants were similar to those in a study by Kuss, Harkin, Kanjo
479 and Billieux (2018) where individuals felt smartphone use could lead to feelings of
480 rejection if they were ignored by a peer who was using their phone instead of engaging in
481 conversation. This is particularly evident when individuals are not clear what exactly they
482 are being ignored for as they cannot see what the other person is doing on their screen
483 (Campbell & Park, 2008). This modern day phenomenon is also known as 'phubbing' i.e.
484 being snubbed by someone in favor of a phone (Chotpitayasunondh & Douglas, 2016) and
485 has been shown to negatively impact relationship satisfaction as well as individual
486 wellbeing (Roberts & David, 2016). This type of anti-social smartphone use was clearly
487 frustrating to participants and was seen as a break in social etiquette, yet the reasons
488 underlying this use could be driven by a desire to engage in social interactions via the
489 smartphone known as 'hyper-natural monitoring' (Veissière & Stendel, 2018) Hyper-
490 natural monitoring is a basic human need to monitor and be monitored by others and is
491 linked closely with seeking social approval which is even more important to teenagers as
492 they navigate group dynamics and adolescent social hierarchies (Twenge, 2017). This

493 would explain the anxiety participants described when having to decide whether to devote
494 their time and energy to the person in front of them or through digital communication as it
495 could be that individuals are simply seeking to meet the same social needs, yet with
496 smartphones this is paradoxically done via an anti-social platform (Veissière & Stendel
497 2018). Longitudinal survey evidence that suggests that adolescents spend on average seven
498 hours less per week socialising in-person (Twenge, 2017), yet perhaps young people may
499 not view these digital and face-to-face socialising as dichotomous but rather
500 complimentary extensions of each other. Time spent away from screen media and increased
501 in-person interactions has been shown to improve comprehension of emotional nonverbal
502 cues in young children, therefore high levels of smartphone use may impact on adolescents'
503 social skills if not combined with face-to-face relationship (Uhls et al., 2014). These
504 findings indicate that ensuring a range of socialising activities including face-to-face
505 interactions could be a protective factor for preserving emotional connectedness and social
506 relationships for adolescents but also that today's adolescents may have more to teach older
507 generations about smartphone etiquette with regards to 'phubbing'.

508 Many of the respondents felt that what is deemed as problematic use was context
509 dependent. For instance, the time spent socialising via smartphones and receiving messages
510 from contacts has been proven to increase positive affect, especially group chats which
511 help create a sense of community and belonging whilst non-social features of smartphone
512 use, such as scrolling and removing notifications, are more related to depression, anxiety
513 and negative affect (Elhai et al., 2017b; Kanjo, Kuss & Ang, 2017). Throughout the focus
514 group discussions it was apparent that smartphones allow users to interact with social
515 networking sites which have been shown to increase the chances of a user developing a
516 dependence or problematic smartphone use (Kwon et al., 2013). This may be due to sense
517 of 'fear of missing out' (FOMO) which increases feelings of isolation and a dependence
518 on the phone to feel connected (Dossey, 2017; Gil, Oberst, Del Valle & Chamarro, 2015).
519 Given the large scope of the focus group discussions it wasn't possible to discuss social
520 media habits in great detail as that was not the primary focus of this study. However, this
521 aspect of smartphone use is clearly significant in relation to social monitoring, social

522 reward and connection and warrants further investigation as another risk factor for
523 problematic smartphone use (Kuss et al., 2018; Marlo, Stone & Bibbey, 2013;) and
524 certainly warrants further exploration.

525 Although most participants were confident that could go for periods of time without their
526 smartphones, they also acknowledged that they would still use other technologies such as
527 iPads or email in order to stay connected. They also preferred having their phone in close
528 proximity and regularly slept with their phone in the same room. Two participants
529 recounted tales of panic when they woke up in the middle of the night and could not find
530 their smartphones after falling asleep with them whilst watching videos. This finding is
531 also supported by previous research which highlighted the physiological anxiety
532 experienced when smartphone access is restricted such as increased heart rate and impacts
533 on cognition (Cheever et al., 2014; Clayton et al., 2015). It may therefore be useful (as
534 previously suggested by Walsh, White & Young, 2010) to separate smartphone *use* from
535 smartphone *involvement* as the latter indicates that although the smartphone may not be in
536 use, the user is very aware of the phones location and the need to be in close proximity.
537 This is particularly pertinent for those seeking to develop future scales and screening tools
538 for smartphone dependency or addiction; as technology is advancing as quickly as these
539 measures are being established, many of the existing scales have been critiqued for missing
540 the multifaceted and fluid nature of problematic smartphone use (Billieux, Maurage,
541 Lopez-Fernandez, Kuss, & Griffiths, 2015). I.e., whilst some users may have high levels
542 of smartphone *use* such for tasks such as revising or listening to music but the emotional
543 demands associated with smartphone *involvement* are not as present (Harwood et al., 2014;
544 Walsh, White & Young, 2010). Equally, whilst some participants held strong views
545 questioning the existence of smartphone addiction, some of their responses indicated that
546 their behaviours and anecdotes indicated there was still a need for close proximity and
547 feelings of reported anxiety when separated from their phones.

548

549 **Strengths, limitations and implications for future research and practice**

550

551 This study was novel in its exploration of the experiences of adolescents (aged 16-18 years)
552 towards smartphone use via focus groups. Teenagers still remain an under-researched
553 demographic despite the fact they are the most prevalent smartphone users and have grown
554 up in many industrialized nations with these sophisticated devices (Twenge, 2017). As a
555 generation, their experiences of smartphones continues to warrant research given that older
556 generations who have adopted these technologies later in life are less likely to develop
557 smartphone dependency (Van Deursen, Bolle, Hegner & Kommers, 2015). The use of
558 focus group discussions in this study allowed for a both a range of viewpoints to be
559 discussed and challenged at a level of detail that would not be possible via other methods
560 such as questionnaires or structured interviews. This resulted in several unique findings
561 including the emotional and existential drivers behind smartphone dependency and the
562 sensation-seeking that young people experience via their smartphones. This study further
563 highlights the need for future measures of smartphone dependency to differentiate between
564 smartphone *use* and smartphone *involvement* (Walsh, White & Young, 2010) and also
565 examine the specific types of activities younger smartphone users spend the most time
566 engaging in (Billieux et al., 2015; Elhai et al., 2017b). For example, future measures of
567 smartphone dependency or related behavioural addiction(s) may wish to incorporate some
568 of the issues highlighted in this study such *non-social phone use* (i.e. scrolling and
569 notification checking) or measures of *anti-social smartphone use* (such as ‘phubbing’)
570 when in company.

571 Young people should also be encouraged by families, friends and schools to monitor their
572 use independently through apps which limit screen time as self-monitoring features that
573 have a social accountability component have higher rates of success than those without (Ko
574 et al., 2015). Young people may also benefit from healthy self-monitoring habits such as
575 set times where sounds and notifications are switched off in order to combat the
576 unpredictable rewards and makes phone use less chaotic and more intentional (Alter 2017;
577 Veissière & Stendel, 2018). An agreement on social rules by parents and schools can

578 minimise the detrimental impact of smartphones on relationships and productivity,
579 however older adolescents such as the participants in this study clearly value their
580 independence and take responsibility for their smartphone use using methods that are age-
581 appropriate (this has been outlined further in recommendations by Blum-Ross &
582 Livingstone, 2016).

583 A limitation of focus group discussions is that the presence of the researcher and other
584 participants can potentially result in self-report bias and a pressure to conform to group
585 consensus (Dimitroff, Schmidt, & Bond, 2005; Fusch & Ness, 2015). However, by
586 establishing an open and supportive group culture and the responses of all participants
587 reflected that they were comfortable in volunteering their views and experiences and
588 disagreeing with others. Future studies could utilise individual interviews where
589 participants have a greater degree of anonymity i.e. via telephone in order to explore the
590 initial themes presented in the findings of this study. The convenience sampling methods
591 used for this study and homogenous demographic of participants (white, state school
592 students from similar socioeconomic backgrounds) should be acknowledged and therefore
593 limits generalization. Future studies should seek to include a diverse range of young people,
594 particularly from different socioeconomic backgrounds and from other industrailized
595 countries to explore the differences and similarities between teenagers across nations and
596 cultures. The need for further qualitative studies with adolescents from different
597 backgrounds is therefore needed to establish potentially common experiences and
598 particularly to ensure the reliability and applicability of any clinical or sub-clinical
599 screening and assessment tools.

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604 **Conclusion**

605

606 The present study provides a range of viewpoints from adolescents about their smartphone
607 usage and experiences including problematic and antisocial use. Four themes were created
608 that captured the experiences of participants: ‘The Comfort Bubble’, ‘Digital Native
609 Etiquette’, ‘The Extended Self’ and ‘Defining Dependency’. The responses of the young
610 people in this study highlight how smartphones are an integral part of modern day living
611 and therefore phone use should be viewed in terms of how and why young people are using
612 their phones as oppose to how much. An unhealthy dependency on smartphones could
613 therefore potentially measured through scales which incorporate measures of sensation
614 seeking, need for close proximity and anti-social phone use. The participants in this study
615 also outlined several habits and social rules which helped minimise the risks of addiction-
616 like behaviours such as using in-built phone features and apps to control when they could
617 be contacted or receive notifications. This study adds rich and valuable qualitative data to
618 the experiences of smartphone use and smartphone dependency and is the first to do so
619 with an adolescent cohort using focus group discussions.

620

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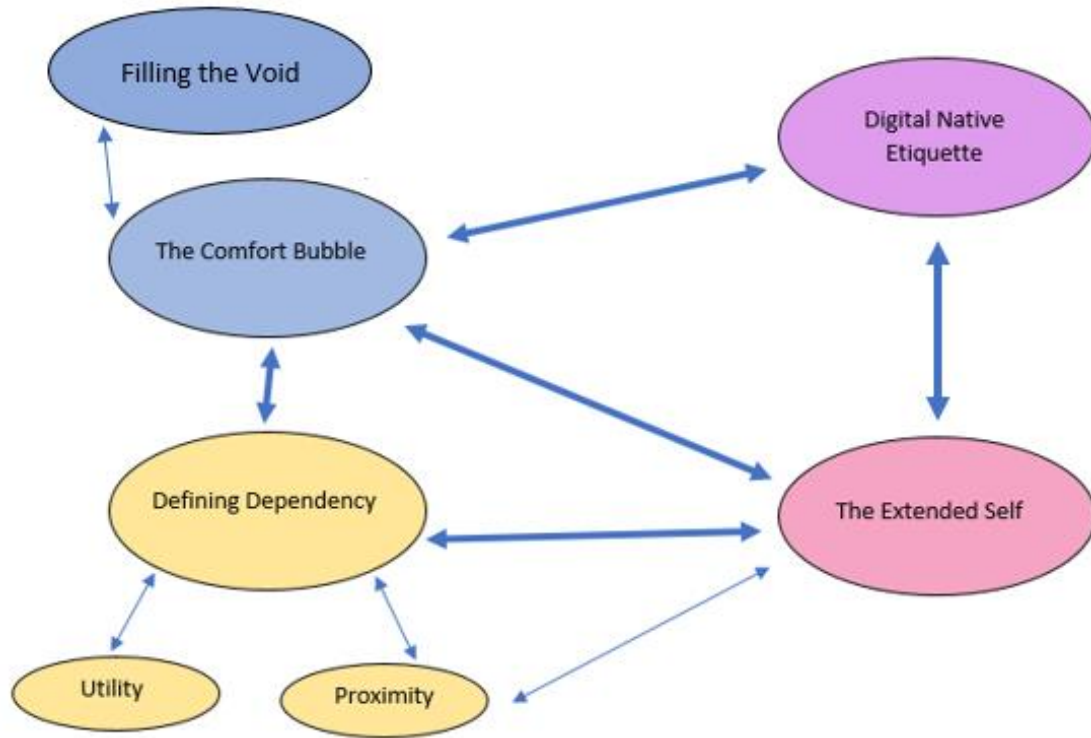
776 **Table 1. Focus Group Schedule example questions divided into two topics: 1) 'Usage,**
 777 **Habits & Meaning' and 2) 'Dependency and Separation'**

MAIN FOCUS GROUP SCHEDULE QUESTIONS	
PART ONE: USAGE, HABITS and MEANING	<ul style="list-style-type: none"> • What are the main reasons for using your phone? • How often do you feel you need to check your smartphone? • Approximately, how much time do you spend on your phone in a typical day? • What are the key times in your day where spend the most on your phone? • How does your smartphone affect your friendships and other relationships (including family)? • Do you think your communication style changes when you're texting/messaging friends and family? • Do you find your phone ever interferes when you're spending time with people face-to-face? • Is there anything we haven't covered so far that you use your phone for or you feel it helps you to do/achieve?
PART TWO: DEPENDENCY and SEPARATION	<ul style="list-style-type: none"> • Where do you keep your phone while you sleep? (Prompt: Do you put your phone on silent at night? Do you ever check your phone in the middle of the night?) • Does your phone ever interfere with your sleep? • What do you think about the idea of keeping your phone in a different room to your bedroom? • I'd now like to ask you a scenario-based question. If, say, your phone was broken and you weren't able to get it replaced for 48 hours, so you had to go two days without a phone, how would that affect you? • [If any participants mention anything to do with panic, disconnectedness, sadness, loss or anxiety then try to prompt them more about this by asking 'I find it interesting that you mentioned _____ why do you think you would feel that way?'] • [If participants mention anything to do with calmness, relief, headspace, freedom then try to prompt them more about this by asking 'I find it interesting that you mentioned _____ why do you think you would feel that way?'] • What would be the worst part about not being able to have your phone?

778

779 **Figure 1. Final thematic map displaying four main themes and two sub-themes: The**
780 **Comfort Bubble (Filling the Void); Digital Native Etiquette; The Extended Self; Defining**
781 **Dependency (Utility; Proximity)**

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787 **Table 2. A table highlighting evolution from initial themes to final themes and sub themes**
788 **with a brief description.**

789

Theme	Sub theme(s)	Initial themes which were incorporated	Brief description of theme
The Comfort Bubble	Filling the Void	<i>Soothing, Comfort and Escapism</i>	Responses relating to phone providing comfort, distraction, safety and escapism.
Digital Native Etiquette		<i>Circumstantial use; Self-management and monitoring use</i>	Rules and etiquette participants deem socially acceptable including monitoring their own usage by friends and family.
The Extended Self		<i>Phone as identity; Staying connected</i>	How participants use phone to stay connected, updated, present themselves and communicate and participate in the digital social world.
Defining Dependency	Utility and Proximity	<i>A tool for Modern Living; Attachment and addiction</i>	Responses where participants discussed concept of smartphone addiction, need for proximity to phone, distress when separated from phone and detachment when phone is viewed simply as a utility.

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