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Expectations and levels of understanding when using mobile phones among 9–11-year olds in Wales, UK

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There is growing interest in examining the use of mobile technology among children. The present study extended this literature among a sample of 9–11-year olds in Wales, UK in three ways. First, to examine the level of mobile phone ownership; second, to consider how mobile phones are used, investigate timescales and expectations when communicating via a mobile phone; and third to explore the emotional impact of not having a text or phone call responded to. A sample of 57 children completed a self-report questionnaire focusing on the expectations and levels of understanding when making and receiving mobile phone calls and text messages. Results suggest that ownership and usage of a mobile phone is high amongst young children; however a lack of developmental and emotional maturity, highlighted by the expectation of immediate responses and the egocentric reasons given, may cause unnecessary distress among a proportion of children. Directions for future work are proposed.

Keywords: children; negative affect; mobile phone; phoning; reciprocity; texting

Introduction

The mobile phone[1] has become an integral part of society and is not only a technological tool but also a social one (Campbell, 2005). For example, in both the UK and US around 90% of adults are reported to own at least one mobile phone (Lenhart, 2012; OfCom, 2013). As adult ownership has increased, there is evidence that many children and young people have access to a mobile phone (Lenhart, 2012; OfCom, 2011). As such, there is growing interest in examining the use of mobile phones among children. The present study seeks to extend this literature among 9–11-year olds in Wales, UK in three ways. First, to examine the level of mobile phone ownership; second, to consider how mobile phones are used, investigate timescales and expectations when communicating via a mobile phone; and third, to explore the emotional effects of not receiving a response to a text or phone call.

Literature review

Mobile phone ownership and use

Recent reports suggest that 77% of US 11–17-year olds (Lenhart, 2012), 57.7% of Swedish 7–14-year olds (Söderqvist, Hardell, Carlberg, & Mild, 2007) and 50% of UK

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5–15-year olds (OfCom, 2011) have a mobile phone, while in Spain over 90% of adolescents have a mobile phone (Sánchez-Martínez & Otero, 2009). Among primary school children; in Germany Schüz (2005) reported ownership to be 35%, whilst in the UK, Davie, Panting, and Charlton (2004) found that 45% of 10–11-year olds possessed a mobile phone. There has been concern about the impact that texting may have on children's and young people's use of formal written English with Woronoff (2007) describing texting as a 'habit forming menace' that affects children's ability to spell correctly, whilst Cingel and Sundar (2012) report a negative relationship between the use of text messages and the grammar skills of adolescents. Conversely, alternative research has found children's literacy skills are not impacted upon by ownership of a mobile phone and the use of texts (Plester, Wood, & Bell, 2008; Wood, Kemp, Waldron, & Hart, 2014). A number of reasons for the widespread ownership among children and adolescents have been provided, including availability, safety and security, and coordination of day-to-day activities (Ling, 2000; Mortazavi, Atefi, & Kholghi, 2011).

Timescales and expectations

The use of mobile phones increases with age and varies by sex, with girls being the greatest users (Ling, 2000; OfCom, 2011; Söderqvist et al., 2007). Texting has overtaken phone calls as the primary means of communication, for example, 63% of US teens texted daily whilst fewer (26%) reported using their mobile phone to chat to friends (Lenhart, 2012). Among younger children (aged 10–11 years), 94.3% used text messages as a means of communication, although from this research frequency of use was not identified (Charlton, Panting, & Hannan, 2002). When using the phone to speak to people, most calls (47%) were for general chat rather than about specific issues, and parents were the most frequently called (46%), usually to advise them of their whereabouts or to make arrangements to be collected from school or a friends home (Charlton et al., 2002). It has been suggested (Oksman & Turtiainen, 2004) that those under 10 years of age tend to communicate most with their immediate family and carers, whereas pre-teens and teenagers communicate more with their peers. That said, it has been argued that in general, mobile communication becomes interesting to children from the ages of 10 to 12 years, as this is when their social networks start to expand outside of the home (Oksman & Turtiainen, 2004).

Whilst there is evidence of increased ownership by younger children (OfCom, 2011, 2013; Söderqvist et al., 2007), little research into mobile phone usage has been undertaken with children aged 9–11 years. There is, however, evidence highlighting the effects and concerns felt by older children and adolescents surrounding the use of digital technology (Blair & Fletcher, 2011; Bond, 2010). For example, qualitative interviews with seventh graders and their mothers found interpersonal connectedness to be a high priority in the desire for a mobile phone in North America. The authors concluded that the mobile phone appeared to hold psychological meaning as the vehicle that could enable such connections (Blair & Fletcher, 2011).

Reciprocity was found to be a significant factor amongst those aged 11–17, with concerns regarding the immediacy of response and appropriateness of the reciprocation. Participants did not wish to be considered rude by not replying in a timely manner, nor did they want the content of their text messages to be misconstrued (Bond, 2010). In older participants, considerable care was taken in drafting texts to ensure clarity of communication (Bond, 2010). Ignoring text messages, failing to answer or return a phone call were classed as punishment. Those on the receiving end of this type of behaviour

reported feelings of frustration, anger and insecurity. It was concluded that although the mobile phone appeared to be technology that was taken for granted, it was one that required a lot of delibration over its use. Whilst digital technology can provide security, its use may increase anxiety and feelings of insecurity in children (Bond, 2010).

Emotional impact

With regards to a child's emotional and social well-being, one of the major contributory factors to the development of strength and resilience is the part played by those close to the child (Aldgate, 2010); and that being able to understand and regulate emotion is dependant on social interaction (Durkin, 1995). Emotions and how they are expressed are important in social development, especially in the course of developing attachments and in the ability to recognise and understand non-verbal communication. An important part of social knowledge is the recognition that each person has their own perspective on the world which may be very different from our own (Durkin, 1995).

Hicks (personal communication March 19, 2012) comments that children are not 'midget adults' and therefore require help and support throughout their childhood. In discussing children's use of digital technology, Hicks (2010) proposes that mobile phones are being used as a 'social umbilical cord' (p. 230). He argues that whilst there is nothing inherently wrong with texting on a mobile phone, it needs to be balanced by the development of oral and literacy skills because, despite this method of communication being quick and efficient, it falls short as a way of relating closely with others.

It is questionable whether children aged 9–11 years have the skills to cope with the challenges of mobile phone ownership. The developmental stages that children work through include the concrete operational stage – around the ages of 7–11. During this period, children begin to understand and use logic to make objective and rational sense of their experiences. Egocentrism lessens as they realise that their perspective of the world is not the only perspective (Piaget, 1953). However, social interaction is vital to cognitive growth, acting as a scaffold between the child's developmental potential and the acquisition of the necessary skills and knowledge (Vygotsky, 1978) and social learning as the natural precursor to development. The nature of mobile technology means that it is able to be used almost anywhere and everywhere. Younger children however, may not have sufficiently developed the cognitive, emotional and communicational skills to cope effectively with the demands of mobile communication (i.e., understanding that communication may not always be instant), nor have the support of an adult nearby to enable them to manage these demands (i.e., calls and texts being unanswered). The present study seeks to address this gap in the literature among 9–11-year-olds in the UK. First, to examine the level of mobile phone ownership; second, to consider how mobile phones are used, investigate timescales and expectations when communicating via a mobile phone; and third, to explore the emotional effects of not having a text or phone call responded to.

Materials and method

Study design, participants and procedures

Data were collected, in 2012, from primary school children in years 5 and 6 (Grades 4 and 5 in the US educational system) from a single school based in an urban location, close to the English border, in North Wales, UK. Following parental consent and the

child's assent, 57 participated in the survey, 32 girls and 25 boys. Ages ranged from nine to eleven ($M = 9.89$, SD = 0.67).

A questionnaire was designed following the work of Borgers, De Leeuw, and Hox (2000), who argued that children from the age of eight years can be surveyed, although the questionnaires need to be specially developed with the age of the participants in mind, taking care to avoid negatively phrased questions and ambiquity. Nineteen questions (see Table A1 in Appendix) were included examining ownership, usage, expectations around receiving and sending calls and text messages, and emotional impact. Open and closed questions were utilised, along with short vignettes to explore the emotional impact of phone usage. Vignettes are seen to be less threatening and distressing than direct questioning with research suggesting participants respond to them in the same way they would if faced with a real-life situation (Hughes, 1998). Care was taken to ensure that question wording and response options were age appropriate. Readability analysis demonstrated that the questionnaire was suitable for those with a reading age of around eight years of age (Flesch–Kincaid grade level 2.9, Flesch reading ease score 91.6%). The questionnaire was pretested for meaning with a small sample of children ($N = 3$) and amended prior to its use in the study.

The study was approved by the Psychology Ethics Committee at Glyndŵr University. Gatekeeper access was sought and granted by the Principal of the school involved. As participants were children, parental consent was sought, with invitations and information packs being distributed by Principal. Assent was sought from the children prior to the questionnaire being administered by the child's usual teacher in the classroom during the Personal and Social Education lesson. All participants remained anonymous and were unidentifiable via their answers.

Data were analysed using descriptive and non-parametric statistics in SPSSv19. Open responses were coded to determine egocentric or non-egocentric perspective, and association between these and categorical variables analysed using a Pearson chi-square.

Results

Mobile phone ownership and use

In total, 91.6% of the participants reported owning a mobile phone. No association was found between sex (girls = 96.9%, boys = 84%) and phone ownership (χ^2 (1, 57) = 2.91, $p = .09$). Whilst younger children appeared less likely to own a phone, no association was found between age (9 = 87.5%; 10 = 93.5%; 11 = 90%) and phone ownership (χ^2 (2, 57) = .51, $p = .78$). Most respondents reported sending text messages (84.2%), receiving messages (87.7%) and making phone calls (82.5%). Most texts were sent to mothers (70.2%), followed by fathers (59.6%) and friends (52.6%). Other relatives were sent texts less frequently. Respondents were more likely to receive texts from mothers (57.9%), fathers (50.9%) and friends (47.4%). Fewer younger children texted, 75% of 9-year olds, compared to the 90% of 10-year olds; however, no association was found (Fishers exact test: $p = .61$). Similarly most phone calls were made to parents (mother 68.4%, father 49.4%), closely followed by calls to friends (47.4%). Mothers were responsible for the majority of calls to respondents (71.9%), whereas fathers and friends called their mobiles less (47.4% and 36.8%). No association was found between age and phone calls made (χ^2 (2, 57) = .48, $p = .787$). Sex differences in usage were apparent. When boys were compared to girls, it was found that girls were more likely to phone their mum (χ^2 (1, 57) = 5.56, $p = < .05$), more likely to receive calls (χ^2 (1, 57) = 4.22, $p = < .05$) and more likely to text their friends than boys (χ^2 (1, 57) = 7.60, $p = < .01$).

Timescales and expectations

All participants expected a response to texts sent. There were however differences in expectations when texting a friend, most (80.7%) indicated that a non-immediate response was required, whereas 19.3% indicated that an immediate response was required. Respondents were asked to provide a reason for their response. These were categorised as either egocentric (35%) or non-egocentric (65%). An association was found, respondents who expected an immediate response were more likely to provide an egocentric response whereas non-egocentric responses were more likely to be reported by participants who did not need an immediate response (χ^2 (1, 57) = 20.81, p = < .001). Conversely, when a similar question was posed but focusing on a child's mother, more required the actor (mother) to immediately respond to their text (63.2% immediate vs. 35.1% non-immediate) than in the previous scenario. Additionally, more respondents answered in an egocentric manner (65%; 35% non-egocentric) and a significant association was found (χ2 (1, 56) = 39.93, p = < .001) suggesting that the participants' expectations and perspectives altered when faced with scenarios involving their parent or main carer. Respondents were asked 'how important was it to reply to a text message as soon as it was received?'. Most participants indicated that it was 'Important' (29.8% 'Very important'; 26.3% 'Important'; 24.6% 'A little bit important'). Younger participants appeared to feel more obligated to respond to a text to avoid appearing rude or their actions being perceived as ignorant. For example, 'I thought it was just important because if you had your phone with you it would be rude not to answer it' (9-year-old female), and 'Because they might think they're ignoring them and they could waste their credit by texting you over and over until you answer' (9-year-old female). Those participants (19.3%) who were unsure whether it was important to reply immediately or not gave reasons that suggest uncertainty and concern about how to respond, as this depended on message context, for example, 'Not sure because the text might be an emergency or it might be your friend saying what you up to' (11-year-old male). Concerns about safety emerged as a theme when communicating with parents. This appeared to impact on expectations surrounding immediacy of response, for example, when responding to a text sent to them, 'it's very important because if your mum wants to know where you are you should reply straight away' (9-year-old male), and 'It could be a very important text like someone who is worried about you' (10-year-old female). Moreover, comments made also suggested that the children become concerned about their parent if they did not get a swift response, for example, 'Because he might want to talk to his mum and know she's safe' (10-year-old female), and 'Because he might think that she is hurt and in hospital' (9-year-old female).

Emotional impact

The feelings of participants surrounding non-response to texts and calls were examined by four vignettes. First, respondents were asked how they thought 'Simon' would feel if he had texted his mum and not received a reply. Almost half of respondents (49.1%) chose 'Puzzled'. Other responses were 'Not bothered' (33.3%) 'Upset' (12.3%) and 'Angry' (5.3%). Nobody selected 'Happy'. Qualitative responses indicated negative emotional reactions, for example, 'Because he won't know if she is okay' (10-year-old female). Those who were not bothered justified their response in non-emotional terms for example 'Because she's at work and she might not be able to text because she's working and she might get in trouble' (9-year-old female). Second, respondents were asked how they thought 'Janet' would feel if she had tried to ring her dad but he had

not answered his phone. Over a third of respondents (38.6%) chose 'Puzzled'. Other responses were 'Upset' (28.1%), 'Angry' (17.5%), 'Not Bothered' (10.5%) and 'Happy' (5.3%). Not answering the phone indicated negative emotional reactions. This was conveyed further in open responses such as 'Because you don't know so I would be a bit worried and puzzled' (11-year-old male), and 'Because her dad might always pick up his phone but she also doesn't know what time to go home' (10-year-old female). Third, respondents were asked how they thought 'Anna' would feel if she had texted her friend but not received a reply. Over a third of respondents (38.6%) chose 'Not bothered'. Other responses were 'Upset' (26.3%), 'Puzzled' (22.8%) and 'Angry' (12.3%). Nobody selected 'Happy'. Qualitative responses indicated non-emotional reactions, for example 'I think she wouldn't be bothered because Tara might still be doing her homework and not be able to reply' (10-year-old female). Fourth, respondents were asked how they thought 'Mark' would feel if he rang his friend but the phone was unanswered. Almost half of respondents (47.4%) chose 'Upset'. Other responses were 'Puzzled' (26.3%), 'Angry' (17.5%) and 'Not bothered' (8.8%). Nobody selected 'Happy'. Qualitative responses indicated negative emotional reactions, for example 'Mark was trying to be nice so I would be upset' (10-year-old female). Responses to questions relating to phone calls elicited higher proportions of negative emotional responses ('Puzzled', 'Upset', and 'Angry') than questions that explored reactions to text non-responses. Moreover, an unanswered phone call appears to elicit more egocentric responses (68.4–77.2%) than the lack of a response to a text message (40.4–57.9%).

Discussion

The present study examined the expectations and levels of understanding when making and receiving mobile phone calls and text messages among a sample of 57 children 9–11-year olds in Wales, UK. Four important findings are worthy of note. First, the level of mobile phone ownership was found to be high, with the majority (91.6%) of participants declaring ownership. This is in line with previous research undertaken with adolescents (Sánchez-Martínez & Otero, 2009; Schüz, 2005). Similarly, as found in recent literature (OfCom, 2011), there was little difference in ownership by gender. Most participants used their mobile phones to send (84.2%) and receive (87.7%) text messages whilst a similar percentage used their phone to make (82.5%) and receive (89.5%) calls. Recent research undertaken with adolescents in the US (Lenhart, 2012) suggests that texting has become the primary mode of mobile phone communication; however, the frequency of texting and phone behaviours varies by age (OfCom, 2011). Second, when examining children's expectations of reciprocity, all participants expected a response to a text, however the immediacy of response differed depending on who the text was from. Only 19.3% expected an immediate response to a text sent to a friend compared to those who expected their primary caregiver to reply straight away (57.9%) or within the same hour (5.3%). This suggests that pre-adolescent children perceive the mobile phone as a connection to their primary caregiver almost as if they were physically with them. This was further confirmed when open-ended responses were taken into consideration and it was found that more responses were egocentric in nature when the questions involved their primary caregiver where a swift response was expected. Responses to the importance of replying to a text message showed that over half (56.1%) of participants thought it was 'Very important' or 'Important' to respond as soon as possible to avoid being rude. Third, whilst the mobile phone can provide a link to and from a parent/caregiver or a friend, for the child it can increase feelings of

confusion and uncertainty especially when a phone call or text is not responded to in a timely manner. This finding was in line with results from a study carried out amongst young people aged between 11 and 17 years (Bond, 2010). One positive aspect of the mobile phone is that they are able to be used almost anywhere and everywhere, however, a negative viewpoint to this is that the younger the person, the less likely they are to have the cognitive ability, or the support of an adult nearby, to enable them to manage mobile communication effectively. Fourth, in three out of the four vignettes (i, ii and iv), the majority of participants chose either 'Puzzled' or 'Upset' to describe how they thought the person in the scenario would feel if they did not receive a response to a text or phone call. In contrast, for the third vignette, over a third of respondents stated 'Not bothered', thereby indicating that the context of this scenario was not seen as being important. This suggests that some of the children were able to take the context of the situation into consideration and not view it from an egocentric perspective.

With increasing levels of mobile phone ownership these findings indicate that young children may be negatively affected by their usage as a result of not being able to consider reasons for any lack of responses to calls or text messages. This suggests that the support and guidance from the adults close to the young children, such as parents or teachers, could be beneficial and aid in their independent use of modern digital technology. The present study had two limiting factors. First, the sample size employed in this research was small ($N = 57$), and was selected from pupils at one primary school, thereby limiting the generalisability of the findings. Second, questions were included to elicit responses regarding ownership and usage, however frequency of use was not asked and, therefore, this makes it difficult to compare the usage patterns with other studies.

On the basis of the present findings, further research in this area is suggested employing a larger sample across different schools, to increase the generalisability of the findings. The inclusion of a measure of usage frequency, and the inclusion of the respondents' year of study, in addition to their chronological age, will provide an alternative focus.

This study focused on mobile phones, which are mainly used for making and receiving calls, and sending and receiving texts, and did not consider 'smart' phones. Whilst 'smart' phones are also used for calls and texts, they offer a lot more besides including access to the internet. This increased capability is likely to present further and different challenges for young children, such as social networking sites, or the use of such technology for information search and access, thus there is the potential for further research in this area.

These findings provide some evidence that ownership and use of mobile phones may result in negative affect due a lack of emotional maturity to deal with any perceived rejection, although it is unclear how phone ownership at a young age might impact on social and emotional development. Moreover, the technological and social benefits of ownership and use of phones by this age group was not explored.

Whilst, there is an emphasis in UK school curricula (Department for Education, 2013) on developing communication skills, and the safe and appropriate use of ICT, the education of younger children around the use and expectations of mobile phone ownership appears to be largely ignored. This research highlights the positive aspects of children using mobile phones, such as alleviating parental concerns about safety, and allowing the children to communicate with their caregiver when needed. It also suggests that, from an emotional perspective, children could be negatively affected due to a lack of understanding when phone calls or texts are not responded to. Future research should

focus on the need to increase understanding about the potential impact on the social, emotional and personal development of young children, and the implications this could have for professionals working with them.

Note

1. In the context of this paper, a distinction will not be made between 'smart' phones and mobile phones.

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Appendix. Questions used in the questionnaire

Table A1. Questionnaire items and response options by theme.

Research theme	Questions	Response categories
Ownership	Do you have a mobile phone?	Yes No
	Does anyone in your family have a mobile phone?	Mum Dad Brother Sister Auntie Uncle Grandparent Other No-one
Usage	Do you use your mobile phone to send/receive text messages?	Yes
	Do you use your mobile phone to make/receive phone calls?	No
	Who do you text/call most often?	Mum Dad Brother Sister
	Who sends you the most texts/calls you most often?	Auntie Uncle Grandparent Friend Other
Expectations	Janet has sent a text to her friend asking if she wants to come out and play. When do you think Janet should get a text back from her friend?	Straight away
	Adam has sent a text to his mum to ask if he can play out on his bike. When do you think Adam should get a text back from his mum?	In the same hour The same day When her/his friend/ mum is able to reply

(*Continued*)

Table A1. (*Continued*).

Research theme	Questions	Response categories
Emotional impact	Simon's mum is at work and Simon has sent her a text asking what they are having for tea. His mum has not sent a text back. How do you think Simon will feel?	Not at all Happy/
	Janet is playing at her friends and has tried to ring her dad to ask what time she needs to come home. Her dad didn't answer his phone. How do you think Janet will feel?	Puzzled/ 
	Anna has sent a text to her friend Tara asking if she has finished her homework yet. Tara hasn't sent a reply back to Anna. How do you think Anna will feel?	Upset/ 
	Mark has tried to ring his friend Harry to ask if he wants to come for tea. Harry didn't answer his phone. How do you think Mark will feel?	Angry/  Not bothered/