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Family dynamics and internet use in Britain: what role do children play in adults' engagement with the internet?

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Family dynamics and Internet use in Britain: what role do children play in adults' engagement with the Internet?

The importance of considering the family context in the adoption and use of the Internet are well recognised. Supporters of the digital inclusion agenda often see children as a way to increase the digital skills and use of the Internet by parents and older adults. However, there is a limited amount of research that has explored whether this is really the case. Using two nationally representative survey data sets from Britain, this paper aims to better understand the links between children and adults' use of the Internet within the same household. In this paper we ask what influence children have on adult's Internet use, skills and engagement. The paper concludes that while children might influence uptake, characteristics of the adult (for example education, age and social capital) are more important in relation to their skills and engagement with the Internet.

Introduction

From the numerous studies on digital exclusion we know that there are a number of individual and contextual factors that help us to understand why and how adults use the Internet. These factors are very well documented, and centre on demographics, socio-economic status, attitudes, motivations, skills, social capital and micro level contexts like school, work and the home (Helsper, 2012; Van Dijk, 2006; Selwyn, 2004a).

In this paper, we focus on one particular aspect of this picture - specifically how young people in the household influence the online activities of adults living in the same household - while taking into account other known factors in explaining the extent to which someone is digitally excluded or included. Many assumptions are made about the potential for young people to make a difference to their parents or guardians Internet use, and are seen by stakeholders as potential "digital champions" who encourage adults in the same household to go online. Yet, this is a relatively unexplored area of research, particularly from a more quantitative perspective (Selwyn, 2004b).

Indeed, within the field of domestication research and other primarily qualitative approaches to understanding Internet use and adoption there have been rich studies that have provided an in-depth understanding of how the use of technology within the family influences the meaning Internet use has for individuals (Haddon, 2004). Yet, few quantitative studies have examined in what ways, if at all, other family members may be influencing an individual's adoption and use of the Internet (Chesley, 2006; Vandenbroeck et al., 2008). This is typically because of the complexity of measurement issues that such relationships and contexts present for survey data. However, these are really important considerations for all digital inclusion researchers, as young people in the same household may well provide a strong reason for why and how people use or do not use the Internet.

The limited amount of quantitative research that is available has somewhat mixed findings. For example, a study in Germany found that while household income and parental education level were both significant factors in understanding Internet use, the presence of children aged 12-24 was more important (Korupp & Szydik, 2005); supporting the notion of children as "digital champions". In contrast, a study in the US found that the presence of children did not notably account for explaining Internet use by parents (Chesley, 2006).

Using two nationally representative surveys that collect data about Internet use in Britain we aim to contribute to the debate. We are interested in what happens when the presence of a child and certain child characteristics (that is, the age of the child and their skills and confidence in using the Internet) are factored into a model of digital exclusion and how this may help to explain parental access, skills and use of the Internet.

From the existing literature we suggest the presence of young people in the home may influence adult's Internet use in three main ways. First, by providing a reason for acquiring home Internet access; secondly by increasing adults interest in using the Internet for a range of different purposes (for example, because the Internet may offer a better way of managing the household and family life or because the child has introduced them to a range of online activities); and thirdly, because children might teach or motivate adults to improve their online skills. Each of these are considered in turn below.

Access: Research in a variety of contexts has shown that households with young people are more likely to have access to a computer and the Internet (Hughes & Hans, 2001; Vandenbroeck et al., 2008; Van Rompaey et al., 2002). This is likely to be because adults often buy computers thinking it will benefit their child's education or lead to other positive outcomes (Haddon, 2005; Kiesler et al., 2000). Thus, even in less well off households, some parents will prioritise Internet access over other goods in order to support their child.

Use: Studies in a range of countries have shown that parents are more likely to use the Internet than adults living without children in the household (Helsper & Eynon, 2010; Lenhart et al., 2011). This may be for a number of reasons, some of which are simply based on the presence of the child in the household. For example, parents or guardians may decide to use the Internet as a way to support various aspects of family life. For example, to try to improve co-ordination amongst family members (Chesley, 2006; Kennedy et al., 2008; Rainie &Wellman, 2012); or to help in managing the household (for example, for finance) (Chesley, 2006). It may also be as a result of their child's use of the Internet in particular; e.g. to enhance interaction and dialogue with

their children (Aarsand, 2007), or to get more involved with their child's educational uses of the Internet (Chesley, 2006; Passey, 2011; Rainie & Wellman, 2012).

Skills: Parents may aim to improve their skills to use computers and the Internet to be able to support their children and ensure they use technology effectively and safely (Lally, 2002; Korupp & Szydlik, 2005). Indeed, a number of qualitative studies have highlighted how parents or guardians employ a range of strategies to support / regulate their child's use of technology (Davies, 2011; Tripp, 2010; Valckea et al., 2010; Zhao, 2009) demonstrating the high importance that the majority of parents place on such activity.

In this paper, we are interested in both the presence of children in the household and individual characteristics of the child (that is, age, skills and confidence to use the Internet) in explaining adult's use of the Internet.

As can be seen from the discussion above, it may simply be the presence of children in the household that leads to certain kinds of Internet use by adults, rather than the child's Internet use per se, or the fact that the child is teaching the parent to use the Internet more frequently or for a wider range of purposes. Having a household with children often requires greater communication between family members to co-ordinate different and competing schedules, financial management and flexible working arrangements as well as information seeking for the child (for example, for decisions about new schools, for health etc) and the Internet provides one way of achieving these goals.

In addition to their presence, certain characteristics of the child are also likely to be important in understanding adult's use of the Internet. First, the age of the child needs to be taken into account. Age provides a proxy for how the needs and responsibilities of being a parent changes overtime and with it their use of the Internet

(Haddon, 2005). For example, when there are pre-school children in the household, computers may be particularly important for home management given the new financial constraints of having a new addition to the household and home recreation for the child and the adult (Watt & White, 1999). In a household with adolescents, adults may have more time to explore their own interests using computers (including socialising and entertainment and interests) (Chesley, 2006; Passey, 2011; Watt & White, 1999).

Second, it may be that the child's use of the Internet also directly influences parent's uses, as the level of skills and confidence young people have in using the Internet could affect the level of skills and use of the Internet by the parent. Indeed, the notion of the child as the household expert has attracted a great deal of attention in policy circles. Digital champion schemes that encourage young people to motivate adults to get online and teach them digital skills have been popular in Europe (Race Online Campaign, 2010). Yet, the results from research studies have been quite mixed. Some authors have highlighted that young people can support adults' uses of ICTs by explaining and thus increasing their skills in this domain. However, such attempts are not always effective and in some families the position of the child as the Internet expert is not without its challenges (Holloway & Valentine, 2003; Kent & Facer, 2004; Kiesler et al. 2000; Schofield Clark, 2009). Other research has been even less positive, with some research indicating that instead of children improving parental search skills to locate information on the Internet, it made them worse, perhaps because adults simply get young people to use the Internet on their behalf rather than asking the child to help them improve their own skills (Hargittai, 2003).

As noted above, it is important, when exploring the links between children and adults' use of the Internet within the same household, to also incorporate the factors that are associated with digital inclusion, that is the individual characteristics of the adult.

Factors associated with higher engagement with ICTs include level of education, age, gender and occupation (Chesley, 2006; Helsper, 2010; Macgill, 2007; Van Dijk, 2005); household characteristics: such as household Socio-Economic Status (SES) and income (Hollingworth et al., 2011); and measures of social capital (Haddon, 2006; Lally, 2002).

Based on the literature above, the paper will address two questions:

- How significant is the presence of children in the household compared to other factors in understanding adults' access, use and engagement with the Internet?
- To what extent do the characteristics of the child and the adult determine adults' access, use and engagement with the Internet?

The specific factors and characteristics of the child and the adult that are the focus of this study are detailed in the methodology section. In brief, we will include individual socio-demographic characteristics of the adult (education, occupation, age, gender), wider contextual characteristics of the adult (SES of the household, measures of the adult's social capital and the support available to them to use the Internet (their digital support network)) plus presence of a child in the household and individual child characteristics (age of the child and their confidence and skills to use the Internet).

It is not possible with survey data to account for the significant complexity of the range of inter and intra family conditions that are relevant to the role of the family in understanding individuals Internet use (Haddon, 2006; Lally, 2002; Murdock, 1992; Schermerhon & Cummings, 2008). Yet, it is possible to provide a useful quantitative framework to test out some of the findings from more qualitative studies. In doing so, we hope to respond to the call for more research that explores how adult use of the Internet can be understood both by personal characteristics within a wider context that

takes into account the presence and characteristics of children in the home, the household context and an individual's social networks.

Methodology

The data upon which this article is based is taken from two surveys. The first is the 2011 Oxford Internet Survey (OxIS), carried out by the Oxford Internet Institute, University of Oxford, which measures Internet use and non-use in Britain. The survey is a multistage probability sample survey of individuals 14 years and older, and is carried out face to face. The 2011 survey was conducted during February – March with 2057 respondents (a response rate of 51%) of which 1498 were Internet users. Areas covered in the survey include information about access to the Internet, Internet use and non-use, kinds of Internet use, attitudes and concerns towards the Internet, and changing habits and practices in everyday life as a result of new technologies.

The second survey data set used in this paper is from the EU Kids Online II project (2009–2011); a pan-European project that aimed to investigate the Internet practices of children across twenty-five European countries, with a representative sample of around 1,000 Internet using children aged 9–16 and one of their parents in each of the partner countries. In the UK, 1032 children and one of their parents or guardians were interviewed face to face collected through random, multistage household sampling procedures.

Using logistic and linear regression analysis on the OxIS data set, we explore how significant having children in the household is for: 1) the quality of Internet access adults have; 2) the adults' level of skills and self-efficacy in using the Internet; and 3) understanding adults' different ways of engaging with the Internet. In addition, we conduct linear regressions using data from the EU kids go online project to explore to what extent the characteristics of the child (age, skills and confidence in using the

Internet) and the parent (age, education, Internet access locations) determine parental Internet use and confidence. Throughout, we include established individual (that is, socio- demographic) variables and some wider contextual indicators of exclusion such as social capital and SES of household. These have been selected based on previous academic literature and the availability of measures in the survey. In future research, a broader set of context indicators would be valuable and this will be discussed further below.

It is important to note here that since this paper is about the role that children in the household play in shaping adults' Internet use, we did not make a distinction between biological parents, official carers and adults in households with children. The results and conclusions therefore do not extend beyond those relevant to adults with children in the household; although based on the EU Kids Online II data we can draw specific conclusions about parents and children.

Measures

OXIS measures

The following measures were taken from the Oxford Internet Surveys (Dutton and Blank, 2011).[1]

Individual socio-demographic characteristics of the adult

Education (M=2.7, SD= .85; Median= 2'secondary education'). Average level on a scale from 1 (basic) to 4 (higher education). Based on the question 'What is the last type of educational institution (for example, school, college or university) that you have

[1] For detailed descriptions of the questions please see the questionnaire at http://www.oii.ox.ac.uk/microsites/oxis

attended or which type of educational institution are you attending now?' For the purposes of analysis those who had basic education only (not completed secondary education) were separated from those with completed secondary, further and higher education.

Occupation Participants were asked: 'Which of these descriptions best describes your current situation?' Dummy variables were created for those who indicated that they worked full time or part-time (53%), and those who indicated studying full-time or part-time (9%).

Children 'How many children live in your household and how old are they?' Answers indicated whether there was a 'Child under 10' (21%); a 'Child between 10-13' (10%) and a 'Child between 14-17' (8%).

Gender (53% women) was observed by the interviewer and *Age* was noted by asking the respondent in which year they were born (only those over the age of 18 were included in the analyses).

Contextual indicators

Household Socio-Economic Status (SES) (M= 2.90, SD=1.46) Measured through noting the job description of the chief income owner and using the ACORN classification to classify them into A, B, C1, C2, D and E levels.

Social capital[2]

[2] The measures used here reflect the everyday social and digital resources available to people both in terms of the availability of close social networks and as regards support networks in relation to using the Internet. For a more detailed discussion for these operationalizations of social capital see Helsper (2013) and digital support networks Eynon and Malmberg, 2012). Operationalizations of bridging types of social capital were not included as part of this study as they are not appropriate for the focus of this paper.

Socialising with local family and friends (M=2.66, SD=.28; α=.63) Average of the answers to the questions 'How often do you contact family or friends who live nearby by… ? 'Going to visit them or they come here?'; 'Calling them on the phone?'; 'Emailing or instant messaging them?'; 'Writing a card or a letter to them?' and 'Text messaging?' Answers on a scale from 1 (less than monthly) to 5 (several times per day).

Social isolation (M=.64, SD=.77, α=.92) Average score over the items 'How often do you feel you lack companionship?'; 'How often do you feel left out?' and 'How often do you feel isolated from others?' Scale from 0 (Never) to 4 (Almost always).

Digital support networks (M=.79, SD=.83, α=.38) Sum of affirmative users' answers to 'In the past year have you received help to use the Internet from': family or friends, people at work / school, people at the library or people at Internet cafes? Scale from 0 (None of these) to 4 (All of these).

Adult Internet access and use indicators

*Home access (*73%) Answer to the question 'Does this household have access to the Internet?'

Use (71%) Answer to the question 'Do you yourself personally use the Internet on whatever device at home, work, school, college or elsewhere or have you used the Internet anywhere in the past?'

Access locations (M= 2.38, SD=1.37) Sum of the number of 7 places users indicated in answer to the question 'Now, could I ask about all of the places where you access the Internet? Do you currently access the Internet….?'

Years of use (M= 7.52, SD=3.50) Average scale 0 (less than a year) to 11 (11 years or more) in users' answers to 'About how long have you been using the Internet?'

Adult Users' Confidence and attitudes to use the Internet

Confidence: (M= 3.86, SD= .81) Answers to the question 'How would you rate your ability to use the Internet?' Scale from 1 (Bad) to 5 (Excellent).

Skills (M= 3.52, SD= .95, α=.89) The average of the answer to the questions 'How confident do you feel about …? If you have never done this, guess how confident you would feel if you had to do it.' Ranging from 1 'Not confident at all' to 5 'Very confident' for 8 items.

Adult users' engagement with the Internet

Scales of engagement with the Internet were created through factor analysis on 46 items using Maximum Likelihood Estimates with varimax rotation. An eigenvalue of one was used as a cut-off point. The question was 'How often do you…?' and scales for these items ranged from 0 'Never' to 5 'Several times per day'. For brevity, just the characteristics of the seven scales used in this paper and their highest loading items will be described.

Communication – Personal (M=.72, SD=.95, α=.79). Average score over 4 items. The highest loading items were 'Write a web-log or blog'; 'Read a web-log or blog' and 'Maintain a personal website'.

Communication - Web2.0 (M=1.08, SD=.91, α=.88). Average score over 12 items. The highest loading items were 'Check or update your profile on a social networking'; 'Post pictures or photos on the Internet' and 'Post a video or video clip'.

Entertainment-User Generated Content (M=.80, SD= .96, α=.86). Average score over 4 items. The highest loading items were 'Uploading videos or music files'; 'Downloading music'' Downloading videos' and 'Watching videos online'.

Entertainment - Broadcasting material (M=.91, SD=1.17, r= .71). Average score over 2 items. The items were 'Watch TV programs on the Internet' and 'Watch movies or films online'.

Literacy - Informal learning (M=1.75, SD=1.08, α= .82). Average score over 5 items. The highest loading items were 'Finding or checking a fact'; 'Looking up a definition of a word'; and 'Investigating topics of personal interest'.

Literacy - Information seeking (M=1.62, SD= .88, α=.72). Average score over 12 items. The highest loading items were 'Getting information about local events'; 'Looking for news - local, national, international' and 'Looking for sports information'.

Household management – Finance (M=1.62, SD= .88, α= .84). Average score over 10 items. The highest loading items were 'Paying bills', 'Using your bank's online services' and 'Buying a product online'.

EU Kids Online measures (UK only)

The following measures were created from the EU Kids Online survey (Livingstone et al., 2011).[3]

Individual socio-demographic characteristics of the parent

Age of parent (M=39.82, SD= 6.75) and *age of child* (M=12.60, SD= 2.32) Parents were asked to indicate their age and the age of the child that was being interviewed.

Level of education (M=3.77, SD=1.28) Parent were asked for themselves and their partner (if applicable) 'Can you tell me what is the highest level of education you have completed?' Answers were classified in the following categories 'Not completed primary education'; 'Primary or first stage of basic'; 'Lower secondary or second stage of basic'; 'Upper secondary'; 'Post secondary, non tertiary'; 'First stage of tertiary' and 'Second stage of tertiary'.

[3] For detailed descriptions of the questions please see the questionnaire at http://eukidsonline.net

Contextual indicators

Household Socio-Economic Status (SES) (M=2.19, SD=.76) was measured through noting the job description of the chief income owner and using the ACORN classification to classify them into A, B, C1, C2, D and E levels.

Parent Internet use characteristics

Internet self-confidence (M= 3.29, SD= .76) Score on 'How confident are you in using the Internet?' Scale from 1 (Not at all confident) to 4 (Very confident).

Frequency of use (M=1.45, SD=.73) Score on 'How often do you use the Internet?' Scale from 1 (Less often) to 4 (Every day or almost every day).

Access locations (M=1.28, SD=.74) Sum of answers to the question 'Do you use the Internet in any of these places?' Options were 'At home'; 'At work or college'; 'From your mobile phone'; and 'Other'. Scale from 0 (None) to 4 (All).

Child Internet use characteristics

Confidence compared to parent (M= 2.21, SD= .81) Score on 'I know more about the Internet than my parents'. Scale from 1 (not true) to 2 (a bit true) to 3 (very true).

General self-confidence (M= 2.50, SD= .61) Score on 'I know lots of things about using the Internet'. Scale from 1 (not true) to 2 (a bit true) to 3 (very true).

Skills (M=4.70, SD=2.58) Sum of answers to the question 'Which of these things do you know how to do on the Internet?' Scale ranges from 0 to 8.

Results

The discussion of the results examines the influence of children in the household on adults: quality of access, skills to use the Internet and types of online engagement.

Adults Access to the Internet

[Table 1 about here]

Presence and characteristics of children: Having children in the household (after controlling for other factors) is significantly and positively related to Internet use, home Internet access and the number of places adults access the Internet. Having younger children (under the age of 10) makes no significant difference to how and whether the adults in the household access or use the Internet but those with pre teens and teens are more likely to use the Internet, access it at home and in the case of teenagers are more likely to use it at a broad range of locations. Thus access and use of the Internet by adults are partly dependent on the age of the child.

Adult characteristics: However, a number of other factors, well established in digital inclusion literature also matter. Adults who have more formal education, are employed, younger, from a higher SES background, and less socially isolated tend to use the Internet and have Internet access at home. Similar relationships can be seen for access locations, although in addition, women have a narrower range of access locations than menSocio-economic status is somewhat surprisingly negatively related to the number of access locationsThis may reflect that those who do not have Internet access at home using the Internet in more locations. Those who are more socially isolated, and those with broader digital support networks are more likely to access the Internet at a wider range of locations.

Adults' Skills to use the Internet

In this section we analyse the relationships between adult and child characteristics and adult Internet skills and confidence using the OxIS 2011 data.

[Table 2 about here]

Presence of children: Having children in the household (after controlling for other factors) does not make a difference for the Internet confidence or skills adults have to use the Internet.

Adult characteristics: In terms of adult's individual demographic characteristics, table 2 shows that the adult's level of education is positively related to digital confidence and skills, while gender and age are both negatively related to skill. In other words, women and older people feel less confident and skilled in their use of technology. The wider context also matters. Socio-economic status of the household matters to some degree for Internet skills but not confidence. Those who are from higher SES households surprisingly report lower levels of Internet skills. Those who contact their family and friends more often in various ways, report low levels of social isolation and those who had accessed less extensive digital support networks indicated higher levels of skill and confidence. Adults' Internet use characteristics also matter. Years of use and the number of locations at which they accessed the Internet were positive and strong predictors of skill and confidence levels.

Thus, when demographics, online experience, Internet access locations and social capital indicators for adults are taken into account, the presence of children in the household has no influence on adults' self-confidence or skill to use the Internet.

Parental access, use and confidence to use the Internet (EU Kids Online data)

To understand if children's age and confidence in using the Internet, rather than simply their presence in the household, influence parental Internet use and confidence, we use the EU Kids Online data.

[Table 3 about here]

Child characteristics: Table 3 shows that the age and level of confidence a child has in using the Internet are in general not related to Internet access, frequency of use or

confidence of UK parents. Children who think their parents are better at using the Internet than they are, have parents who are more confident in their own use. Children who have lower general Internet self-confidence have parents who use the Internet less frequently.

The R2 change is significant when these child characteristics are added to parental socio-demographic and Internet use characteristics but the effect size is relatively small.

Adult characteristics: Amongst the individual demographic and Internet use characteristics of the parent, the level of education, general Internet related self-confidence of the parent, frequency of use and access locations are consistently strong, positive and significant predictors of the ubiquity, frequency and self-confidence in Internet use of the parent. The only non-significant relationship is between level of education and frequency of Internet use. Socio-economic status of the household is only relevant in relation to how many different locations the parent has access to, where, similar to the relationship identified in OxIS, those with lower socio-economic status have access to more locations. These parental and household characteristics explain a relatively high proportion of the variance, about 30%.

Adults Engagement with the Internet

These analyses are conducted for the OxIS database because they have more information on engagement types of adults.

As noted above, here we use average composite scales. Thus, if users do one thing very frequently, for example, looking for news, but do not engage very much in other kinds of information seeking, then their "literacy – information" score will be low.

[Table 4 about here]

Presence of children: Having children in the household has a mixed and relatively weak relationship with adults' engagement with most types of online activities (see Table 4). Having a child under 10 was the most influential. Having a child under 10 in the household has a positive influence on personal communication (such as reading or writing blogs), information seeking, household management, using the Internet for personal types of communication, but a negative influence on Web2.0 communication (such as social networking and posting photos) and broadcast entertainment activities (for example, watching films online). Having slightly older, pre-teen children is also related to increased information seeking and informal learning, but not to any other activities. Having teenagers in the household limits adult engagement with personal communication but was not significant for any other activity. It is important to note that all these effect sizes are small.

Adult characteristics: The socio-demographic background of the adult was strongly related to engagement. Education is positively related to personal communication, learning and information seeking as well as to household management uses. It was negatively related to using the Internet to access User Generated Video and Web2.0 communication. Adults who work are more likely to use the Internet for household management purposes and less likely to access it for entertainment and Web2.0 communication activities. Those who are studying are more likely than others to access the informal learning and communication aspects of the Internet as well as User Generated Video. Age is negatively related to communication and entertainment activities but unrelated to learning or household management. Women are less likely to engage in all activities except Web2.0 types of Internet use and household management activities. Socio-economic status of the household is significantly and, surprisingly,

negatively related to all but the broadcasting and household management applications of the Internet once other factors are controlled for.

Also significantly and strongly related are the social capital variables, in particular the amount of socialising with friends and family who live nearby is positively related to all types of engagement with the exception of broadcast content. Accessing digital support networks positively relates to Internet activities with the exception of Web2.0 communication, broadcast and finance. A weaker pattern was found for the social isolation variable although the analysis does show that higher levels of isolation are related to higher levels of engagement with Web2.0, informal learning and household management.

Years of experience with the technology was not related to most types of engagement, it was related significantly to information seeking and household management. Access locations and confidence were related to all types of engagement, skills only to communication related activities, uses of the Internet for User Generated Video and household management.

Discussion

The results show that the role children play in the household in relation to adults' access, skills and use of the Internet is relatively limited. There is some evidence that having children in the household encourages adults to get home Internet access in the first place but after that it does not seem to aid adult Internet use a great deal. Indeed, in some cases having younger children seems to limit certain types of adult Internet engagement rather than encourage it, and even in cases where positive relationships were found the effect sizes were small. When we look at not just the presence of children in the household, but focus on their characteristics such as age, skills and confidence to use the Internet again we see a very limited relationship to adult

Internet access, skills and engagement. Far more important than the presence and characteristics of children are individual adult socio-demographic characteristics and social exclusion indicators such as social capital.

Adult Internet Access

The findings presented support other work that has demonstrated positive relationships between the presence of children in the household and home access (for example, Hughes & Hans, 2001; Vandenbroeck et al., 2008). This may be because parents purchase computers and the Internet as they see them as important for their child's education or future occupational chances (Stevenson, 2011). Interestingly, White and Selwyn, who analysed cross-sectional data from 2002-2010 in the UK, found that the presence of children in the household did not influence home Internet access – but similar to our study the authors concluded that traditional social exclusion factors mattered (White & Selwyn, 2013). This may be related to the need to consider the age of the child. As is clear from our data, the age of the child matters. Both access to and use of the Internet by adults is higher in households with pre-teens or teens but this is not the case for households with children under 10. This may be mirroring the educational transition common in the UK from primary to secondary school at age 11, where the child's use of the Internet for school may become more important and a child's bargaining power increases. Once the Internet connection is there, adults may be encouraged to try it out (Chesley, 2006). Further, adults with older children may have more free time to use the Internet as the child becomes more independent (Watt and White, 1999). Nevertheless, an adult's level of education and employment status are more important than the presence of the child in understanding who has the Internet at home and who is an Internet user.

Adult Internet Skills

Having children in the household does not make a difference to adults' online skills once other factors have been controlled for. Adults feel neither less nor more confident in their own skills when they have children around. Parents with confident children do tend to feel more confident themselves but analyses of the EU Kids Online data suggests that parents who are objectively more skilled have children who are more skilled rather than the other way around and that is, thus, not the children who teach them.

The fact that skill levels are not significantly different in households where children are present contrasts to earlier research that suggested that parents develop their online skills to use new technologies in order to ensure their children use computers effectively and safely (Korupp & Szydlik, 2005). Indeed, a study of adults in the UK in early 2000 found that some older parents had decided to learn to use computers in formal educational settings to pass this knowledge on to their children (Selwyn, 2005). However, this effect may no longer be seen because at the time of this research the Internet is not particularly new in many families . Another strand of literature argues that digital inclusion amongst adults could be enhanced by using young people as 'digital champions'. Young people would get adults online and teach them the skills that they, as digital natives, have and adults, as digital immigrants' lack, (for a critique see Helsper & Eynon, 2010). As Stevenson (2011) notes, just because adults and children happen to be in the house with the technology at the same time, does not mean they will use it together or benefit from it. Similarly the findings presented here suggest that children might not be the 'digital champions' for adults that some digital inclusion programmes hoped they might be.

As for access, other variables well known in digital inclusion research matter more when examining adults' confidence in using the Internet. Education, age and gender of the adults are all related to Internet related confidence levels in the expected directions. Similarly, having a strong social network available is related to greater Internet related confidence. However, accessing digital support networks is actually negatively related to the adults' levels of confidence and skills. The use of these networks might be practical; those adults who feel that they need support access their informal networks, those who feel confident do not explicitly ask for help but do have access to high levels of social capital.

It should be noted that this does not necessarily indicate that these adults have more skills or are more competent at using the Internet. Bandura (1989) and Eastin & LaRose (2001) show that self-efficacy is not directly related to skill but that it is strongly related to socio-economic status and general confidence rather than the actual task at hand. Indeed, research demonstrates that those of lower SES and women are less confident even when they have the same skill levels (Durndell & Haag, 2002). A lack of confidence might lead to a greater need for support but that those with a greater need of support often come from groups with less extensive digital support networks. Previous research has shown the importance and complexity of how digital support networks (Haddon, 2005; Murdock et al., 1992), social capital and social support operate in relation to digital inclusion (Helsper, 2012; Kennedy et al., 2008) but more work is needed to draw strong conclusions..

s This paper's analyses do suggest that peer support networks are more influential than children in the household. Future research should look at separating out access to and use of social and digital support networks and their independent relationships to Internet skills.

Adults' Internet Engagement

The findings show that having children in the household does not play an extensive role in adults' engagement with the Internet. When we looked at the presence and characteristics of children in the household and their relationship to various kinds of Internet activity the effect sizes were small, and not always positive. Having children under the age of 10 was most strongly related to the adults' Internet uses. For children of all age groups, when the relationship was significant and positive these were mostly for practical uses related to household management and information seeking, learning and person to person communication. Some support for this finding is provided by a scheme in the UK (The Home Access Programme) that put computers and the Internet into the homes of low SES households, that found the presence of a computer in the home leads to parents using the Internet for a range of online services and sources of information (for example, for e-Government and job searching) and language learning (Jewitt & Parashar, 2011). Furthermore, the lack or negative relationship between presence of children and adult engagement with entertainment activities is supported by general population studies in the US (Lenhart et al., 2011).

One explanation for these negative relationships may that while at times adults are influenced by other members of the household who encourage them to use a technology, at other times they may be discouraged by family members to engage in some online activities as others in the household dominate that particular activity (Chesley, 2006). Adults might also find themselves competing with their teenagers over the use of the available home devices that connect to the Internet (Watt & White, 1999). Indeed, priority is often given to teenagers to use the computer as they need it most for educational purposes (Lally, 2002).

As with our findings for access and skills, the individual demographic characteristics of the adults, the household and social capital measures are more important to consider than the child. The somewhat surprising negative relationship between SES of the household and uptake of a number of Internet engagement activities suggests that individual demographic characteristics (particularly Education) matter more. This finding may also indicate the problems of using ACORN as the SES household measure while at the same time controlling for employment at an individual level in the regression model. While beyond the scope of this paper and data set, more work is required to explore this issue.

To readers' familiar with the digital inclusion literature, none of the other relationships are particularly surprising, yet we would like to stress here the relevance of gender. While gender no longer makes a difference for home Internet access and frequency of use of the Internet, in this analysis it remains related to fewer access points, lower levels of confidence and less broad engagement with different aspects of the Internet. This gendered aspect of Internet use should not be overlooked. Other research has shown it is not going away, is stronger at some stages of life than others and is clearly relevant when thinking about how family members influence another's Internet use (Helsper, 2010). Indeed, Hollingworth and colleagues (2011) showed that mothers are more likely to be involved in their child's education and this may at times involve acquiring access to computer. Nevertheless, this did not necessarily make them more confident users of the Internet, as they may not be using the Internet for their personal development when they are looking after their children at home.

Conclusion

While more qualitative studies of Internet use have recognised the importance of family members,, quantitative research has been slow to catch up. Using data from two

representative surveys we have tried to contribute to this debate through investigating the significance of the presence and characteristics of children in understanding adult's access, skills and engagement with the Internet, alongside the characteristics of adult commonly used in digital inclusion research (Vandenbroeck et al., 2008). From our analysis there is some evidence that having children in the household encourages adults to get home Internet access but after that, children's presence, age, confidence and skills to use the Internet are not significantly related to the Internet access points an adult has, their skills to use the Internet or the breadth of their Internet use. Far more important than the presence and characteristics of children in the household are the individual characteristics of the adult.

There are of course limitations with the research presented here that are largely based around the constraints of using cross-sectional survey data. Three key issues for further research are: (1) the need for a detailed mixed method study that enables the research issues raised in this paper to be explored both qualitatively and quantitatively with linked data sets. A strong qualitative component would enable a better understanding of the underlying processes, refine the variables used in the survey data and better explain the reasons behind the patters and relationships outlined in this paper. (2) the need for quantitative work that studies a wide range of family variables and encapsulates more of the factors at work within the interactions between adults and children in the context of the home (Haddon, 2006). This work should build on existing qualitative studies that explore all aspects of family dynamics in relation to Internet use (Vandenbroeck et al., 2008).

(3), the need for longitudinal data to explore how the adoption and use of new technologies change over time within the same family (Chesley, 2006; Passey, 2011; Selwyn, 2005). This would enable us to see how certain factors influence both the adult

and the child (Schermerhon & Cummings, 2008),to explore mediating variables and how different variables play out in different contexts. Previous literature suggests that SES of the household may have a significant influence on the ways that adults develop their own uses of the Internet over time and the strategies they employ to ensure their children use the Internet safely and effectively (Hargittai, 2003; Hollingworth et al., 2011; Schofield Clark, 2009). Longitudinal data would allow an in-depth exploration of this studies surprising negative relationship between SES and Internet skills and engagement after controlling for other adult and child characteristics..

We argue that our analyses provides new insights into the relationships between adult and child Internet use. The findings may assist in the development of further research and in particular provide a useful quantitative framework for qualitative research in this area.

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