


Parents as Coresearchers at Home: Using an Observational Method to Document Young Children's Use of Technology

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Abstract

This article discusses the use of observational video recordings to document young children's use of technology in their homes. Although observational research practices have been used for decades, often with video-based techniques, the participant group in this study (i.e., very young children) and the setting (i.e., private homes) provide a rich space for exploring the benefits and limitations of qualitative observation. The data gathered in this study point to a number of key decisions and issues that researchers must face in designing observational research, particularly where nonresearchers (in this case, parents) act as surrogates for the researcher at the data collection stage. The involvement of parents and children as research videographers in the home resulted in very rich and detailed data about children's use of technology in their daily lives. However, limitations noted in the data set (e.g., image quality) provide important guidance for researchers developing projects using similar methods in future. The article provides recommendations for future observational designs in similar settings and/or with similar participant groups.

Keywords

preschool children, technology use, observational methods, video recordings, research design, participant coresearchers

Introduction

Current research demonstrates that children are engaging with technology and going online at increasingly younger ages. In the United States, for example, 38% of children under age 2 used a mobile device in 2013, compared to only 10% in 2011 (Common Sense Media, 2013, p. 9). In Australia, a national study found that when compared to children in 25 other countries, Australian children were among the youngest first time users of the Internet, at an average age under 8 on first use (Green et al., 2011, p. 7). Although a number of studies document the devices used by older children and adolescents (e.g., Foss et al., 2012; Large, Beheshti, & Rahman, 2002; Livingstone, 2002; Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013; Rideout, Foehr, & Roberts, 2010), very few include data device access for children under age 8 (Gutnick et al., 2010; see Marsh, 2005 and Vandewater et al., 2007, as examples). Similarly, many studies debate the merits and value of media viewing by young children, particularly from a developmental standpoint (e.g., Desmond & Bagli, 2008; Ellis & Blaski, 2004; Schlembach, 2012), but few of these use qualitative approaches to examine young children's experiences, directly.

Overall, the research landscape related to young children's use of information technology—that is, where and how they use tablets, laptops, smartphones, and so on—is nascent, with only a few studies documenting children's activities (e.g., Davidson et al., 2014; Danby et al., 2013; Gutnick et al., 2010; Rideout et al., 2010; Rideout & Hamel, 2006; Spink, Danby, Mallan, & Butler, 2010). Often, studies of preschoolers' experiences with technology are focused on implications for classroom pedagogy and/or curriculum, such as early

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literacy and numeracy skills (e.g., Burnett & Merchant 2014; Plowman, Stevenson, McPake, Stephen, & Adey, 2011; Zevenbergen & Logan, 2008). Many studies rely on parent or teacher surveys of children's use, rather than naturalistic observations of children's activities, in either classroom or home environments. Although some studies have used qualitative approaches with young children, directly (e.g., Davidson, 2012; McKechnie, 2004; O'Hara, 2008; Plowman et al., 2011; Spink et al., 2010), these types of studies are few in number. Burnett (2010) presents a systematic review of much of this body of literature, where she notes that the focus on formal childcare environments for studies with children under age 8 is based, in part, on "the perceived difficulty of researching the experience of very young children" (p. 254).

This article discusses one recent study that used observational video recordings to document young children's use of technology in their homes. Although observational research practices have been used for decades, often with video-based techniques, the participant group in this study (i.e., very young children) and the setting (i.e., private homes) provide a rich space for exploring the benefits and limitations of qualitative observation. The data gathered in this study point to a number of key decisions and issues that researchers must face in designing observational research, particularly where nonresearchers (in this case, parents) act as surrogates for the researcher at the data collection stage. Before exploring the research design and findings from this study related to observational practice, an overview of the use of observational techniques across disciplines is warranted.

Review of the Literature: Observational Research Methods

Observational research practices have a long and rich history across disciplines, including both quantitative and qualitative techniques for data collection and analysis. Qualitative observational research is intended "to capture life as experienced by the research participants rather than through categories that have been predetermined by the researcher" (McKechnie, 2008b, p. 573). Often, qualitative research data are captured in natural settings, so as to document people's experiences in the world as they go about their daily lives. When data are gathered unobtrusively, this can provide a glimpse into individuals' behaviors that a researcher may not otherwise be able to see or document during data collection. The settings for observational research can range from open, public spaces, such as parks, shopping malls or community meeting rooms (e.g., Carey, McKechnie, & McKenzie, 2001; Fisher, Marcoux, Miller, Sánchez, & Ramirez, 2004; Stooke & McKenzie, 2009), to institutional settings such as libraries and schools (e.g., Gross, Dresang, & Holt, 2004; McKechnie, 2004; O'Hara, 2008). Studies in people's homes have also been conducted to document how people organize their living spaces, engage with family and friends, and use technology in their daily lives (e.g., Campos, Graesch, Repetti, Bradbury, & Ochs, 2009; Hartel, 2006; Plowman et al., 2011). In these studies, researchers make a number of decisions about the practice of

observational research—from the data collection tools to be used to the level of engagement desired with study participants.

The Research Process

Qualitative observational research takes many forms and is associated with many different methodologies (e.g., ethnography, ethnomethodology, grounded theory, and participatory action research) and data collection techniques (e.g., fieldnotes, video/audio recordings, and document analysis). Where interviews, focus groups, and other methods rely on self-reporting of activity, retrospectively, observational methods allow researchers to gather data in real time, at the moment of engagement. Studies show, for example, that data gathered on what people *say* they do and what they *really* do, when observed, can be quite different (e.g., Lee, 2000). For this reason, observational methods are often used in conjunction with other methods to triangulate the sources of data to gain a richer and more complete understanding of people's experiences.

Some observational data are documented in obtrusive ways (i.e., with the participant fully aware of the researcher's presence). For example, a researcher may "shadow" an individual as he or she completes a task or engages in an activity, even asking questions or prompting the participant to discuss his or her actions during the investigation (e.g., Allard, Levine, & Tenopir, 2009; Cooper, Lewis, & Urquhart, 2004; Reddy & Spence, 2008). In other cases, unobtrusive observation is the goal (i.e., where the researcher's presence melts into the background, while participants engage in their work). In these studies, the researcher uses various strategies to make their presence less visible. These strategies include wearing similar clothing to those worn by participants, sitting off to the side of the action so as not to interrupt the activities, using very small recording devices that will not be confronting for the participant, and making observations over time to allow participants to become accustomed to the researcher's presence (Lee, 2000; McKechnie, 2008b). In other studies, the design is covert (i.e., participants do not know they are being watched). The researcher and recording devices may be hidden from view (e.g., behind two-way glass) or, the researcher may be present, but not disclosing to the participants that they are being observed (e.g., Becker & Marique, 2013; McKechnie, 2008a; Pettricrew et al., 2007). In all of these cases, the researcher's role in the process is a conscious decision that shapes the research design. The researcher may be a separate and independent observer of the action (i.e., with no interaction with participants) or the researcher may be a full participant in the activities; in some cases, a mix of approaches may be used, with a researcher's role changing as the investigation evolves. Taking on one of these roles is a conscious, planned part of the investigation, with implications for research design and, ultimately, quality of data and analysis.

Research Design

In this project, unobtrusive observation was used to document young children's (i.e., aged 3 to 5) activities with technology in

their homes. This method was part of a larger study of preschoolers' use of technology in eight early childhood centers in Queensland, Australia; the project also included surveys of teachers and parents as well as observations in preschool classrooms. Ethics approval was granted by research ethics boards at the two universities involved in the study, with consent and assent provided for the use of children's and family members' images in research publications. The consent process followed the Australian National Statement on Ethical Conduct in Human Research. In keeping with those guidelines, the process involved discussion between researchers and families around the process for data collection, including the fact that they had complete control over which sessions to record, how long, and who was to be on screen. Details were also shared about the importance of gaining consent on an ongoing basis as sessions were recorded to ensure that parents and children were comfortable with the data gathered. A sample of 15 children participated in the home-based observation, with parent volunteers recruited from the eight early childhood centers. Parents were invited to take a digital camera home for a period of 1 week and asked to record instances of a child's "everyday" use of information technology. Parents were asked to record their children engaging with computing devices in the home environment as part of their normal, daily activities (i.e., parents were instructed not to set up contrived activities but to record typical, everyday use). Parents were provided with written instructions on camera functionality and also asked to complete an inventory of technologies available in the home. The researchers did not engage with the parents during data collection; the cameras were returned to the researchers at the end of the data collection period. This is in keeping with video-based data gathering techniques used by such researchers as Michael Rich (2008), where participants are provided only with support for the mechanics of video recording to maintain a more direct, participant-driven approach to visual documentation (p. 915). The data set comprised a total of 29 hr of video recording, showing children using laptops, desktop computers, and a range of mobile devices. Individual sessions (i.e., a child engaging with technology in a single sitting) ranged from less than 2 min long to more than 80 min long. The total number of sessions ranged from a low of two per child in a single day, across the week of data collection, to a high of 29 sessions per child (i.e., where use was recorded on every day of the data collection period).

A detailed descriptive analysis was conducted, using a modified "seating sweeps" (Given & Leckie, 2003) approach; this allowed the researchers to code the videos as though they were observing in the space, in real time, to document details of the types of technology, engagement activities, and people using the devices. The data were also analyzed using an inductive, thematic approach to explore emergent themes related to young children's everyday technology activities in the home. Complete results of these analyses are published elsewhere (e.g., Given et al., 2014). This article reports findings related to the use of the observational method, with a particular focus on the impact of video recording by parents on the types and quality of data gathered. Implications for the design of similar studies, in future, are explored.

Results and Discussion

Setting the Stage for Research: Parents and Children as Coresearchers

Parents used various strategies to incorporate the research camera into the activity spaces where their young children were using technology. At times, they placed the camera in a fixed location (e.g., on a bookshelf, on the edge of a desk), with the camera angled toward the child and/or the technology device being used. In other cases, parents held the camera themselves, recording the children's engagement with the devices during the sessions. The video recordings show the child participants' general awareness of the camera in the space. Henry, for example, altered the fixed position of the camera to access a document on the printer; once the document was retrieved, he moved the camera back to its original position. Jordie warned his sibling about the presence of the camera when she tried to grab an USB stick from the computer, so that he would not knock the camera over. Oliver moved out of the camera's frame and (a few seconds later) was told, by his mother, not to touch the camera.

Figure 1 is an example of a screen shot taken with a fixed camera angle; here, mother and child engage with the computer together, with the computer screen visible in the background. Lighting issues, people blocking the camera, and the distance from the camera to the computer screen (i.e., limiting visibility of on-screen text) were quite common challenges in the home data recordings. In some cases (like this one), the child's face was not fully evident on screen; in others, the camera showed a close-up of the child's face, only, without showing the computing device or any other contextual information visible in the frame.

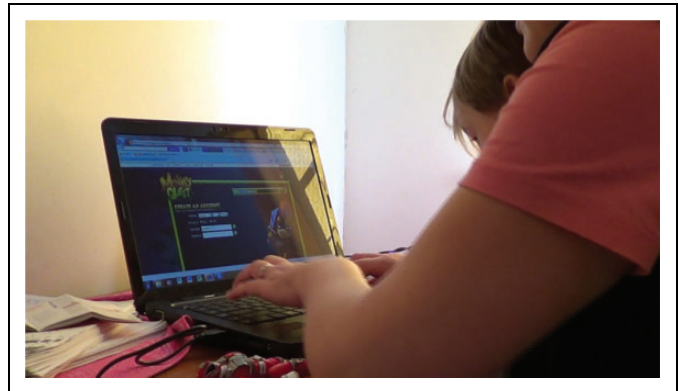


Figure 1. Mother and child engaging with a laptop computer, together. The camera is positioned behind and to the left side of the action on a fixed surface.

Figure 2 shows an example of a fixed camera shot providing a view of the laptop's keyboard; neither the computer screen (on the left) nor the child (on the right) are fully visible to the camera. Unfortunately, these types of camera angles limit the level of analysis possible, particularly if there are no sounds or

actions to be heard or seen on camera. Although the data can be analyzed for what is in view (e.g., children's bodies in relation to technology), other contextual data (e.g., what the child is watching) cannot be incorporated into that analysis. It was also difficult, at times, to know where in the house the activity was taking place (e.g., kitchen, office, bedroom), due to the lack of contextual details captured in close-up camera shots.

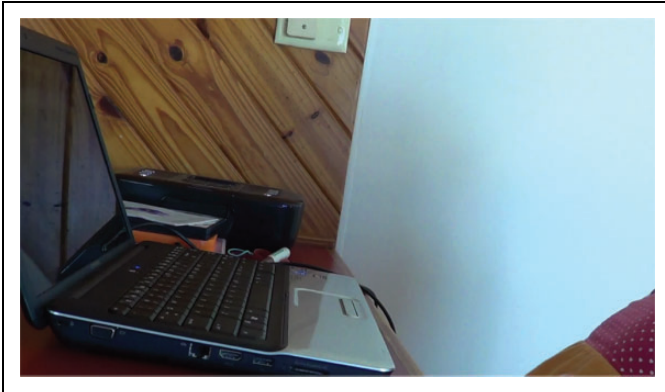


Figure 2. Fixed camera position, documenting the laptop keyboard. The screen (left) and child (right) are not fully visible in the frame.

In some cases, the camera captured footage of another part of the room, entirely. Figure 3 shows clothing on a table in one home; this was the focus of the recording for 12 min when the child participant moved the camera away from the computer activity.

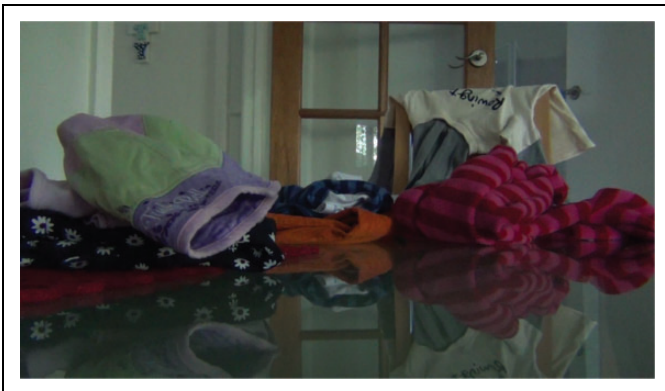


Figure 3. Clothing became the focus of the shot for several minutes, when a child participant moved the camera.

Despite these kinds of challenges, parents were generally very adept at ensuring that the camera focused on the child and the technology, so that the data gathered were related to the project. In one session, for example, Oliver stood up and his mother then asked him to kneel, so that “the ladies” (i.e., the researchers) could see him on the screen. This is one, of many, examples where parents staged the child or elements in the space, physically, to ensure that activities would be captured on screen. Rosielyn was lying on her bed using her iPad,

while her mother held the camera and recorded the activity. At one point, the mother repositioned the iPad to be seen on camera and also asked the child to move down further on the bed to be better positioned in the frame. This direct staging of the activity led to the following exchange:

- Mom: [describes the activity] Rosielyn having iPad time just before she goes to bed.
- Rosielyn: [looks at her mother, who is holding the camera] Mom, can I take a picture of you?
- Mom: No, it's a video, ok?
- Rosielyn: Oh . . . could I take a picture of you now?
- Mom: [adjusting camera position to get the right angle on the activity] It doesn't take pictures, darling . . . You just gotta play with the iPad.
- Rosielyn: Why do I got to play with iPad?
- Mom: Just for five minutes, so we can see what you do.

In addition to staging, this example also demonstrates that children were not always interested in using the technology devices at hand. At times, it is clear from the commentary between children and parents that some activities were being filmed to fulfill the goals of the study, rather than to capture activities in the moment that children chose to engage with technology on their own terms. Although the goal of naturalistic observation is to capture activities “in the moment” and “as they happen,” leaving control of the video recording in core-searchers' (i.e., parents') hands means that some data gathered are the result of constructed activities designed to meet the project's needs. This is simply a limitation of the method that must be acknowledged by researchers, since the use of hidden cameras or stop-action data collection techniques (i.e., where recording is prompted by an activity's start and end) may not be practical in the home setting.

Rosielyn and her mother's interaction is also an interesting example of a potential lost opportunity in the data collection process, where the research tool (i.e., the camera) could have served as an educative tool or another object of play for the child or have some other purpose. What might have happened in this exchange if Rosielyn's mother had shown her daughter how the camera worked? What if the mother had turned the camera around to take a picture of her, as Rosielyn asked? Although the parent in this case is clearly “on task” with the observational activity and attempting to capture her child using a computing device, the scope of the data gathered is somewhat limited. If the parents in this study had been prompted to define the use of digital technologies more broadly, the data gathered may have provided a richer picture of children's understandings of the integration of these technologies alongside (and into) computing devices themselves. Although a parent may make a distinction between computers and cameras, and record data that he or she judges to be appropriate for the project, a researcher may envision a number of other possibilities that may have arisen on-screen if the camera were in the researcher's own hands. This is something to consider when crafting explanatory materials and/or comments to share with core-searchers during the orientation to data collection; researchers

need to carefully consider how they describe relevant, potential data to the coresearchers, to ensure that emergent design within the scope of the research problem can be facilitated.

It is also noteworthy that, across the data set, many children discussed the camera's presence and purpose with their parents and siblings. Although the children had been informed of the recording activity as part of the informed consent process, their comments and questions demonstrate an ongoing learning process about the role of the camera in the home and the type of information being recorded. Jordie asked his father if the camera was taping what he was doing on the computer. Helen asked about the camera and her mother asked her to use her iPad; Helen responded by complaining that she did not have anything to do on the iPad and chose to watch her sister play with another device. Rory was aware of the camera's presence during one recorded session, when his parents discussed what should be recorded. In this excerpt from their conversation he provides information about the types of recordings being made in the preschool (i.e., "kindergarten") to provide guidance on what to record in the home:

- Rory: [To his mother] Dad is videoing me.
 Dad: What are you doing?
 Rory: Playing the iPad.
 Mom: I think you're supposed to be surfing the internet.
 Dad: [Quietly, to Mom] No, using ...
 Mom: [Quietly, to Dad] Oh ... even games? Oh, okay. That's fine.
 Rory: [Continues to play the game] At [kindergarten], everything I do on the computer, even research ...
 Mom: They're more interested in the research, darling, than the playing.
 Rory: [Still playing the game] Everything I do on the computer, even looking at stuff on the ... the not games computer, they still take videos of that.
 Dad: Yep.
 Rory: [Still looking at the screen] They take videos of all the computer stuff.
 Dad: Yep.

This exchange is an interesting one, as it demonstrates both the child's and his parents' understanding of the research activity, generally, as well as their conscious desire to provide appropriate data to the research team (see Danby & Farrell, 2004). Rory, whose activities were also being recorded in the preschool classroom environment, could serve as a bridge between the research team and the parents. He provided valuable context for his parents about what could be recorded, making clear that "everything" is valuable, not just his internet searching activities, as his mother first believed.

Repositioning Research Technology: Engaging With the Camera as an Object of Play

In addition to seeing the research camera as a tool for data collection, a number of children also involved the camera directly in their activities. Children danced, laughed, and stared

at the camera, putting themselves at the center of the action on screen. Cody and his younger sister, for example, jump on the bed, smile, and look at the camera while saying "Cheese!" (i.e., an acknowledgement that their picture is being taken). In Figure 4, Lara waves at the camera while keeping one hand on the computer. Here, the angle of the camera is positioned to capture the computer screen as well as the child's hands and side profile during searching activities. This type of placement allows the researcher to view some of the content of the searching activity, although the screen size prohibits access to details (such as specific search terms entered). The child's hands are in the frame, so can be viewed using the keyboard or moving the cursor onscreen, and some of the child's expressions are visible to the camera.

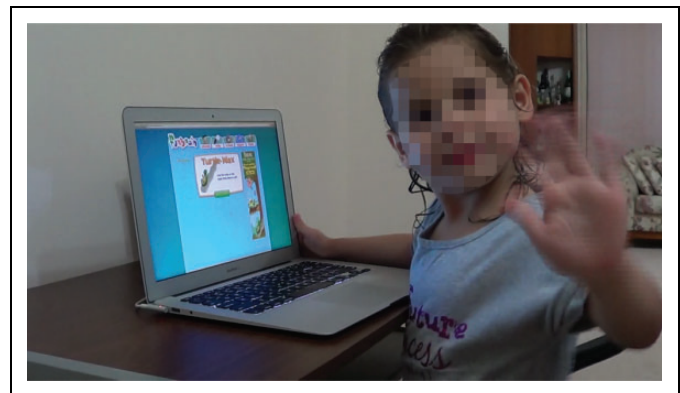


Figure 4. Child participant waves at the camera while holding her computer.

In other cases, the participants used the research camera to create videos of their own making, rather than being the subject viewed on camera, themselves. In Figure 5, for example, Jordie is seen performing martial arts/dance moves in front of the camera; here, the computer or other digital technologies are not in the camera's frame, at all. It could be that parents recorded a range of activities in order to make the recording device a part of overall everyday activities; this is an area that requires further research as to the role of data collection tools in the home environment, generally.

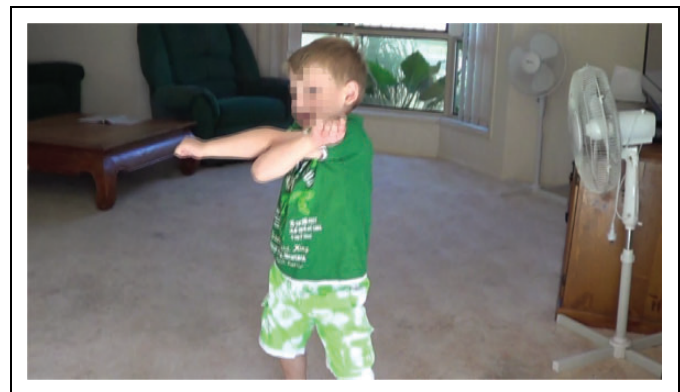


Figure 5. One of the participants performs martial arts/dance moves for the camera.

Tina provides another example of the child as a producer of on-screen action; this participant used a dolphin-shaped cookie cutter and a Barbie doll to extend her play with the *Barbie in a Mermaid's Tale* video on the computer screen. She held each of these items up to the camera, having the dolphin and the Barbie swim along with the music in the frame (see Figure 6); at times, these actions mirrored the activities that characters engaged in on the video itself.



Figure 6. A child positions her Barbie doll in front of the camera, moving the doll to the music that is playing in the video on the computer screen.

These examples are important pieces of data, because they demonstrate how technology is positioned within the child's broader play environment. First, while Rosielyn believed that the video camera was simply a still-image camera, Tina and Jordie's use of the research tool demonstrates an understanding of video technology. As these children perform for the camera, and as they engage in video production in their own way, they are using all the available technology in the room to their advantage. While Jordie's computer is removed from the frame of action, with the camera focused on the child, himself, Tina integrates her use of the computer with the camera activity.

Although researchers such as Conrad (2008), Norris (2009), and Gibson (2005) discuss ways to design studies and analyze data using performative aspects as points of analysis, these were not the focus or intent of our project. In addition, some research designs with very young children may preclude the level of conscious cocreation of data that would be relevant to performative design; however, this would be an interesting avenue for research exploration in future. Although one could argue that parents are cocreators of the performative aspects in this study, most of the data gathering was neither staged nor consciously constructed to facilitate performative analysis. For example, a camera that is perched on a table and aimed at a computer, with no parent in the room to direct the activity, results in a very different data set than one where parents coengage with children in onscreen activities. There is a great deal of potential for future research designs where researchers can create opportunities for performative modes of engagement. In the current study, the performative aspects of the data set are emergent analytic findings, which point to the need for

additional data and a changed research design to provide a fulsome analysis using a performative lens.

Implications For Research Design

Despite the rich data gathered using this approach, it raises a number of questions around what has not been recorded and what analytic opportunities may have been missed. Unfortunately, the project design does not allow for further investigation of these issues because additional data collection would be required. For example, interviews with parents about their video-recording strategies, including the choices they made about what data to include and exclude, would add a level of depth to the available data. Researchers need to consider the limitations of their project design and think about lessons learned; the sections that follow explore the limitations and strategies for future research design that have emerged from our experience in this project.

Limitations. There are a number of limitations in the data set that provide important guidance for development of future projects using similar methods. Some of these limitations relate to the quality of the images captured due to technical problems; low and indirect lighting, as well as poor camera angles, limited some of the data captured for analysis. Similarly, the recorder's in-built microphone did not always capture complete conversations (e.g., if a parent was speaking to the child from another room). In other cases, data limitations were due to the timing or context of the data collection process. As the camera was not capturing data 24 hr per day but was only turned on during a technology-related activity, the data set does not provide a complete picture of the context in which the activity occurred. Although we initially asked parents to provide written contextual details of children's recorded activities (using a template document), very few were received and these provided little content to guide analysis. This leaves a number of additional questions unanswered (e.g., What was happening just prior to the activity? What conversations did the family have, later in the day or week, about the child's technology use?). By extending the timeframe of data collection during the week, additional context would be captured that may provide new insights into children's activities. Also, although some of the camera angles provided data on the types of websites or iPad applications used, consistent and complete data on the tools and software children used would be useful. That said, it is important to recognize that extended timeframes and/or additional requests made of families may be inconvenient or simply inappropriate; as with all studies, there are trade-offs between a researcher's ideal data collection goals and what is reasonable or appropriate in a given research setting.

Strategies for future research design. There are a number of concrete strategies that could be implemented to resolve some of the issues noted previously, in future. These include:

- providing a workshop or detailed brochure for families on details related to videography (e.g., lighting and camera placement);
- using screen capture software (such as Camtasia) on home computing devices to capture information on the sites visited and tools used;
- using a secondary, omnidirectional microphone to extend the range of audio recordings; and,
- setting multiple cameras in the space, with extended recording capabilities, to provide additional context related to the activity.

Of course, many or all of these suggestions may not be practical or appropriate to implement in the home environment. Although Sarah Pink, for example, in her work *Doing Visual Ethnography* (2007), discusses many of the “technical procedures” required for video success, some of these strategies were not appropriate for our research design. She notes, for example, “when I interviewed people with video in their homes, I often collaborated with my interviewees to arrange that lights are strategically placed and switched on as we moved around video-recording” (p. 105). In our study, the research team wanted to ensure that coresearchers had a high level of the control to record at times and in places that best suited their activities. Using a range of cameras and extending the timeframe across the week may also prove too intrusive. Similarly, installing screen capture software on home computers would require that parents be trained to ensure that the software was enabled only for children’s activities and for the computer to have sufficient memory and hardware capacity to use a program such as Camtasia. Researchers need to explore these kinds of tensions in designing these studies to explore what will be the best fit.

In their book *Researching the Visual*, Michael Emmison and Philip Smith (2000) discuss strategies for gathering visual data on what they term, “the most ubiquitous but least self-evident manifestation [of visual data]: the activities of people in everyday interaction” (p. 190). However, like many visual methods texts, Emmison and Smith discuss strategies for gathering data in the public domain or where the research team is present to observe. There is less guidance for researchers aiming to conduct research in the home environment, particularly in ways that will balance the need to gather visual data with the respect for privacy in that space. These issues have a range of research ethics implications, as well, which must suit both the researchers’ and the families’ needs. However, the use of dedicated training materials or workshops to educate families on the use of the cameras may enhance the quality of some data without adding an undue burden on either the coresearchers or participants. It is important for researchers to consider these various elements when designing projects to ensure that the best quality data are captured, while respecting families’ privacy, as well as the time commitment involved in data collection. The families involved in this study were very generous with their time and did their best to capture relevant, useful data on behalf of the research team. The end result is a rich and engaging data set

that provides a rare window into young children’s engagement with technology in the home.

Conclusion

Overall, the involvement of parents and children as research videographers in the home resulted in very rich and detailed data about children’s use of technology in their daily lives. In particular, it is noteworthy that the parents recorded interactions with their children that researchers would typically never observe or record in other (obtrusive) data collection settings. The type of personal and informal engagement observed between a parent and a child searching online, in the comfort of their home (e.g., Tina and her father, who were laying on the parents’ bed with a younger sibling nearby; see Danby et al., 2013), would not be possible to replicate in a lab or a public space. The use of recording devices in the home allows researchers to capture these moments, as they happen, with little interference in the everyday activities of those involved. This type of recording provides powerful insights into an intimate family moment where digital technology is central to rich interactions between the participant and other family members. The use of appropriate, fixed camera angles provided clear images of both the technological devices and the children (e.g., hand placement on keyboard and computer mouse), while the dialogue captured between participants and their parents/siblings provided useful context for the observed activities (e.g., scaffolding and support provided for online searching). Further, the ability to derive still images from the video data set has proven very useful for the data analysis and writing process.

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