

Infants, interfaces, and intermediation: digital parenting and the production of 'iPad baby' videos on YouTube.

Authors: Bjorn Nansen and Darshana Jayemanne,

- This is the accepted manuscript of an article published by Taylor & Francis in the *Journal of Broadcasting & Electronic Media*. on 17 November 2016 available online:
<http://dx.doi.org/10.1080/08838151.2016.1234475>

Note: This is a pre-published draft of an article to be published in the Journal of Broadcasting and Electronic Media

Authors: Bjorn Nansen and Darshana Jayemanne

Infants, Interfaces, and Intermediation:

Digital Parenting and the Production of 'iPad Baby' Videos on YouTube

This paper considers the relationship between childhood and digital media by analyzing online videos, and the associated comment threads, of infants playing with mobile applications and touchscreen devices. We investigate the ways young children's use of these interfaces is both understood and shaped by parents through the production, sharing and comments of two key YouTube videos. This analysis expands on, and departs from, theories of parental mediation, which have traditionally been framed through a media effects approach in analyzing how parents regulate their children's use of broadcast media such as television within family life. We move beyond the limitations of an effects framing through more culturally and materially oriented theoretical lenses of mediation, considering the role mobile interfaces now play in the lives of infants through analysis of the ways parents intermediate between domestic spaces and 'networked publics'.

We propose the concept of *intermediation*, which builds on insights from critical interface studies (e.g. Hayles, 2005; Galloway, 2012) as well as cultural industries literature (e.g. Deuze, 2007; Nixon & du Gay, 2002), to help account for these expanded aspects of digital parenting. When parents produce and publish online videos of their young children interacting with touchscreens and apps, they are not simply moderating children's media use within the home, but also operating as an intermediary in contributing to, or modulating, wider online representations and discourses of children's digital culture. We find that this

intermediation oscillates between ideological positions that locate ‘naturalness’ in either the iPad’s gestural interface or the child’s ‘digital dexterity’. The concept of intermediation highlights how these videos are not an encounter between two discrete entities (infant and interface) in which naturalness and artifice are to be located in such a way as to guide parenting, but rather as a set of interrelations and processes in which multiple agents (child, designed devices, parents, commenters) attempt to configure one another. Intermediation, then, complicates notions of parental authority and departs from a media effects approach to allow us to account for the ways that children’s digital play is produced within networked public such as YouTube.

Infant Media Use

Research on digital media use by very young children, aged from 0 to 5, is only recently emerging compared to work on older children. This is, in part, a consequence of young children’s historically limited engagement with, or capacity to use, desktop devices and their associated interfaces. However, trends in mobile media are challenging these historical conditions. There is a growing body of research attempting to quantify the devices, activities and time spent by young children with mobile and touchscreen devices (e.g. Commonsense, 2013; Ofcom, 2013; Rideout et al., 2004), studies exploring the spaces and technologies shaping children’s ‘postdigital’ play (Giddings, 2014; Jayemanne, Nansen & Apperley, 2015), reviews of children’s software design within the mobile app economy (e.g. Chiong & Shuler, 2010; Shuler, 2009), and analyses of digital content shared about newborns on social media platforms (Leaver, 2015; Kumar & Schoenebeck, 2015). This research provides evidence for the multiple contexts and implications of mobile devices and digital content in the lives of toddlers and even babies, reflecting the ubiquity of digital mediation (Deuze, 2011) as well as the ease of using touchscreen interfaces (Buckleitner, 2011; Hourcade et al., 2015). Clearly, then, studies of children’s media use needs to extend beyond

a singular focus on parental mediation by utilizing a wider set of methodological and theoretical frameworks to investigate shifting interfaces and intermediaries in infant media life (e.g. Giddings, 2014; Plowman & Stevenson, 2012).

Research into the changing forms of hardware and content in children's lives, and the online contexts alongside the domestic in which digital parenting and discourses of childhood unfold, can extend the limitations of parental mediation literature in ways called for by mobile and networked technologies. Moreover, insights afforded by critical interface studies (e.g. Hayles, 2005; Galloway, 2012) as well as cultural industries literature (e.g. Deuze, 2007; Nixon & du Gay, 2002), offers novel theoretical lenses through which to examine processes of digital mediation and parenting. Here, we advance this research by analyzing the material and cultural production of videos of infants playing with touchscreen interfaces, and the consumption of these media beyond the domestic environment or the relatively bounded space of a given social network through their distribution on the 'networked public' of YouTube (Burgess & Green, 2009a; Lange, 2007).

Digital Parenting: Mediation, Remediation and Intermediation

Research into the ways parents regulate their children's media use, referred to as parental mediation, was originally developed in reference to the medium of television and the types of rules and restrictions imposed by parents on the routines and content of children's viewing (e.g. Austin, 1993; Pasquier, 2001). Studies have since extended the focus on television to include newer media such as computers, the internet and videogames (e.g. Livingstone & Helsper, 2008; Nikken & Jansz, 2006). Literature on parental mediation addresses a range of measures parents implement to *moderate*, or preside over, their children's media use, predominantly within home environments.

Historically, this theory of communication has been located within a psychological effects model, aimed at prescribing strategies for mitigating the perceived negative impacts of

media on children's development (Clark, 2011). Strategies for parental mediation extend from restrictive approaches such as banning media, creating technology free times and spaces, enforcing rules and monitoring use, through to more active approaches such as evaluating the quality of media and engaging with children's use, or encouraging diversity of play activities (e.g. Nikken & Jansz, 2006; Valkenberg et al. 1999).

Concern with trying to assess the negative impacts of and impose limitations on children's media use has, however, blinded parental mediation literature to alternative theoretical approaches for understanding the cultural contexts and diverse practices of digital parenting (Clark, 2011). For example, children's media use is shaped to a large extent by parents' past experience and familiarity with media, or what McPake & Plowman (2010) describe through the concept of *prolepsis*.

Prolepsis signifies how familiar or comfortable parents are with media, as well as the beliefs and hopes they attach to media and its role in their children's lives; it can be understood as a process in which parents *remediate* technology experiences from their past and project their aspirations onto their children's futures. Parental remediation highlights the ways that digital media is not perceived in purely negative terms, and is not just located within the immediate contexts of use or effect, but instead spreads out through symbolic dimensions into other 'intermediate' times, such as past memories or future projections of media habituation (Cross, 2008; Keightley, 2013). Moreover, remediation highlights the ways digital media exist in increasingly rich media environments where children participate in redefining the meanings and uses of media in the home (e.g. Aarsand & Aronsson, 2009; Pasquier, 2001), and parents often encourage more extensive patterns of media use (McPake & Plowman, 2010; Wartella et al., 2013).

Methodology

We explored more interconnected and enabling practices of digital parenting by investigating how it plays out in relation to the production and publishing of young children's mobile media and touchscreen play. This paper is part of a wider project examining family routines and household geographies of young children's mobile media use. Where the final research will examine a far wider set of data (including ethnographic interviews, participant observation and situated analyses of domestic practices), in this study we closely read and critically examine two key YouTube videos, each of which has millions of views and thousands of comments.ⁱ These videos were selected from a larger sample using the search term "iPad Baby", which provided many thousands of videos, which were filtered by View Count, and viewed sequentially until thematic saturation was reached.

The two videos were chosen for close analysis based on their significance and representativeness: "A Magazine is an iPad That Does Not Work" and "Baby Works iPad Perfectly. Amazing Must Watch!" Not only were they the most viewed and had the most commentary, but they exemplified two dominant video editing forms and two divergent positions taken on the interface-infant relation that characterized the genre of iPad baby videos more broadly. Drawing on the suggestion of Blythe and Cairns (2009) that critical theory methods be adopted for studies of online video-sharing, this article applies critical discourse analysis in closely reading the representations, production and comments associated with two videos, and situates this reading in relation to material and cultural theories of mediation: critical interface studies and cultural production literature. The analysis explores how this particular context and mode of mediation extends beyond domestic screens and traditional spaces of media parenting through digital content sharing on participatory platforms, opening on to new problems for traditional parental mediation theory.

We recognize the limitations of this method of data collection and analysis. For example, data collection in a dynamic archive on a video-sharing site such as YouTube faces

certain methodological problems such as the protocological issues associated with a proprietary search engine or the platform architecture allowing for modification in the archive (Burgess & Green, 2009a). Further, the analysis is of only two videos. Yet, these videos stand out in the sample due to their high views and comments, and because they exemplify two major themes in the ‘baby-iPad’ video genre, are thus amenable to cultural and discursive analysis. These videos and their associated comment threads are read as cultural texts in their own right: they do not simply display babies using iPads, but also stake specific claims about ‘naturalness’ that have been debated by thousands of commenters.

In focusing on these two videos, we do not presume to know the motivations of parents producing and sharing them, nor assume the makeup and views of the audience. Instead, we examine them as sites in which notions of intermediation, in both technical and cultural forms, converge. Through this media studies approach, we analyze how in sharing these videos and articulating specific discursive claims parents move from a mediating role within the home to an intermediary position in which they are contributing to public representations and discourses of young children’s mobile and touchscreen technology use. This analysis differs in scope and depth from studies of parenting and technology that adopt alternative disciplinary methods and methodologies. This approach broadens the focus from domestic governance of access to particular devices and services to the registering of a more dynamic set of actors and influences. Furthermore, the inability of the uploaders and the commenters to definitively locate naturalness in either ‘dexterous infant’ or ‘gestural interface’ hints at a more complex set of multidimensional actors that we seek to adumbrate here.

Infant-Interface Relation

The genre of iPad baby videos is mostly presented in short recordings and in home settings. There are varying approaches to narration, but typically the recorder remains silent

and lets the camera observe the child's activity. These videos show young children encountering tablet computers, mostly iPads, and how they interact with these touchscreen interfaces, mostly banging and tapping, though also by licking, shaking, and sometimes swiping (Hourcade et al., 2015). The apps used by the children are mostly music-related; though also include other games and educational apps involving animal games, counting and reading activities, or drawing tools. The genre has the feel of footage in which parents are recording important milestones in their baby's development like their first steps, though here the video is of the baby's first app use. The infant and/or the tablet are almost always propped up in some way, either held by an adult, or set-up on a bed or couch with supporting cushions and so on. Such situations sometimes break down, with either the iPad or baby falling out of position. It is unclear whether the videos are being shared for a particular audience such as geographically distributed family and friends or whether they are posted for wider public consumption. There are clearly, however, a number of production techniques that highlight the constructed and performative dimension to these videos, which we return to later in the paper. The parental production of these videos highlights a fascination in the infant-interface relation, though the videos typically privilege either the interface or the infant in this interaction. These contrasting foci are exemplified in: "A Magazine is an iPad That Does Not Work", "Baby Works iPad Perfectly. Amazing Must Watch!"

Interface Fascination: Naturalness and Gesture

"A Magazine is an iPad That Does Not Work", asserts a comparative approach to the operations of old media (magazines) versus new media (tablet computers): the shift in media is primary, not the child. The video presents footage of a baby girl playing with an iPad, which is then contrasted with scenes of her trying and failing to manipulate the pages of a magazine. More intensive than most videos in this genre, this video is highly edited with

heavy use of visual filters and explanatory intertitles that make claims about her affective response to traditional media: that she is disappointed or unengaged by older magazine media that do not feature an interactive surface that can be swiped, pinched and so on. Whether or not this is actually the case is difficult to ascertain because the video is cut into very short and repeated segments rather than longer takes.

Through its editing and intertitles, this video advances a specific argument about the ease of use and intuitiveness of a touchscreen interface: because the touchscreen utilizes gestural movements rather than learnt procedures or symbolic language, even a baby can use it. Such interfaces bypass traditional input devices like the keyboard and mouse by enabling users to gesturally manipulate screen displays. By incorporating hand gestures into the field of computer interaction they form a vanguard of ‘naturalistic’ interfaces that expand the repertoire of computer input modalities (touch, vision, voice, motion, etc.). Academics have characterized these as ‘natural user interfaces’ (NUIs) (e.g. Norman 2010; Widgor & Wixon 2011). This nomenclature within the product design and manufacturer communities aligns with the video’s locating of ‘naturalness’ within the media device itself.

These interfaces are not only helping to re-shape the ways we personally interact with computers, but also the way we collectively acculturate computation (Galloway, 2012). The role of touchscreens within economies of play, for example – or what Galloway calls ‘ludic capitalism’ (2012) – is evident in design research using the same ‘iPad baby’ data set to inform baby app product development and commercialization for a growing market of increasingly younger children (Buckleitner, 2011). This research provides a taxonomy of children’s touchscreen gestural capacities, whilst also reveling in the technical detail of the interface and its possibilities for capturing infant attention:

A perfectly flat, glassy surface is magical all by itself. It doesn't exist in nature...and when it's covered with fog or a slippery oleophobic coating, it gets even more interesting to your fingers...

The Minimum User Competency (MUC) has dropped from around 2 1/2 years (for the mouse) to around 12 months (for the iPad)...

This presents new opportunities for children's interactive media developers; nothing short of a new era in computing, as the user interface becomes increasingly invisible. (Buckleitner, 2011, p.10)

Here we see interface fascination manifest in the economic and cultural possibilities of computing with 'minimum user competency'. The video "A Magazine is an iPad That Does Not Work", affirms this so-called 'MUC' with clips of the baby girl alongside paratextual framing and intertitle commentary that assert a media-centric understanding and deterministic perspective:

For my 1 year old daughter, a magazine is an iPad that does not work. It will remain so for the rest of her life. Steve Jobs has coded a part of her OS... Medium is message. Humble tribute to Steve Jobs, by the most important person: a baby.

The father who posted this video is an active participant in evaluating and interpreting the infant-interface relation. The baby girl, is presented as 'programmed' – and, because she cannot yet read or speak but only gesture, this programming is happening at a pre-linguistic level. Her 'operating system' is being coded by her interactions with the iPad to the degree that the legacy print technology, represented by the magazine, is 'impossible to understand'. The video seeks to convince viewers that a shift is taking place between two media epistemes. More than simply attesting to the design qualities or usability of the interface, the

video makes a claim about contemporary media conditions and their impact on the construction of subjectivity.

Moreover, in making these claims the father suggests some knowledge of media theory, marshaling McLuhan's famous dictum that the medium is the message. Whilst drawing attention to the interface medium, the video does not so much signal a McLuhnesque effect in which media extend the human senses, but instead articulates an understanding closer to that of Friedrich Kittler in which the relation of bodies to media is inverted. In this view, media take on a primary role in determining the deep structures (the 'operating system') of subjectivity. Hayles updates Kittler's media-centric analysis by noting that in the contemporary digital discourse network the literary voice of reading, "has been supplanted by another set of stimuli: the visual, audio, kinesthetic, and haptic cues emanating from the computer" (Hayles, 2005, p.4). "A Magazine is an iPad That Does Not Work" presents a particular view of this interface acculturation, with the child inculcated to a sensory experience of mediation that expands the notion of 'audio-visual media' in harnessing the use of touch, gesture and movement.

Infant Fascination: Natives and Dexterity

The video "Baby Works iPad Perfectly. Amazing Must Watch!" provides a contrasting position that shifts attention from the interface to the infant. As signaled in the title, the sense of wonder is directed at the baby rather than the technology. The video shows a 2 year old boy sitting on an armchair playing with the iPad in his lap, whilst the father can be heard off-camera encouraging him to demonstrate his favorite apps, and praising his performance (e.g. 'You're so smart'). In this video, then, the technology is understood as a 'learning tool', whilst it is the child who possesses the digital dexterity and intuitive capacity to easily use the touchscreen device:

My son ... just turned 2 last week and I bought him an iPad, mostly an excuse for me to get one and he actually can use it perfectly! His speech, understanding, word recognition, and even hand eye coordination have improved within just a short while!!

The father locates ‘naturalness’ in the child and not the gestural interface; an idea that children are now ‘born digital’ and so native to this environment (Prensky, 2001; Palfrey & Gasser, 2008). The thesis of the digital native emerged in the early 21st century as a way to describe a generation of young people from the 1980’s onwards whose lives have coincided with the development and explosive growth in computing, internet, gaming, and mobile technologies. By growing up surrounded by and immersed in digital technologies, this generation is thought to possess a natural familiarity and confidence with technology absent in older generations of digital ‘migrants’.

The native label has, however, been subject to critique in relation to the more intensive media environment of children born after the year 2000 (Selwyn, 2009). In his review of the digital native thesis, Selwyn argues that such terms characterize a shared disposition without adequately interrogating children’s specific media uses or experiences, and so “the notion of the “digital native” should be seen more as a discursive than descriptive device” (2009, p.371). “Baby Works iPad Perfectly...” attempts to describe an iPad native who possesses an innate digital disposition, yet in doing so this video contributes to discursive configurations of childhood expertise and digital dexterity that privilege a gestural or surface screen competency. Orienting expertise around the ‘user interface’ obscures other sites of knowledge about computational operation in which the multiple layers of the interface and their significance are elided. Interfaces, as Cramer and Fuller (2008) argue, are better understood as distinct contact points and exchanges between hardware, software, code,

and protocol within computer systems; between humans and machines at the user interface level; and between humans in and through network cultures.

This interface analysis connects with a growing recognition of the ways algorithms, databases and software protocols are embedded in and constitutive of social life (e.g. Chun, 2011; Galloway, 2012). In these contexts, user-friendly interfaces or the celebration of child interface expertise circumvents the ability – and desire – to investigate the processes of computation within the machine and culture more broadly. Children’s abilities to navigate the screen may, then, contradict ‘digital native’ discourses (Scott, 2013), constituting a contemporary version of Kittler’s analysis in ‘Protected Mode’ (1997) in which corporate control and lock-down of computer systems limits any significant user intervention into their functioning. Touchscreen technologies and their discursive configuration can be seen as a further intensification of this pejorative reading of interfaces, with children increasingly enmeshed within the protocols of media consumption and an interface culture geared to playing at a surface level.

iPad Baby: Reading the Comments

Many of the comments attached to these videos align with or contest the uploader’s notions of naturalness – whether explicit (“A Magazine is an iPad That Does Not Work”) or implicit (“Baby Works iPad Perfectly...”). They tend to express a sense of wonder directed at either the interface or the infant. For example, touchscreens and NUIs are seen to be particularly well designed in light of ‘natural’ human capacities and tendencies – the gestural interface of the iPad is so natural, even a child can use it:

This proves what an amazing and intuitive interface and experience can do for a platform!

I've heard lots of stories lately about how naturally toddlers take to the touch screens of smart phones and tablets, but this video says it all.

I witnessed this first hand, my daughter used to believe that all screens are touch screens. My son still believes that :-)

In contrast, many comments on “Baby Works iPad Perfectly...” praised the child’s capacity to pick up new technologies. These comments thus reflected the widespread currency of the ‘digital native’. For these commenters, the baby’s digital dexterity with new media appeared intuitive, and such familiarity would also prepare the child for informational futures in education and employment:

This baby is amazing... only 2 years old!

The new generations are going to love their gadgets more than us.

They are definitely way ahead of the game and as these kids get older, they'll be able to use the iPad to learn school subjects.

Apple would do well to hire a child who had displayed such aptitude at an early age.

Juxtaposing these expressions of wonder, however, were many comments that noted the banality of such interactions in terms of a child’s physical development trajectory, or a commonsense view on their engagement with the material world. Very young children are often the subject of such discourses, as the notion of appropriate development implies an attitude to what is a natural capability at a given age:

There's nothing wrong with the magazine, or the iPad. This is just how babies are at this age.

Obviously, this child's father thinks he is a genius, but is this really “genius-worthy”?

Pinching and flicking gestures are a part of a baby's natural development and dexterity. Its [sic] not ground-breaking, nor is it due to an iPad.

Unsurprisingly, many comments also conformed to well-established traditions of online cultural reception. For example, a baby playing with an iPad fits, in many ways, within the circulation of ‘cute’ content on the web (Lobato & Meese, 2014), and kinds of photos shared by mothers of their babies online (Kumar & Schoenebeck, 2015). Many of the comments express delight in this aesthetic:

OMG that's a cute video.

Cute overload... ;)

In keeping with the agonistic dynamic of comment culture, however, the generally positive comments were interspersed with a range of negative responses to the videos, such as the accusation they are colonizing time that should be reserved for ‘unmediated experience’. Such comments argued that the iPad was detracting from ‘natural’ play with traditional media or engagement in physical activities outdoors:

More sensuality! Less electronics I say!

He's entering the age of the digital cage early... Give that kid a book!

This kid is going to have a lot of trouble adjusting to fossil fuel depletion.

More common, however, were comments that addressed the parents, often expressing unease or misgivings about parents’ role in facilitating their children’s use of mobile media, extending to outright aggressive accusations of poor parenting, if not neglect:

I think this shows that the parents haven't exposed their child to a book/magazine before they introduced her to a iPad. THAT is the shame part.

This is excellent parental planning. Show that child early that she will spend life enslaved to a screen in order to afford whatever magazines and the fashion industry command her to consume. Welcome to reality, kid.

Why not give your child paper and pens. Parents who use iPads as replacements for physical things like toys, the outside world disgust me.

Interestingly, these comments were directed at the implications of scenes captured in the video such as device training or online publicity, without explicitly addressing concerns about the potential implications of such digital traces on children's future lives as part of a digital footprint and cultural database that remains accessible, searchable and retrievable to a wide networked public (Lovink, 2008):

You've obviously spent a lot of time "teaching" him how to use the iPad. How about teaching him to swim or ride a bike, walk confidently or even actually using real crayons to draw on real paper. Sad. Going down this route with him leads to isolation and bullying. Get a grip.

He will have absolutely no ability to concentrate over 8 seconds. But props, he's YouTube famous.

The iPad baby video genre ostensibly presents candid scenes of technology encounter and interaction involving young children and touchscreen technologies. They portray a sense of wonder at this child-technology relation, but this wonder is guided by associating notions of naturalness with either the interface or the infant. In turn, the associated comment threads largely respond to the content within the representational frame, debating the parental mediation and governance of the child-iPad relation: is it too early for the child to have access to this technology? The two main types of comment thus resonate with the academic discourses of remediation and prolepsis (projecting parental notions of what is 'natural' in order to judge age-appropriate access to media technology) and digital nativeness (assuming that the child is naturally inclined to gestural interfaces).

The material or non-discursive dimensions of these recordings, however, remain largely absent in comments: the ways the recording and publishing of these videos is *produced* through various technologies and techniques – whether in editing the video or the

child's parentally-coached performance. In the next section we analyze the production of these videos in relation to the role of parents as both technical and cultural intermediaries.

Modes of Video Editing

In these videos, parents are not simply mediating a child and a technological object. Instead, the production and sharing of these videos, gives rise to a much more complex set of relations in which parents act as intermediaries within the technical and cultural configuration of children's digital media use. We propose the term *parental intermediation* to illuminate the in-between role that the parents in both videos play within such assembled and distributed networks. Parental intermediation builds on and also departs from themes established within parental mediation literature through reference to theories of technological intermediation (Hayles, 2005), and cultural intermediation (Bourdieu, 1984). As this context of online video sharing shows, the modes of parental mediation we analyze helps to destabilize competing claims to 'naturalness' located with either the interface or the infant. Neither the child nor device can be disentangled from the processes in which these relations and their representations are produced, circulated and debated. These operations are made visible in two distinct ways within the two videos under analysis: editing the production, and editing the performance.

Editing the Production: Technical Intermediation

"A Magazine is an iPad That Does Not Work", for example, has been crafted through postproduction techniques in order to make an argument about the significance of the encounter and computational entanglement of child and touchscreen. The uploader makes use of short and repeated segments of footage of his young daughter using an iPad cut with segments of her interacting with a magazine as though it too had an interactive interface. These scenes are then edited together with intertitles, ironically recalling a much older

cinematic mode of media.

This video is explicitly and highly edited, making visible the assemblage of media required to make and share this recording. This is implicit in all videos within the genre: a recording device such as a smartphone is necessary, of course, but also access to a computer, an internet connection and basic competencies in the use of these technologies. Moreover, this video is only possible because of the historical, steady and aggregated domestication of viewing, recording and editing technologies in the home – from the television and VCR, to the camcorder and personal computer, to the mobile and touchscreen device, to editing software, mobile applications, social media platforms and so on.

This situation is, then, assembled through the mediating role of parents, the presence of a recording device, the architecture of the internet and YouTube platform – all gathering around the infant-interface interaction. In bringing these different media devices and applications together, and then distributing the production amongst a networked public, the parental uploaders are not simply governing their child's technology use within the home in terms of access or rules of use. Instead they are intermediating this play with and through an aggregation of media, and broadcasting it to a wider audience. Hayles has used the term 'intermediation' to characterize the constellations or aggregations of different media forms involved in the processes of making, storing, and transmitting digital information. This term opens up the ways multiple media – novel, film, television, website, video game and social media platform – now come to shape the construction and reception of a cultural text or product. She develops this concept in order to approach the dynamics of literary texts and subjectivities within a regime of digitality: "rather than holding up as an ideal a unitary convergent work to which variants can be subordinated...we should conceptualize texts as clustered in assemblages whose dynamics emerge from all the texts participating in the cluster, without privileging one text as more 'original' than any other" (2005, p.9).

Rather than focusing on the subject or the media alone, Hayles' concept of intermediation orients us to the technologies and transactions entwining these different actors. We suggest that if we are to adequately account for these expanded contexts and public networks of digital parenting that parental mediation be reconsidered through the concept of intermediation. Here, parents are not working to govern or moderate children's use of technology in reference to discrete media devices or hermetic family contexts, but are instead utilizing a range of media to contribute to public conversations online and thus helping to shape or modulate how children's digital culture is represented and understood. Setting videos loose within such public channels and networks does not, however, mean motivations for doing so are known, nor guarantee an audience or stable reception, but instead exposes them to potential acts of reinterpretation or repurposing. Such acts are revealed in the use of these videos by interaction designers and product developers to understand infants interface capacities in order to develop commercial mobile apps (Buckleitner, 2011).

Editing the Performance: Cultural Intermediation

"Baby Works iPad Perfectly. Amazing Must Watch!" signals a different mode of editing that addresses the performance of the child rather than video production. It is shot in a continuous fashion, and it contains many of the vernacular signifiers of a naturalistic event with shaky hand-held camera work, a domestic quotidian setting, incidental lighting, unedited sound and footage. Yet, it also a clearly a deliberately staged scene, with the child is positioned on an armchair with the iPad in his lap, whilst the angle of the shot is framed to provide a clear view of the touchscreen and child's gestures. In addition to the deliberate set-up of the scene, the video provides an exemplary, if exaggerated expression, of the standard generic tropes of parental guidance and encouragement. The father can be heard clearly throughout the video verbally instructing and prompting his son to demonstrate his favorite

apps, as well as the ability to navigate between apps icons on the home-screen.

So, in a sense, he is operating like a film director trying to control the sequence of events and narrative of the scene. For example, the father prompts by asking ‘Why don’t you draw a squiggly line?’ and when the child seems to be at an impasse as to which animal to choose from a list, the father prompts again ‘There are some other animals? Why don’t you pick another animal?’ The verbal prompting and directing of the child’s actions reveals the child is revisiting and rehearsing well-worn patterns of app use. This can be seen when the child plays a video and begins scrolling forward, and the father asks, ‘You’re looking for the monkey part, aren’t you?’ ‘You’re looking for your favorite part.’ There is, then, a sense in which not only is the present recorded action directed, but that this interaction has been practiced, learnt, or perhaps even trained, over time to become habituated interaction. In this video, parental intermediation is less the post-production of snippets of footage to make an argument to a networked public so much as a coaxing of certain desirable behaviors from the child’s playful repertoire. In doing so, this video of a child’s use of apps does not only involve technical aspects of intermediation through aggregating media to record, produce and circulate the video, but also highlights how this genre of videos participates in *culturally intermediating* public conversations and discourses about mobile media in the lives of young children.

The concept of cultural intermediaries was introduced to account for a new professional class of media workers emerging in France during the second half of the 20th century (Bourdieu, 1984). Working as producers, journalists and broadcasters in the expanding fields of news and entertainment media, this class of cultural workers were seen as critical to shaping public reception, practice and taste of cultural products by mediating between their production and consumption. Since identifying and documenting the emergence of such professional cultural intermediaries, a number of scholars have drawn

attention to an expanded number of fields in which culture circulates and thus cultural intermediaries operate (Deuze, 2007; Nixon & du Gay, 2002).

Following developments in digital and networked media, however, the understanding of cultural intermediaries has expanded beyond professional domains to include the activities of a range of amateurs and consumers who participate in the co-creation of cultural products and their value. This participatory cultural consumption engages with a diversity of digital and cultural products, for example, entrepreneurial video bloggers reviewing products on YouTube (Burgess & Green, 2009b). Such participatory activities signal a media environment in which distinctions between production and consumption, amateur and professional, or commercial and non-commercial become unsettled. Whilst these activities may generate tensions around forms of cultural capital, intellectual property, and free labor (e.g. van Dijck, 2009), it is clear that in contexts of digital networks, users and consumers operate to intermediate the form and value of cultural products.

In the case of iPad babies on YouTube, parents are not operating simply as receivers of professional wisdom about children's media based on expertise in areas such as health or education. Instead, they are also actively participating in the co-creation of how touchscreen media use by children is culturally enacted, represented and understood. Whilst the purposes of production and the audiences of such broadcasts remain uncertain, these parents are in a sense participatory consumers undertaking work of cultural intermediation in a vernacular capacity. This does not appear to be a deliberate attempt to intermediate between the production and consumption of mobile media products, nevertheless their activities constitute a mode of cultural intermediation that extends the audience and consumer demographics of the product – both devices and mobile applications. Their cultural intermediality helps to add value to the digital product in terms of its discursive configuration within networked publics,

but also through the ways their videos have been appropriated to inform design research (see: Buckleitner, 2011), for the commercial development of infant mobile applications.

Conclusion

This study explored the public networks and culture around young children's mobile media and touchscreen device use through the ways the infant-interface relation is actively shaped by parents producing, sharing and discussing videos on YouTube. Two highly viewed and exemplary videos were closely analyzed to better understand the cultural, material and discursive construction of these relations. Together, these videos reveal the ways that scenes are crafted, actions prompted, and video edited across the genre of iPad baby videos. These are not simply quotidian encounters but cultivated forms of performance that configure fingers, limbs and bodies; they are composed pieces of production that assemble technologies for recording, editing and distributing, which challenge claims to 'naturalness' located with either the interface or the infant.

The analysis departs from traditional parental mediation theory by situating the production, circulation and consumption of these videos in relation to theories of intermediation associated with critical interface studies and cultural production literature. The paper suggests that to adequately account for these expanded contexts, materialities and networks of digital parenting, theories of parental *mediation* can be supplemented through concepts such as *intermediation*. Intermediation – in both its technical and cultural configurations – can be usefully translated into this context to help account for the in between role parents play in the distribution and discourse of iPad babies.

The paper argues that this process can be understood as a shift from traditional media effects oriented parental mediation in its bound and located form within family life, and from parental remediation derived from prolepsis and past media experience, to parental intermediation in which parenting occurs with and through the flows of content on newer

media platforms. When parents produce and publish online videos of their children interacting with mobile media and apps they are no longer operating as an authority *moderating* (presiding over) children's media use within the confines of the home, but are instead acting as a kind of intermediary *modulating* (adapting in and through) the technical and cultural relations shaping children's mobile media play and culture.

Acknowledgements

This work was supported by the Australian Research Council (ARC) under Discovery Early Career Researcher Award grant number DE130100735.

ⁱ Ethically, the content of these videos cannot be assumed to be unproblematically available for internet researchers to access as found data analyzed using unobtrusive methods, as research shifts the context in which they were originally shared (Markham & Buchanan, 2012). Using this data for research purposes is particularly difficult in this case given these videos involve children, whose anonymity cannot be protected. We are aware of these ethical concerns. Nevertheless, given that the intention of posting these videos on YouTube was to communicate them to a broad networked public, and that they have been viewed by a large number of people, we feel the benefits of this analysis outweigh any potential negative outcomes.

References

Aarsand, P., & Aronsson, K. (2009). Computer gaming and territorial negotiations in family life. *Childhood*, 16(4), 497-517.

- Austin, E. (1993). Exploring the effects of active parental mediation of television content. *Journal of Broadcasting & Electronic Media*, 37, 147–158.
- Blythe, M., & Cairns, P. (2009). Critical methods and user generated content: The iPhone on YouTube. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, CHI '09*. ACM, New York, 1467–1476.
- Bourdieu, P. (1984). *Distinction*, Trans. R. Nice. Cambridge: Harvard University Press.
- Buckleitner, W. (2011) A taxonomy of multi-touch interaction styles, by stage. *Children's Technology Review*, 18(11), 10-11.
- Burgess, J., & Green, J. (2009a). *YouTube: Online video and participatory culture*. Cambridge: Polity.
- Burgess, J., & Green, J. (2009b). The entrepreneurial vlogger: Participatory culture beyond the professional-amateur divide. In P. Snickars, & P. Vonderau (Eds.), *The YouTube reader* (pp. 89-107). Stockholm: National Library of Sweden.
- Chiong, C., & Shuler, C. (2010). Learning: Is there an app for that? Investigations of young children's usage and learning with mobile devices and apps. New York: The Joan Ganz Cooney Center at Sesame Workshop.
- Chun, W. (2011). *Programmed visions: Software and memory*. Cambridge: The MIT Press.
- Clark, L.S (2011). Parental mediation theory for the digital age. *Communication Theory*, 21, 323–343.
- Common Sense Media. (2013). *Zero to eight: Children's media use in America 2013*. A Common Sense Media Research Study.
- Cramer, F. & Fuller, M. (2008). Interface. In M. Fuller (Ed.), *Software studies: A lexicon* (pp.149-153). Cambridge: MIT Press.
- Cross, G. (2008) Play in America: from pilgrims and patriots to kid jocks and joystick jockeys. *American Journal of Play*, 1(1).

- Deuze, M. (2007). Convergence culture in the creative industries. *International Journal of Cultural Studies*, 10(2), 243–263.
- Deuze, M. (2011) Media life. *Media, Culture & Society*, 33(1), 137-148.
- van Dijck, J. (2009). Users like you: Theorizing agency in user-generated content. *Media, Culture & Society*, 3(1), 41-58.
- Galloway, A. (2012). *The interface effect*. Cambridge: Polity Books.
- Giddings, S. (2014). *Gameworlds: Virtual media and children's everyday play*. New York: Bloomsbury.
- Hayles, K.N. (2005). *My mother was a computer: Digital subjects and literary texts*. Chicago: University of Chicago Press.
- Hourcade, J.P., Mascher, S.L., Wu, D., & Pantoja, L. (2015) Look, my baby is using an iPad! An analysis of YouTube videos of infants and toddlers using tablets, *Proceedings of CHI 15*. New York: ACM Press (2015): 1915–1924.
- Jayemanne, D., Nansen, B., & Apperley, T. (2015). Post-digital play and the aesthetics of recruitment. *Proceedings of Digital Games Research Association (DiGRA) 2015*, May 14-17, Luneburg, Germany.
- Keightley, E. (2013). From immediacy to intermediacy: The mediation of lived time, *Time & Society*, 22(1), 55-75.
- Kittler, F.A. (1997). *Literature, media, information systems*. Amsterdam: G+B Arts International.
- Kittler, F.A. (1990). *Discourse networks 1800/1900*, Trans. M. Metteer, with C. Cullens. Stanford: Stanford UP.
- Kumar, P., & Schoenebeck, S. (2015). The modern day baby book: Enacting good mothering and stewarding privacy on Facebook. *Proceedings of CSCW 2015*, March 14-18, Vancouver, Canada.

- Lange, P.G. (2008). Publicly private and privately public: Social networking on YouTube. *Journal of Computer-Mediated Communication* 13, 361–380.
- Leaver, T. (2105). Researching the ends of identity: Birth and death on social media. *Social Media + Society*. April-June, 1-2.
- Livingstone, S., & Helsper, E.J. (2008). Parental mediation of children's internet use. *Journal of Broadcasting & Electronic Media*, 52(4), 581–599.
- Lobato, R., & Meese, J. (2014). Kittens all the way down: Cute in context. *M/C Journal*, 17(2).
- Lovink, G. (2008). The art of watching databases. Introduction to the video vortex reader. In G. Lovink & S. Niederer (Eds.) *The video vortex reader. Responses to YouTube* (pp.9-12). Amsterdam: Institute of Network Cultures.
- Markham, A., & Buchanan, E. (2012). *Ethical decision-making and Internet research: Recommendations from the AOIR ethics working committee (version 2.0)*. Retrieved from <http://aoir.org/reports/ethics2.pdf>.
- McPake, J., & Plowman, L. (2010). At home with the future: influences on young children's early experiences with digital technologies. In N. Yelland (Ed.), *Contemporary issues in early childhood education* (pp.210–226). Open University Press: Maidenhead.
- Nikken, P., & Jansz, J. (2006). Parental mediation of children's videogame playing: a comparison of the reports by parents and children. *Learning, Media and Technology*, 31, 181–202.
- Nixon, S., & du Gay, P. (2002). Who needs cultural intermediaries? *Cultural Studies*, 16(4), 495–500.
- Norman, D. (2010). Natural user interfaces are not natural. *Interactions*, May-June, 6-10.
- OfCom. (2013). Children and parents: Media use and attitudes report. London: OfCom.

- Palfrey, J., & Gasser, U. (2008). *Born digital: Understanding the first generation of digital natives*. New York: BasicBooks.
- Pasquier, D. (2001). Media at home: Domestic interactions and regulation. In S. Livingstone & M. Bovill (Eds.), *Children and their changing media environment: a European comparative study* (pp. 61–177). Mahwah, NJ, Lawrence Erlbaum.
- Plowman, L., & Stevenson, O. (2012). Using mobile phone diaries to explore children's everyday lives. *Childhood*, 19(4), 539-553.
- Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1–6.
- Rideout, V.J., Vandewater, E.A., & Wartella, E.A. (2004). Zero to six: Electronic media in the lives of infants, toddlers and preschoolers. A Kaiser Family Foundation Report, Washington, DC: Kaiser Family Foundation.
- Scott, M. (2013). Kids can't use computers... and this is why it should worry you. Coding 2 Learn blog. Retrieved from <http://coding2learn.org/blog/2013/07/29/kids-cant-use-computers/>
- Selwyn, N. (2009). The digital native – myth and reality. *Aslib Proceedings* 61, 364–379.
- Shuler, C. (2009). iLearn: A content analysis of the iTunes app store's education section. New York: The Joan Ganz Cooney Center at Sesame Workshop.
- Valkenburg, P. M., Krcmar, M., Peeters, A. L., & Marseille, N. M. (1999). Developing a scale to assess three styles of television mediation: Instructive mediation, restrictive mediation, and social coviewing. *Journal of Broadcasting & Electronic Media*, 43(1), 52–67.
- Wartella, E., Rideout, V., Lauricella, A., & Connell, S. (2013). Parenting in the age of digital technology: A national survey. Report of the Center on Media and Human Development, School of Communication, Northwestern University.

Widgor, D., & Wixon, D. (2011). *Brave NUI world: Designing natural user interfaces for touch and gesture*. Burlington: Morgan Kaufmann.