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YOUNG CHILDREN’S HAPTIC MEDIA HABITUS

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Introduction

Young children’s contemporary engagements with digital media are embodied relations shaped with and through the interfaces, materiality, and mobility of haptic media technologies. This chapter explores these embodied dimensions of young children’s digital media use, drawing on research from ethnographic observation in family homes, and from analysis of user interface and mobile app developer literature, and in particular the ‘Event Handling Guide for iOS’, which encodes touchscreen interaction through the design constraints and possibilities of gesture input techniques. Connecting this research and analysis with phenomenologically informed cultural theory, particularly as it relates to research on mobile technologies, haptics, and everyday life, this chapter describes the emergence of what could be described as a haptic habitus. That is, the cultivation of young children’s embodied dispositions, conduct, and competence towards haptic media.

As explored below, children’s haptic habitus can be seen to take shape through the media environments they inhabit, and the processes by which they habituate to mobile touchscreen interfaces. These are situated within the materialities of domestic media spaces and family life. Within these contemporary habitats, children are both interfacing with and habituating to mobile devices (tablets and smartphones) in ways that appear to diverge from, but also resonate with residual media’s directed modes of interaction. These are explored through themes of encounter, enculturation, and embodiment of haptic and mobile media. Yet, this research also reveals how children’s haptic habitus is configured – enabled and constrained – by the commercial and design operations of mobile media, in which relays between cultural contexts of use, user interface studies of children’s developmental capacities for gestural interaction, and the modulation of touchscreen gestures by technology companies can be seen.

Researching Children and Haptic Interfaces

There is relatively little research on young children’s everyday play with or use of digital media, which is in one sense unsurprising given young children’s historically limited engagement with, or capacity to use, older desktop devices and their associated interfaces. However, developments in haptic media through touchscreen interfaces and their widespread adoption following Apple’s launch of the iPhone and later iPad in the 2000s have challenged these historical conditions,
making digital media accessible to wider demographics of users, including young children. These conditions have prompted emerging strands of research into young children’s haptic media play, including research from the social sciences working on media and communications to quantify the devices, activities, and time spent by young children with mobile and touchscreen devices (e.g., OfCom, 2013; Rideout, 2013), including some preliminary research trying to understand some of the qualities of these playful and embodied relations (Marsh et al., 2018; Nansen & Jayemmane, 2016; Nevski & Siibak, 2016).

Alongside this social and cultural research is a growing body of more political-economy-inflected research that seeks to critically understand the design and marketing of children’s mobile devices, applications, and software products (Burroughs, 2017; Chiong & Shuler, 2010; Shuler, 2009). At the same time, researchers working in interaction design and user experience design (UX) are exploring young children’s gestural capacities to interact with touchscreen interfaces (Buckleitner, 2011; Hourcade et al., 2015) in order to inform user interface (UI) developments for child-friendly mobile software applications. Here, the term ‘Minimum User Competency’ (MUC) has been coined to characterise the lowering of usability thresholds to ever-younger populations of users for gestural and touchscreen interfaces – down to approximately 12 months of age, from the previous two-and-a-half years for keyboard and mouse interfaces.

These strands of research provide some insights into the cultural and economic contexts of young children’s mobile and touchscreen media use. Yet, there is scope for more situated and theoretically informed research, exploring how technologies and bodies intersect in the formation of young children’s media practices. Drawing on published research from the author (Nansen & Jayemmane, 2018; Nansen & Wilken, 2019), this chapter focuses on these intersections and entanglements by applying insights drawn from phenomenologically informed cultural theory in the contexts of media studies approaches that seek to understand everyday media use. This analysis helps to reveal how mobile technologies, haptic interfaces, and media dispositions are operationalised within young children’s contemporary digital cultures.

The Phenomenology of Haptic Media

Understood as the acquisition and embodiment of dispositions or forms of conduct, the concept of habitus has been developed across anthropological and sociological literature to address the relations that emerge between bodies and technologies in everyday life (Bourdieu, 1977; Mauss, 1973). Marcel Mauss, for example, located habitus at the intersection of bodily practices, object designs, and cultures of use, noting how particular forms of movement, from walking, swimming, sitting, and digging, were entrained and organised over time within specific cultural contexts through forms of repetition, interaction, and imitation. Pierre Bourdieu’s social analysis understood habitus less in terms of micro analysis of bodily movements, but still as a significant element at the intersection of culture and embodiment, in which dispositions are culturally shared and shaped through class-based activities and experiences. Phenomenology, with its focus on the body’s place, performance, and expression of material culture, has productively contributed to this concept of habitus and its intersection with media technology. From this work, body techniques have come to be understood as “culturally and contextually specific – taught, learnt, and dynamically evolving” (Richardson & Wilken, 2009, p. 24). In phenomenological terms, the way in which body–technology relations become part of our habitus, our “corporeal schema” (Richardson, 2012, p. 135), “expresses the power we have of dilating our being in the world, or of altering our existence through incorporating new instruments” (Merleau-Ponty, 2012, p. 145). For Merleau-Ponty, whose focus was on analogue technologies, habitus was not simply an involuntary or rigid pattern of behaviour, but, rather, an empowering relationship between bodies and artefacts that expressed capacities to adopt and adapt to technologies, to embody them in order to act in the world. Merleau-Ponty
identified multiple layers of habitus, which incorporated physical bodies, repeated use, learnt movements, and cultures of use. So, for example, the typing body habituated to keyboard use when the corporeal schema was distributed in the fingers, performed through their dexterity, and learnt through cultural norms, such as touch-typing (2012, p. 145).

Such reflections have been taken up by more recent variants of phenomenology, such as ‘post-phenomenology’, which seeks to understand the situated negotiations and multi-stable qualities of human–technology relations. Here, the influential work of Don Ihde (1990, 1993), which understands embodied relations as one type of interrelation form – alongside alterity, hermeneutic, background – has provided a productive lens for considering various technologies and their embodied dimensions, including mobile media and haptic interfaces (Wellner, 2016). This, in turn, connects to a broader ‘material turn’ in media and communication studies, especially the study of mobile and touch-based interfaces (Mowlabocus, 2016; Parisi et al., 2017; Richardson & Hjorth, 2017), which orient us to the histories, senses, and experiences of contemporary haptic media. One trajectory of analysis and theorising of such forms of habitus is labelled ‘cultural phenomenology’ (Connor, 2000; Csordas, 1999; Richardson & Third, 2009). Cultural phenomenology ‘resituates embodiment and materiality within sociocultural contexts’ by turning our attention to ‘the body–technology relations that emerge from particular cultural milieu and collective habits’ (Richardson & Wilken, 2017, pp. 120–1). In bringing together both phenomenological and cultural studies traditions, this approach has been deployed to ‘critically account for the perceptual and sensory dimensions of everyday material culture’ (Richardson & Third, 2009, p. 49), including the hapticity and embodiment of mobile devices (Richardson, 2012; Richardson & Wilken, 2017). Such phenomenological reflections have also been taken up within the context of human–computer interaction (HCI) research, documenting how appropriating gestural interfaces requires levels of physical ability, learned and controlled bodily movements as input, and situated meanings of use (e.g., Loke & Robertson, 2011; Nansen et al., 2014).

Clearly, phenomenologically informed cultural theory around habitus and body–technology relations forms a productive way of understanding young children’s encounters, enculturation, and embodiment of touchscreen media. This orientation towards habitus as both mediated by technologies and embedded in culture contexts is valuable in turning our attention to everyday media practices and their situated contexts. More specifically, it highlights the importance of attending to the specificity of haptic interfaces, the conduct of young bodies, the ecologies of media spaces (both mobile and residual), the cultural practices surrounding and shaping these activities, and the wider communities of interest accommodating, representing, designing, or commodifying these relations.

In order to explore the haptic habitus of young children, this chapter draws on qualitative research and ethnographic observation of young children’s mobile media practices in family homes conducted with children aged from birth to 5 years old (n = 41) in their domestic media settings in Melbourne, Australia, during 2016–2017; and analysis of UI and mobile app developer literature, and in particular the ‘Event Handling Guide for iOS’, which encodes touchscreen interaction through the design constraints and possibilities of gesture input techniques. Combining these theoretical and empirical lines of inquiry, this chapter explores the cultivation of young children’s embodied dispositions for touchscreen conduct and competence – their haptic habitus. The following analysis is structured around the relational processes of encounter, enculturation, and embodiment. These are situated within the materialities of domestic haptic media spaces and family relations in which haptic media use unfolds. The analysis is also concerned with how, in turn, these spaces and practices are enfolded into wider communities of design, development, and commercialisation, in which relays can be seen between cultural contexts of use, user interface studies of children’s developmental capacities for gestural interaction, and the modulation of touchscreen gestural events by children’s app developers.
Cultivating Young Children’s Haptic Media Habitus

It is now commonplace for young children to inhabit household media environments characterised by dense ecologies of digital media, including Wi-Fi infrastructures, the presence of multiple and mobile touchscreen devices, along with residual media technologies such as televisions and desktop computers. The domestication of and dwelling within these contemporary media habitats facilitates young children’s encounters with media technologies: We’ve got an iPad, which just floats around anywhere. In particular, the mobility of tablet computers and mobile phones, no longer located in a fixed place but circulating around the home through routines of use and disuse, has prompted children’s early and regular encounters: They just kind of picked up the things that were laying around.

Haptic media, then, come to inhabit homes in ways that become readily available but also appealing for young children through the affordances of the interface responding to touch with screens lighting up, and gestural movements activating applications: He notices when the lights, the bright light. A little bit, little bit moth to a flame, you know. These routinised encounters with touchscreen devices habituate young children to the availability and interactivity of haptic media. These media habitats and touchscreen encounters were not purely an outcome of spatial arrangements and mobilities of haptic media, but also are culturally encoded or enculturated in the ways parents make available, model behaviour, and mediate their children’s media interactions. For example, young children observed their parents embodied, distracted, or intimate relations with their phones and tablets (see Mowlabocus, 2016): I, I suppose indirectly he’s fascinated ... he notices when our attention is drawn by it. Through these observations, children become enculturated into understanding the cultural value of mobile screens in contemporary life, and they embody such values through imitation: The other day he found ... he got his mum’s phone and starting going, “Lala-lala”, talking.

In addition to such indirect forms of habituation, parents identified more deliberate practices of providing children with mobile devices, so-called “passing-back” (Chiong & Shuler, 2010), in order to pacify them in situations where they were otherwise occupied, such as driving, working, or socialising, and thus they deploy mobile devices as a tool of distraction or management within the routines of family life: ... on my phone and she’ll watch a show if I’m out somewhere. It’s usually a ... I use it like a tool to entertain her. Yet, such parental provision of devices was not simply an expression of what Mowlabocus (2016, n.p.) describes as the hail of smartphones “reminding us to be productive ... as workers, students, parents, friends, consumers, and producers”, in which “their constant notifications interpellate us into the contemporary political-economic structure from an ever-earlier age”. Instead, such attachments also reflected the value placed by families on children’s digital play, learning, and social interaction, in which the everyday and ordinary usage of haptic media slowly seeped down to younger children’s everyday media practices: We had my son’s birthday and there were some photos, some footage of us singing happy birthday and the little one just wants to watch it over and over again.

Young children’s haptic media habitus is, then, embodied through the affordances and materiality of mobile devices for being held, touched, and carried: The phone is 100% instant and it’s little, they can carry it around, so I think that’s part of the attraction as well. Haptic media encounters are animated by touchscreen interfaces that are responsive to simple gestural actions of young children: They can grab it and start playing with it. It just shows that it’s so much part of their world ... to swipe something. And these haptic media relations are habituated over time through cultural contexts of provision and performance as part of their “individual and collectively realized corporeal schema” (Richardson, 2012, p. 135). Arguably, the swipe emerges as the key gesture of a haptic habitus: She knew from quite a young age to swipe a photo on the phone. Yet, the swipe is not immediately part of haptic conduct, but emerges as critical in the transition from simple and intuitive discrete interaction to more encoded multi-touch
gestural styles. Like Merleau-Ponty’s keyboard habitus, it is expressive of young children’s internalisation of a particular mode of gestural input for corporeal conduct as part of a wider haptic habitus.

The swipe speaks to the formation of young children’s haptic habitus and embodied capacities for and relations with media being shaped through the dominance of a particular interfacial mode of engagement, touch. This, then, guided interactions and expectations with media more generally, including interfacing with “residual media” (Acland, 2007): It’s funny because when she was younger she would go up the T.V. and she would try swiping the T.V. to turn the channel. The ‘failure’ of legacy media to respond to touch was seen as underscoring the intuitive qualities of haptic media, located in the generational naming of ‘natural user interfaces’ within the product design and manufacturer communities (e.g., Norman, 2010): He has been using an iPad before he was 1. He could unlock it. He could open things with it. Play games. Choose apps. Before he could talk or walk. It’s such an intuitive interface. Such embodied dispositions highlight how young children’s means of conceptualising digital media are driven by modes of interfacing: The keyboard in my office is a big novelty… So, it’s a novelty, that, I think that they actually don’t see the computer and the tablet as similar devices. A haptic habitus is, then, not just cultivated by relations of encounter, enculturation, or embodiment, but critically constrained and guided by codified regimes of interaction involving product design and development.

### Configuring Haptic Habitus through Interface Design

As the discussion of young children’s touchscreen habitats and habituation above suggests, the formation of young children’s touchscreen habitus emerges through their embodiment and enculturation of dispositions towards touchscreen media shaped by direct experience, by rich household media environments, and through relations of mimesis and mediation. Here, the haptic interface is understood not solely as the point at which the user interfaces with the computer screen, but, as Cramer and Fuller (2008) argue, the interface becomes a site of exchange which operates below the level of the user interface through hardware, software, and code within computer systems, as well as beyond the screen through shared practices and norms operating at the level of culture.

At the level of the screen, touchscreen gestures must be registered by and map onto a predefined and limited range of common UI gesture types (tapping, pressing, swiping, dragging, scrolling, pinching, spreading, rotating). These gesture types are designed, detailed, and determined by product manufacturers such as Apple, and made available for software developers through APIs and documentation such as Apple’s developer manual for gestural input, the ‘Event Handling Guide for iOS’.

But, these gestural interactions and encodings are, in turn, informed by recursive examples of UX research that draw on cultural resources. YouTube videos of young children playing with iPads, for example, have been used as a resource by interaction design researchers to understand young children’s capacities to use touchscreen interfaces and mobile applications (Buckleitner, 2011). Analysing YouTube videos of young children’s embodied interactions with touchscreen devices is used to inform the ongoing development of touch design in commercial mobile apps. Through such circuits of cultural production children’s haptic habitus within wider economies of play is becoming a commercially valuable resource for informing interaction design, and haptic software product development can be located:

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 2½ 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)

This research highlights a common and not unexpected observation that children’s initial modes of haptic interaction involve actions such as jabbing, swatting, licking, and smearing (e.g., Buckleitner, 2011). While “looking, tasting, smelling, and hearing” – alongside jabbing, swatting, and smearing – “are all variants of ‘handling’ the world” (Richardson & Third, 2009, p. 154), in design terms such haptic interface exploration can be understood as a form of gestural excess (Apperley, 2013; Simon, 2009), inasmuch as these gestures exceed and therefore are not clearly registered within the codified regime of touchscreen interface design. For young children, touchscreens (and mobile devices more generally) require subtle yet significant reformulations of, adjustments to, and disciplining of, gesture. With children, this gestural literacy involves learning through doing – whether their fingers have moved far or fast enough, or in a straight enough line – to activate on-screen actions. That is, they must discover and then adjust their actions to map onto movements incorporated within predefined gesture recognition lists. And yet, young children’s capacities to deliberately interact with touchscreens are fairly quickly acquired. Beginning from around the age of 12 months, children demonstrate abilities for simple discrete types of single-fingered gestural interaction such as tapping and swiping (or flicking) (Cristia & Seidl, 2015; Hourcade et al., 2015). More complex and multi-touch gestures, such as dragging or pinching, are, whilst slower to develop, displayed from around 18 months and steadily increase over time (Hourcade et al., 2015).

Children’s haptic habitus, then, becomes a site of interest for UX and interaction design researchers aiming to build applications for play and learning that accommodate these capacities through programmed tolerances for gestural input techniques. Whilst designing for bodily interaction is an implicit dimension to UX and human-centred design traditions (e.g., McCarthy & Wright, 2004), it is in the design and development of haptic interfaces that the notion of a habitus emerges in a more explicit and significant aspect of design research. HCI and media scholars have noted that haptic media and gestural interfaces are not unique to our current moment of digital mobile media (Norman, 2005; Parisi et al., 2017), drawing on past regimes of interaction such as GUI (graphical user interface). They are, nevertheless, part of an apparatus that imagines a renovated experience of computer interaction by incorporating people’s natural modes of physical communication and movement – natural user interfaces (NUIs). The NUI paradigm of interaction has, however, been critiqued for the assumption that such interfaces are somehow intuitive, universal, and immediately usable (Norman, 2010). Rather than a mode of interaction that comes naturally, Donald Norman and others have noted that gesture systems still require designing a grammar of interaction that follows well-defined modes of expression and navigation. Thus, like any other mode of interfacing, haptic media are still subject to entanglements of design protocols and learnt user practices in which specific gestures must become habituated.

In turn, phenomenologically informed cultural theory of mobile media emphasises as part of the enculturation of technology that gestural interfaces are “culturally specific and materially contextual” (Richardson & Third, 2009, p. 155). Despite efforts to naturalise this habitus, whether that naturalness is located in the child or the gestural interface – accompanied by claims to either digital natives (Prensky, 2001) or natural modes of computer interaction (e.g., Widgor & Wixon, 2011) – young children’s haptic media habitus cannot be disentangled from the site of its cultural production, material performance, and economic exploitation. Designing for young children’s
haptic habitus may appear to be a task in which UI designers simply codify children’s gestural capacities onto touch-based user interfaces. Yet, as this research highlights, haptics are both specific to and produced within different bodily, technological, and cultural contexts. The ability to use touchscreen devices is not simply determined by children’s developmental capacities, as this operates within feedback loops involving forms of encounter, enculturation, and embodiment described above. Parents deliberately assemble the interface between child and touchscreen through the provision and promotion of mobile devices and applications (Nansen & Jayemanne, 2016).

Similarly, the so-called ‘Minimum User Competency’ (MUC) of touchscreen interfaces is not simply a product of touchscreens automatically lowering thresholds of computational usability to ever-younger populations. Instead, children’s capacities for gestural interaction are closely mapped, fostered, and fed back into UI development in order to inform the design of child-friendly software applications and extend the commercial market of potential users (Buckleitner, 2011). Within such political economies of media haptics minor variations of gesture type and tolerance spread across various mobile applications, operating systems, and device manufacturers. Commercial efforts to own particular gestures like the swipe to unlock or the pinch to zoom have featured in the long-running patent wars between Apple and Samsung, and yet legal settlements of these differences signal to the standardisation of touchscreen gestures, enrolling media haptics within a wider platform imperialism (Yong Jin, 2015). The result is a kind of “ergonomic branding” (Parisi, 2015), in which the material design of branded touchscreen interfaces inscribes bodies with a haptic habitus that codifies the feel and performance of gestures. Whilst this may maximise the efficiency of gestural interaction, and lower thresholds of usability, it comes at the “cost of the autonomy of gesture” (Zehle, 2012), delimiting the possibilities of children’s haptic media technologies, experiences, and cultures.

Conclusions

This chapter has applied phenomenologically informed cultural theory to technology relations as a way to approach young children’s formation of an embodied disposition or haptic habitus towards touchscreen interfaces. This habitus is produced through young children’s increasing use of mobile and touchscreen media, cultivated by encounters, enculturation, and embodiment of haptic media in domestic and family life, and appropriated by haptic user interface designers and product manufacturers. It can be seen that UX and interaction design researchers are implicitly interested in how developmental capacities intersect with forms of encounter, enculturation, and embodiment as part of the dominant interface now reconfiguring children’s media habitus.

With young children growing up in media environments defined by haptic media experiences, parents of young mobile media users reflecting on the phenomenological significance and implications of such changing media interfaces can be seen: *I think that in some ways it (touchscreen) makes them feel more connected to the device, like they’re more part of what they’re doing.* Such observations highlight shifting but shared media subjectivities entrained through an emergent haptic habitus in terms of dispositions and expectations for immediacy, for availability, and for connectivity in the operation of digital media. Paradoxically, whilst such reconfigurations enable new modes of experience not available through older interfaces, the touchscreen interface also installs anxieties about the erasure of sensory engagement afforded by more traditional modes of physical play and learning: *With the iPad, you don’t get texture. You don’t sort of feel, you know, if you’re using sand, or if you’re using tissue paper, or you’re using Play-Do, or whatever, you’re actually getting different textures to feel. It’s definitely missing a sensory input to it.*

These tensions around the redistribution and revaluation of sensory experience structured through young children’s every-day and embodied touchscreen interfacing are, in turn, folded...
into broader economies of media haptics. On the one hand, acquiring capacities for using touchscreen interfaces equips young children with embodied resources for relating to and through digital media, whilst, on the other hand, touchscreens inscribe bodies with codified gestures for manipulating interfaces (Parisi, 2015; Zehle, 2012), thus delimiting the potentials for children’s haptic habitus. These contradictions raise important questions about the significance of a culturally dominant interface form in reconfiguring dispositions, especially for young children growing up in media environments defined by increasingly intimate and entangled haptic media experiences. And they call for understandings of children’s digital media informed by, and accounting for, relays between everyday media practices, cultural norms, and economies of design.

Acknowledgements

This research was supported through funding from an Australian Research Council (ARC) Discovery Early Career Researcher Award (DE130100735).

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