Young children in digital worlds: multi-modal development?

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Friends, it's time for some honesty. How many people have got multiple devices in their pockets? Let's have a think: who's got a phone in their pocket? Yeah, 100%. Okay, parents and grandparents, how many of your children and grandchildren have devices in their pockets? Our brains might not be changing, but the environment we live in is substantively changed. We are now having children growing up in a multimedia world.

I want to just take a moment to acknowledge the traditional owners of the lands on which we stand. I was very excited that Qantas reminded me of the lands I was on and the lands I was leaving. I wasn't so excited that Qantas was nearly an hour late and my breakfast meeting was slightly delayed. I was, however, thrilled that my Uber driver knew that my plane was late and was still there waiting. I didn't have to text him; he knew already. So even though we talk about technology as a problem, in many ways it makes our lives significantly easier.

So, Adam, Sharynne, Anne, and Penny: you've given me a particularly hard act to follow. I'm not a professor. I haven't been nominated by a newspaper for being significantly impactful in my research. My little *Conversation* piece[2] went slightly viral: apparently, I'm destroying childhood again. And I feel incredibly honoured to be here, so thank you. And particularly thank you to the Royal Society of New South Wales to let me climb over the borders and join you today.

When we look at young children in technology, whether in any of the forms of development that we focus on or any of the forms of brain conditioning we focus on, we have this immensely polarised debate. There will be some lovely people in this room saying we shouldn't be talking about technology. And then we've got others in the room who are happily tweeting, taking photos, posting things on whatever social media platform they're on. We're polarised in our perspectives of young children and technology. Unfortunately, the research is no longer polarised about this: we have some very firm guidelines and hopefully I will try and cover some of that.

When we look at young children and media — I'm sure you can see a child in your life looking somewhat like that (I have a six-year-old; she doesn't have a device, but is allowed to sometimes use my device) — we don't look like any of these things because I've read the research. Unfortunately, many families in Australia have not read the research. We have not done a good enough job at translating that research. The ideal way for children to use technology and media is by co-viewing and co-engagement, because that way we can facilitate their language development, we can monitor atypical

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1 This is an edited transcript of the address [Ed.]

2 Highfield, K. (2023) How can I tell if my child is ready to start school next year? *The Conversation*, 29 August.

development, we can focus on literacy elements as children use the devices. But unfortunately, often we allow these devices to become isolating. When we talk about the conflict though, we have to recognise the positives. If I look back on the last 12 hours of my life, my device has worked as: a clock, a CD player, a book, an audiobook, a ticket, a fitness tool, a map, it's been my credit card, it was my communication tool, and, yes, I communicated to some of our friends online as I arrived. It's been a camera — I took some photos of this incredible ceiling, my device has been a distraction when my plane was late, it's been a phone — I rang my mother — and it's been a connector. Lastly, and most importantly as we think about brain development and children's development in the digital space, my device has been a memory aid: I have notes that help me remember what I'm talking about. They also help me manage things like executive function. You see, I've turned off my distractor. It's not on anymore. I've made conscious decisions about how I use the technology.

All of those things come to play because I'm researching in this space but I wonder about your children and grandchildren. I wonder about you in the room, whether you have actually thought about the way you're using technology, and who is driving the digital bus in your family. You see, often our friends at Apple are driving the bus. Our friends at Netflix are telling us the types of media to watch. Sometimes children don't even have the option to make a conscious decision whether they use or not use, as parents just hand out the devices. So how do we overcome that?

We first of all have to understand that digital toys technology is an artefact of childhood. We can't get away from that.

We have to acknowledge it. We also have to understand that when we talk about digital technology, we are really talking about screen-based media predominantly. And we have to understand that we've got both broadcast media or streamed media, and we've got interactive tools. We've got these two different things and you could position them on a continuum if you like, with television streamed media at one end, and then interactive tools at the other end. However, this becomes really murky because — guess what? — most children don't watch television anymore: they watch streamed media on mobile and tablet devices. It becomes complex, doesn't it? The toolbox has changed. It also means that we have a generation of children growing up at the moment whose parents are dealing with a fundamentally different childhood to the childhood in which they grew up.

This device of course was only invented in 2007. It's a different childhood and as we think about what this means for children, for childhoods and for brain development. I think we need to take some time to carefully communicate, to carefully consider, how we use the devices. They're not going away, so we need to really put some constructive thought in.

What does the research say? The research says a lot. In particular, we have good usage statistics internationally about how children are using media. For example, the 2023 data from OFCOM, which covers children from 4 to 15 years of age, shows us that children's engagement with TV has decreased, but children's engagement with BOD (Broadcast video On Demand) and SVOD (Streamed Video On Demand), watching devices when we choose what to watch — that's actually increased by exactly the same decrease that

television viewing has dropped. What that means is that the devices we use has changed but we're still watching television. We know that 9 out of 10 children play games, but only about 10% of those games are educational in any way, shape or form. We also know that children who have atypical neural development have different usage: often their usage is increased.

Unfortunately, Australian data is really limited. If we take anything from this, we take the need to have really good Australian data. Our Australian data comes from the Australian Bureau of Statistics and it basically says children are using media. That's probably unfair. We know that children are using media for approximately 2 hours per day, with about 60% of children using media for that time. Unfortunately, the group that I worry most about is the 24% of children in Australia who are watching or using over 20 hours of screens a week.

To know what the impact is on neural pathways, on synaptic pruning, and in particular on development in other areas — social, emotional skills, executive functioning skills — we need to know more about whether or not they're using a screen, and what that does to a child. We also know that we've got some particularly at-risk communities when it comes to screen time. We know that maternal educational level is a big predictor of how much screen time children have. Unfortunately, mothers who have less academic attainment allow their children almost double the screen time. We also know that, for under-3s, an increase in screen time has a direct impact on speech and language development. It's getting a bit sad.

However, the other piece of the picture that we need to focus on is the children as they grow in age. When we go past just this idea of screen time, and look at what children are really doing with screens, we can see that there's been some positive effects, particularly during the pandemic, of teenagers and young children connecting using social devices. If we keep looking at the negatives, I think it's important to acknowledge the impacts of things like dopamine and that we could argue that young children are growing up in an environment where we're allowing dopamine — the hit of social media, the hit of the ping in your pocket — to have an impact on development. Unfortunately, the hunting — that's where people post a photo and see how many "likes" they get — starts at a very young age. And unfortunately again, the less educated the mother is, the more likely she is to inadvertently show poor media habits.

I think the problems here are really complex and intertwined: they're about language, they're about literacy, and they're about groups that are experiencing adversity. If we look at teenagers, we have to acknowledge things like impact on sleep. We have to acknowledge things like low digital literacy. We need to know that young children, particularly as they're growing into those teenage years, might be using technology for positive social interactions, but those positive social interactions can flip very quickly. When we look at the space of technology and the developing brain, it is complex.

A couple of key takeaways: first and foremost, we can't put the technology journey back in the bottle. Technology is

here to stay. We're not giving up our devices, hence we need to be aware of how we can raise citizens in this digital age. The second takeaway is that we need to consider screen time for our under-3s and screen quality for our older children. We also have to think about the context that children are living in, how they're using tech: is it isolating or is it a social connector? Lastly, we need other metrics beyond just time. In Australia particularly, we need to know what children are doing on their devices and we need Australian research that really supports families. We need to help teachers to navigate this space because we know they're a key conduit in the area. And of course, we need to ensure that we're developing Australian content. You won't be surprised to hear that the American Pediatrics Association and our colleagues in America are quite concerned about "Bluey," because children in America are starting to speak with an Australian accent. I want those children in Australia to speak with the Australian accent. I want caps on media usage so that we are building and constructing our own media in Australia. But I don't want any media — I want high-quality media. When we have high-quality media, we can engage children, we can extend their geographic boundaries, we can enrich their lives, and most importantly we can enable them to do something they can't do normally. High-quality media and technology can overcome a lot of the concerns we're talking about, but how do we get to that part? This is the beginning of a conversation and if you'd like to chat further, please feel free to connect with me.