

2016

Children's choices: the technology choices that children make within their free time. Influences and implications

D O'Connor

The University of Notre Dame Australia, dee.oconnor@nd.edu.au

C Robinson McGunnigle

The University of Notre Dame Australia, christine.robinson@nd.edu.au

M McCormack

V O'Rourke

Follow this and additional works at: https://researchonline.nd.edu.au/edu_conference



Part of the Education Commons

This conference paper was originally published as:

O'Connor, D., Robinson McGunnigle, C., McCormack, M., & O'Rourke, V. (2016). Children's choices: the technology choices that children make within their free time. Influences and implications. *8th International Conference on Education and New Learning Technologies*.

<https://library.iated.org/view/OCONNOR2016CHI>

Original conference paper available here:

<https://library.iated.org/view/OCONNOR2016CHI>

This conference paper is posted on ResearchOnline@ND at https://researchonline.nd.edu.au/edu_conference/109. For more information, please contact researchonline@nd.edu.au.



©IATED (2016). Permission granted by IATED for inclusion in ResearchOnline@ND

CHILDREN'S CHOICES: THE TECHNOLOGY CHOICES THAT CHILDREN MAKE WITHIN THEIR FREE TIME. INFLUENCES AND IMPLICATIONS

D. O'Connor¹, C. Robinson McGunnigle¹, M. McCormack², V. O'Rourke³

¹ *The University of Notre Dame (AUSTRALIA)*

² *Dublin City University (IRELAND)*

³ *Letterkenny Institute of Technology (IRELAND)*

Abstract

The Irish Neighbourhood Play Research Project included almost 1700 families and 240 communities throughout Ireland. Using parental surveys and naturalistic observation, data was secured on how children in modern Ireland aged 0-14 are spending their free time. An all-island approach was taken incorporating cities, towns and rural areas across a variety of socio-economic groupings.

Interesting findings arose from the data relating to the choices that children are making within their free time. This paper focuses on the choices they are making within technology use. Data on the children's technological engagement will be presented and discussed through a child development lens. The positive and negative implications for both learning and development are raised. This generation of children will be the first to emerge into adulthood without ever experiencing a world without technology. For them, it will always have been central to their existence. What does this mean for the next generation of humanity?

Keywords: The Irish Neighbourhood Play Project, Technology in Children's Play, Children's Technology Choices, Implications of Technology Use in Childhood, Children and Television, Play, Childhood, Education.

1 INTRODUCTION

This paper presents findings on the technological choices which children between the ages of birth and fourteen are making within modern Ireland. The data is from the Irish Neighbourhood Play project which was a research study initiated by IT Sligo and Early Childhood Ireland in 2012. The study incorporated both indoor and outdoor play. The findings show that overwhelmingly, technology is an indoor choice. Very low levels of technological engagement were observed during outdoor play. Very high levels however were reported by parents in relation to their children's indoor activity choices. These findings are discussed in relation to research based literature on how technological engagement is effecting children's holistic development. The focus of the discussion is centred on the impact of television viewing, especially on the under-fives. The literature is clear that television viewing holds negative outcomes for young children. These negative outcomes are discussed alongside the argument that today's children are digital natives and as such, must be facilitated in early technological engagement. The findings of this study show high levels of television viewing in Irish children under five. Indeed, it shows high levels of television viewing across all age ranges, including the under two's. The ensuing discussion outlines why this is a trend that is costing children dearly across emotional, social, cognitive and physical domains.

2 METHODOLOGY

The aim of the research was centred on the research question: What is happening in children's neighbourhood play in Ireland today?

Focusing on the best methods with which to answer this question, a mixed method approach was adopted that incorporated detailed parental questionnaires (phase one) and the construction of a tailored observational tool (phase two). Naturalistic observation (Geller, Russ & Altomari, 1986; Loucopoulos & Karakostas, 1995) was chosen as the most effective approach for capturing a snapshot view of neighbourhood play. The project's sequential design allowed for the collection of data from multiple sources to facilitate triangulation which enriched the project, as there are often differences between what people report and actual behaviour (Punch, 2001).

Data was collected utilising a simple coding system (Robson, 2012, pp. 337) which captured data on variables including age, gender, extent of peer interaction, type of play environment, play objects used, instances of interaction with nature and/or electronics and the type of play children were engaged in. The population of interest was all children aged between 0 and 14 who resided on the island of Ireland in June - July 2012. Corresponding with the survey research, the sampling technique employed was purposive sampling, external play areas within the previously determined geographical and socio economic locations were observed. The final sample size achieved was 240. Data was analysed quantitatively; frequencies and cross tabulations were performed.

3 FINDINGS REGARDING THE USE OF ELECTRONICS IN CHILDREN'S OUTDOOR PLAY

There were a very low number of observations of interaction with electronics in outdoor play. In total there were 14 observations (8%) of children interacting with electronics in outdoor play. 7 (50%) used electronic equipment with others while 5 (36%) carried electronic equipment but did not use it and the remaining 2 (14%) used electronic equipment alone.

Details on full time or part time use were gathered for 9 observations. 5 of the 9 (55%) observations used electronic equipment full time while the other 4 (45%) observations used electronic equipment part time.

The number of observations of interaction with electronics did not vary greatly depending on area or socio economic indicator (details on interaction with electronics and area/ socio economic indicator were gathered for 11 observations). Of these observations 5 (46%) were in town areas, 3 (27%) were in the city areas and similarly 3 (27%) were rural areas. 4 (36%) were from middle socio economic areas and 4 (36%) from affluent socio economic areas, while 3 (27%) were from disadvantaged socio economic areas.

In total 42 children were recorded interacting with electronics. Over half (55%) were aged between 12 and 15 and more boys (15) than girls (8) were observed. A further 31% were aged between 8 and 11 (9 boys and 4 girls) and the remaining 14% were aged between 4 and 7 (5 boys and 1 girl). No children between the ages of 0 and 3 were observed interacting with electronics.

4 FINDINGS REGARDING THE USE OF ELECTRONICS IN CHILDREN'S INDOOR FREE TIME

Responses from just under 1700 parents were collated. There was a wide spread of respondents from 18 geographic areas across 240 communities. There was also an even representation from the three socio economic (SE) indicators; affluent (30.5%), middle (35.4%) and disadvantaged (33.9%).

Parents were asked about the kinds of activities their children engaged in. The top four activities children engage in are 'watching TV and films' (71%), 'spontaneous sports' (58%), 'being creative at home' (56%) and 'play with electronic games' (56%).

Further analysis of the top four activities children are engaged in across the ages of 0 to 14 and across both genders highlighted some differences. More boys than girls watch TV /films and play with electronics while more girls than boys engage in spontaneous sports and creative activities.

Supplementary analysis indicated that while there is a clear gender difference, age does not appear to greatly impact TV/ film viewing, whereas the number of children engaging in the other activities varies more with age. Electronic gaming however has a clear relationship to the age of the child. As children get older they play more with electronic games. Children of all ages however are engaging in equally high levels of television viewing.

5 DISCUSSION

The lower levels of technology use in outdoor play are in marked contrast to the very high levels of technology use within children's indoor free time. With television watching being cited by the highest number of parents as their child's indoor activity of choice and electronic gaming being the fourth most cited activity, it is clear that technology is playing a significant role in modern childhood. While these figures are stark, the knowledge that technology is very prevalent in childhood is not new. Many studies internationally have shown that children are engaging with high levels of technology. Both

European and US studies have found that nearly every child studied engages with screen time daily (Gutnick, Robb, Takeuchi & Kohler, 2011; Rideout, 2011; Plowman & McPake, 2012).

That the Irish Neighbourhood Play Study found no age differentials in relation to watching television is concerning. While electronic gaming increases with age, the passive technological engagement that underpins television viewing is consistently high with no pattern of change in children aged birth to fourteen. Why is this concerning? Firstly, the early childhood phase of learning and development is vitally important for emotional, social, cognitive and physical development. Television viewing offers little by way of developmental support in any of these spheres. Indeed, through recent studies into brain development and technological use in young children, we have learnt that technological use and in particular, television viewing, has negative developmental outcomes in young children (Grace & Hodge, 2012; Keegan, 2012; Vandewater, Rideout, Wartella, Huang, Lee & Shim, 2007; Warburton & Highfield, 2012). Warburton and Highfield write that "Our neural networks reflect our life experiences and constantly change to incorporate new experiences...for this reason, repeated experiences can strongly impact the way a child thinks, feels, and behaves...for many contemporary children, repeated messages from media provide just such an influence" (p.144). This form of learning has been discussed for decades and previous to neuroscientific research was often referred to as social referencing (Pelaez, Virues-Ortega, & Gewirtz, 2012). Its power as a social learning process cannot be underestimated. Children learn how to be and how to act by referencing from those around them. If they are surrounded by conscious and supportive people then that is what they become through a process of social referencing. If on the other hand, they are exposed to high levels of television, they then adopt and integrate the message they receive through this medium. This is often processed through play, when the child plays out the television based social referencing in an attempt to integrate it into their holistic development as a person (O'Connor, 2012). Keegan's 2012 study underpins that technological use in childhood is changing the processing of cognitive development in a negative way and that this has deskilled us as thinking people in a greater way than technology has skilled us, thus costing us more in human development terms than it gives within convenience, knowledge acquisition, communications and connection.

Vandewater, Rideout, Wartella, Huang, Lee & Shim call childhood a media saturated environment (2007). Other studies confirm that this statement is true within many contemporary childhoods. The 2005 Kaiser Family Study found that children over eight, and teenagers, engaging in leisure time technology, spend the equivalent time of a full time job doing so (Keegan, 2012). Tapscott's 2008 research puts the average American technology consumption at thirty thousand hours by age twenty which is an average of 28 hours a week throughout childhood. It is not therefore surprising that The Irish Neighbourhood Play Study has found that television viewing and electronic gaming are cited as two of the most common activities being chosen by children age 0-14.

With television being engaged equally with all ages in this category, there are reasons to be alarmed. Passive screen media is viewed very negatively for children under two, with paediatric organisations taking a strong stand against it for health and human development reasons (Warburton and Highfield, 2012). It is clear that due to the intensity of development occurring in the early years, the impact of technological engagement is especially significant early in life (Rideout, Vandewater & Wartella, 2003). The American Academy of Pediatrics released a policy statement in 2010 outlining their concerns. They clearly outline that the negative impact of technology on young children is developmentally compromising cognitive and social outcomes. This detrimental effect, they state, impacts on the child in both childhood and throughout life. It is not reversible.

The developmental phase of the brain is highly tuned to experiential learning in early childhood and its vulnerability cannot be underestimated. The National Association for the Education of Young Children (NAEYC) together with the Fred Rogers Centre for Early Learning and Children's Media at Saint Vincent's College issued a joint statement in 2012 warning parents and educators about the negative impacts of television and technology use. It cites much research that identifies that technology use, including television viewing, produces many negative outcomes for children including irregular sleep patterns, behavioural issues, decreased academic performance, negative socialisation outcomes and delayed language development (NAEYC, 2012); all of which increased in proportion to the amount of technological engagement experienced by the children. The position statement articulates that screen time is inappropriate for children under two and that those between two and five years should experience no more than thirty minutes a day.

This position is upheld by broader research. A longitudinal study undertaken in the USA on 6 month old babies and their mothers investigated the use of media with these infants and the impact on development. Findings suggested that from a human development perspective, no media exposure is

preferential for under 2's (Tomopoulos, Dreyer, Berkule, Fierman, Brockmeyer & Mendelsohn, 2010). Howard-Jones undertook an extensive study in 2011 on the impact of technological engagement on learning. He concluded that while worthwhile within adult learning, it was problematic in childhood. The nature of the developing brain and its immense susceptibility to being influenced to the extent of changing the course and structure of thinking itself makes it very vulnerable and as such, technology use should be restricted and very carefully managed (Howard-Jones, 2011).

The benefits of technology engagement are cited by Warburton and Highfield as supportive of identity formation and supportive of coordination and spatial cognition (2012). Both of these benefits are arguably much better supported by non technological engagements such as social play and physical play or sport. Such an interpretation is upheld by many studies (Keegan, 2012; Subrahmanyam, Kraut, Greenfield, & Gross, 2000; Vandewater, Rideout, Wartella, Huang, Lee & Shim 2007). Choosing technology over physically or socially based play is a cause of developmental concern (Subrahmanyam, Kraut, Greenfield, & Gross, 2000). It is also a choice that comes at a cost not just to physical and social play but also impacts on reading time and time outdoors (Vandewater, Rideout, Wartella, Huang, Lee & Shim 2007). Links between screen time and obesity are well documented with Paediatric Organisations asking parents to support sport and imaginary play over screen based choices (Subrahmanyam, Kraut, Greenfield, & Gross, 2000).

Studies have also shown that children who engage more with technology, engage less with warm human interactions with their parents, thereby compromising healthy emotional development and attachment; a key determinant of successful life outcomes (Howard-Jones, 2011; Warburton & Highfield, 2012). In addition, as television time increases, creative play decreases. Creative play supports intelligence and problem solving; vital skills in this changing world (O'Connor, 2014). Warburton and Highfield's study (2012) also found key correlations to increased aggression, early sexualisation, lower self-esteem, disordered eating, body image and gender image distortion, sleep deficit, reduced social interaction and language delay (2012) while Keegan (2012) categorically links high levels of technological use with difficulties experienced in learning "There are also links between poor school performance, attention problems and the consumption of entertainment media" (p. 153).

With so many linkages to negative outcomes, what are the purported reasons for encouraging technological engagement in childhood? Largely these are put forward as embracing the inevitability of it; as accepting that technology is a part of children's lives and that this first generation of digital natives will need immersion in order to be prepared for a technologically based future (Rosen & Jaruszewicz 2009). This is not however, a truly convincing or sensible argument, especially when viewed in the light that all of today's incredible technological advances, from surgical breakthroughs to the invention of the internet, were conceived and developed by adults who had little technological engagement as children. In addition, technology itself is changing so fast that anything children learn how to master in the primary school years will be out of date by adulthood (Plowman & McPake, 2012).

6 CONCLUSION

Given that the message from the broader literature surrounding neuroscientific research is that technological engagement is more harmful than beneficial for young children, the low levels of technological use found within outdoor play in modern Ireland is heartening. Outdoor play is very positive and effective in supporting children's holistic development (Brussoni, Gibbons, Gray, Ishikawa, Sandseter, Bienenstock & Tremblay, 2015; Hestenes, & Wang, 2016; Tremblay, Gray, Babcock, Barnes, Bradstreet, Carr & Brussoni, 2015).

On the other hand, the high levels of technological engagement during indoor free time is an area of concern. This concern is particularly acute in reference to very young children engaging in high levels of passive screen time during television viewing; an activity which contemporary research is clearly outlining as damaging to their development on emotional (Howard-Jones, 2011; Warburton & Highfield, 2012), social (NAEYC, 2012), cognitive (Pelaez, Virues-Ortega, & Gewirtz, 2012; Rideout, Vandewater & Wartella, 2003) and physical levels (Subrahmanyam, Kraut, Greenfield, & Gross, 2000).

REFERENCES

- [1] American Academy of Pediatrics (2010). Policy Statement. Media Education. *Pediatrics*. DOI: 10.1542/peds.2010-1636

- [2] Brussoni, M., Gibbons, R., Gray, C., Ishikawa, T., Sandseter, E., Bienenstock, A. Tremblay, M. (2015). What is the relationship between risky outdoor play and health in children? A systematic review. *International Journal of Environmental Research and Public Health*, 12(6), 6423-6454. doi:10.3390/ijerph120606423
- [3] Central Statistics Office (2012) The Haase-Pratschke Index of relative affluence and deprivation [online], available: <http://www.cso.ie/en/media/csoie/surveysandmethodologies/documents/pdfdocs/Haase,Pratschke,Report,on,Optimising,the,Sampling,Methodology,for,CSO,Household,Surveys.pdf>
- [4] Cohen, L., Manion, L. and Morrison, K. (2001), *Research Methods in Education*. Oxon: Routledge.
- [5] Department of social protection (2011) The Children First: National Guidance for the Protection and Welfare of Children' policy [online], available: <http://www.welfare.ie/en/Pages/Children-First.aspx>
- [6] Fine, G. and Sandstrom K. (1988) *Knowing Children: Participant Observation with Minors*, Qualitative Research Methods: Volume 15, London: Sage.
- [7] Geller, E., Russ N. and Altomari, M. (1986), Naturalistic observations of beer drinking among college students, *Journal of Applied Behaviour Analysis*, 19 (4) 391-396
- [8] Government of Ireland (2003) Data Protection Act [online], available: <http://www.irishstatutebook.ie/2003/en/act/pub/0006/sec0001.html>
- [9] Grace, R. and Hodge, K. (2012) *Children, Families and Communities: Contexts and Consequences* (4th Ed).
- [10] Gutnick, A. L., Robb, M., Takeuchi, L., & Kotler, J. (2011). *Always connected: The new digital media habits of young children*. New York: The Joan Ganz Cooney Center at Sesame Workshop.
- [11] Hill, M. (1997) Participatory Research with Children, *Research Review, Child and Family Social Work* (2) 171–83.
- [12] Howard-Jones, P. (2011). *The impact of digital technologies on human wellbeing: Evidence from the sciences of mind and brain*. Oxford, England: Nominet Trust.
- [13] Keegan, S. (2012) Digital technologies are re-shaping our brains: What are the implications for society and the research industry?, *Qualitative Market Research: An International Journal*, 15 (3), p.328 – 346.
- [14] Li, J., Hestenes, L. L., & Wang, Y. C. (2016). Links between preschool children's social skills and observed pretend play in outdoor childcare environments. *Early Childhood Education Journal*, 44(1), 61. doi:10.1007/s10643-014-0673-2
- [15] Loucopoulos, P. and Karakostas, V. (1995) *System Requirements Engineering*, McGraw Hill International.
- [16] Northern Ireland Statistics and Research Agency (2010) The Northern Ireland Multiple Deprivation Measure [online], available: <http://www.ninis2.nisra.gov.uk/public/Theme.aspx?themeNumber=137&themeName=Deprivation>
- [17] O'Connor, D. (2012) Generation Yes. How Childhood Consumerism is Influencing Play; Implications for Creativity Development. In Bustreo M. – Russo V. (Eds), *Proceedings of the Child and Teen Consumption 2012 5th International Conference on Multidisciplinary Perspectives on Child and Teen Consumption*, Qanat, Palermomore: Milan.
- [18] O'Connor, D. (2014) The Development of Creativity in Early Childhood. The Role of Educators. In O'Connor, D. (Ed). *Educational Tales of the Unexpected: Children and Creativity*. Interdisciplinary Press: Oxford. ISBN: 978-1-84888-294-2.
- [19] Pallant, J. (2011) *SPSS Survival Manual: A step by step guide to data analysis using SPSS*, Australia: Allen and Unwin.

- [20] Pelaez, M., Virues-Ortega, J., & Gewirtz, J. L. (2012). Acquisition of social referencing via discrimination training in infants. *Journal of Applied Behavior Analysis*, 45(1), 23-36. doi:10.1901/jaba.2012.45-23.
- [21] Plowman, L., & McPake, J. (2013). Seven myths about young children and technology. *Childhood Education*, 89(1), 27.
- [22] Punch, S. (2001) Multiple Methods and Research Relations with Children in Rural Bolivia, in M. Limb and C. Dwyer (eds) *Qualitative Methodologies for Geographers*. London: Arnold.
- [23] Punch, S. (2002) Research with Children: The Same or Different from Research with Adults? *Childhood*, 9 (3) 321-341.
- [24] Rideout, V. (2011) *Zero to Eight: Children's Media Use in America*. San Francisco: Common Sense Media.
- [25] Robson, C. (2011) *Real World Research*, 3rd Edn, West Sussex: Wiley.
- [26] Rosen, D. & Jaruszewicz, C. (2009) Developmentally Appropriate Technology Use and Early Childhood Teacher Education. *Journal of Early Childhood Teacher Education*, 30(2), p. 162-171, DOI: 10.1080/10901020902886511
- [27] Subrahmanyam, K., Kraut, R., Greenfield, P. & Gross, E. (2000). The impact of home computer use on children's activities and development. *The Future of Children*, 10(2), p. 123-144.
- [28] Tomopoulos, S., Dreyer, B., Berkule, S., Fierman, A., Brockmeyer, C., Mendelsohn, A. (2010). Infant media exposure and toddler development. *ArchNational Institute of Health*. American Medical Association: New York.
- [29] Tremblay, M., Gray, C., Babcock, S., Barnes, J., Bradstreet, C., Carr, D. Brussoni, M. (2015). Position statement on active outdoor play. *International Journal of Environmental Research and Public Health*, 12(6), 6475-6505. doi:10.3390/ijerph120606475
- [30] United Nations (2010) The UN Convention on the Rights of the Child [online], available: <http://www.childrensrights.ie/sites/default/files/UNCRCEnglish.pdf>
- [31] Vandewater, E. A., Rideout, V. J., Wartella, E. A., Huang, X., Lee, J. H., & Shim, M. (2007). Digital childhood: Electronic media and technology use among infants, toddlers, and preschoolers. *Pediatrics*, 119(5), e1006-E1015. doi:10.1542/peds.2006-1804
- [32] Warburton, W. & Highfield, K. (2012). Children, Media and Technology in Bowes, J., Grace, R. and Hodge, K. (2012) *Children, Families and Communities: Contexts and Consequences* (4th Ed).