The Freedom to Be Yourself: Technology-Themed Social Spaces for Young People with High-Functioning Autism

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Author Statement

We hope to generate further interest in and discussion of the complex intersections of sociality and technology that play out in the lives of young people with autism, with a view to expanding the opportunities for young people to benefit from technology-enhanced settings.

Abstract

This paper introduces a social interaction approach to technology-based autism therapy, as exemplified by Australian program *The Lab*. It deploys digital technologies and learning tools and expert mentoring, within a social setting.

Author Biographies

Greg Wadley is a lecturer in the department of Computing and Information Systems at the University of Melbourne, where he conducts research on technology for health, in particular mental health and behaviour change.

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Author Keywords

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ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g.,HCI):J.3 Life and Medical Sciences: Health.

Introduction

Research involving the intersection of autism and technology tends to focus on the design and deployment of therapeutic technologies for individual use. This paper introduces a social interaction approach that uses existing digital technologies and learning tools, together with expert mentoring, within a social setting. This approach has been developed by *The Lab*, an Australian network of after-school 'technology clubs' for young people with high-functioning autism (HFA) who like computers. Each Lab space acts as a catalyst for the creation of 'differentiated spaces' (Ng et al, 2015) that span online and offline domains, and that allow participants to make new friends, develop social skills and self-confidence, and receive personal technology mentoring by programmers and designers. Documented impacts on child wellbeing have included development of friendships, enhanced happiness, mental health improvements, cessation of harmful behaviors, positive changes to medication management, technical skill development, heightened motivation to learn and increased engagement with school. Impacts on family wellbeing have included new appreciation of children's skills, reduced parental stress, expanded support networks, improved household function, and improved relationships with siblings (Donahoo and Steele, 2013).

The Lab's approach aligns with the views of Attwood (2005) and Baron-Cohen (2000), who argue that HFA ought not to be thought of as a deficit but as an entirely different cognitive style. Attwood summarizes: "The brain is wired differently, not defectively. The person prioritizes the pursuit of knowledge, perfection, truth, and understanding of the physical world above feelings and interpersonal experiences" (p. 46). So

rather than focusing on "solving the problem" of the individual (Baron-Cohen, 2000), the emphasis at The Lab is on creating a context where individuals' strengths are emphasized in a non-judgmental environment populated largely by other HFA people with similar interests. The use and mastery of digital technologies plays well to this focus on knowledge and truth, but also allows for interpersonal development through shared interests. Engagement occurs because many young people with HFA are drawn to computers (Putnam & Chong, 2008). Burke et al. (2010) found that adults with HFA strongly desire social contact, but find it difficult to initiate. Instead they seek it in interest-based online communities, which "provides additional time to think of a response, removes pressure for eye contact, and reduces self-consciousness about paralinguistic cues" (p. 428).

The 'wiring' of people with HFA creates challenges and opportunities for researchers. How is it possible to understand the inner world and life experience of someone who shuns interpersonal interaction and who may react negatively in interview situations? Researchers working with the Lab have grappled with this and related issues (Waycott et al, 2015).

Background

The Lab (www.thelab.org.au) was founded in 2011 to provide a weekly social space where young people with HFA aged 10-16 could meet, make friends and learn new technology skills from expert IT mentors (Schutt et al, 2015; Wadley & Schutt, 2013). The Lab has grown from one site into a national network of 14 sites working with over 300 families weekly. Labs are predicated on two spaces: a flexible space where participants and mentors meet, and another where

Figure 1: the Footscray Lab, Melbourne

parents and guardians meet. This allows parents and guardians to be nearby but for participants to feel they are free of parental oversight. Sessions are unstructured and based on participants' technology interests, with mentors allowing participants to pursue interests in an unpressured manner whilst also suggesting activities based on those interests. Sessions are held in community spaces with Internet connectivity; participants bring their own laptops and can take their projects home to work on.

The Lab concept was initially inspired by the *826 Valencia* project, which combines a writing workplace with a drop-in literacy center for local children, and the *Computer Clubhouse*, an international network of computer clubs for underserved young people based on constructivist principles. When working on a previous project, The Lab's founders saw that the young HFA people they worked with were socially isolated but shared interests related to digital technologies. They also responded well to mentoring. For some HFA people, online connection are seen as stepping-stones to offline friendships; however in the absence of mentoring, attempts at maintaining friendships often run into difficulties because of misunderstandings.

What Happens at The Lab
The Lab offers weekly two-hour sessions at after school or on weekends. These take place at third-party locations that are not home or school. Two software mentors work with 12 to 20 young people. Activities include learning to code, building websites, setting up Minecraft servers, creating a game, designing a comic strip, or experimenting with Arduino kits or 3D printing. Participants are free to play games; importance is placed on not forcing activities on young people, and

the only structured activities are occasional 'Maker' competitions. Sessions are designed to be unlike school, which can a difficult environment for young people with HFA. Instead mentors look for opportunities to suggest creative uses of technology, and point participants to technology learning lessons on the Lab website. Implicit is a recognition of children's need to unwind after school. A number of strategies deployed at The Lab have proved successful in other contexts. These include mentoring (Grandin, 2010), the use of peer settings (Mastergeorge et al., 2003), the harnessing of special interests and talents (Attwood, 1998) and social skills training (Reichow et al., 2012). However relatively little research exists on successful interventions with young HFA people over 12 years old, despite evidence of increasing social impairment and distress with age.

A Different Kind of Space
The term 'differentiated spaces', devised by Ng through her work at The Lab (Ng et al., 2015), recognises online, offline and personal spaces as unique in their own right and capable of facilitating particular forms of communication. However they do not exist in isolation and are dependent on each other to give meaning to a place. In an environment like The Lab, they overlap and interconnect to form distinct cultures of socialisation that extend beyond ableist narratives of sociality (Ng et al., 2015). This draws on notions of space as multidimensional (Gores 2000), involving personal interaction and the effects of proxemics, as well as technology-facilitated forms of interaction.

Building Social Skills
Newer Lab members tend to start with object-centred and computer-mediated communication. Face to face
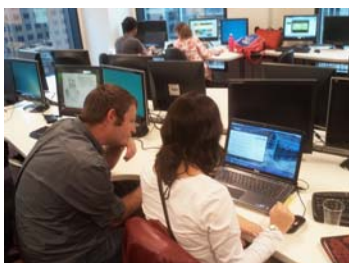
Figure 2: mentor with Lab participant

interaction follows, usually starting tentatively but then developing over time. However these are not distinct, discrete stages. Though they are collocated, Lab participants often use technology to converse with each other, and complex combinations of communication channels can be observed during Lab sessions. A 'social distance' model would predict participants moving from mediated to face-to-face communication as their social anxiety eases. This accords with our observations: at The Lab, face-to-face communication tends to increase as confidence grows. This is why the unstructured nature of the Lab is important: unlike at school, participants can determine where and with whom (if anyone) they sit, thereby retaining control of how much social presence they project and receive. Also having their own laptops with them allows them to feel safe and familiar, and to find a spot that suits them. This is where theories of object-centred sociality (see e.g. Ploderer et al., 2012) are useful, suggesting that Lab participants use technology as a 'ticket to talk' with others in the session.

Conclusion

The Lab can be framed as a form of technology-based therapy. However it is unusual in that it inhabits a hybrid space between mediated and face-to-face communication, generating complex patterns of socialisation that appear to suit some young people with HFA. Here, Computer-human Interaction moves beyond the interface between a person and a technology platform into hybrid social spaces, a rich source of investigation given the increasing ubiquity of technology in everyday life. There is much to learn from these spaces about the subtle and complex interplay of online and face-to-face communication, and the potential of technology to make a positive

difference to people's lives, including - but not limited to - those living with autism.

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