

Visualising Interaction: Supporting Autistic Teens in Self-Directed Explorations of Social Interaction

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Abstract

Autism has typically been seen from a deficit perspective, describing things that autistic people are seemingly unable to do when compared to neurotypical people. As such, much of the support for autism is based on training programmes designed to eliminate undesirable (autistic) behaviour without an understanding of its function or purpose, and without considering that autism might in fact be a different way of “being” in the world, rather than a deficit. Recently, autistic adults and autistic scholars have been speaking out against such approaches. In this paper, I describe a proposed new approach to the development of social skills which is person-centred and strength-based. Rather than seeing autistic people as lacking in social skills, and needing to be “trained”, this paper describes an approach which builds on the skills and desires of autistic individuals, helping them to determine their own social goals, and explore the skills they would like to acquire in a self-directed manner, and within a context which interests them.

1. Introduction: Changing perspectives on autism

Autism is a lifelong, neurodevelopmental condition that has an impact on the way in which a person interacts and communicates with others, and the manner in which they experience the world around them (National Autistic Society, 2016). Definitions of autism in the research literature are typically based on diagnostic criteria, such as those of the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders), in which autism is described using the following two main criteria: “Persistent deficits in social communication and social interaction across multiple contexts” and “Restricted, repetitive patterns of behavior, interests, or activities” (American Psychiatric Association, 2013).

In terms of the first criterion, social communication and social interaction, these “persistent deficits” can take the form of:

1. Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.
2. Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication.
3. Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.

(American Psychiatric Association, 2013)

It’s interesting to note the multiple instances of words such as “failure”, “abnormal”, and “deficits”. Despite the two-way nature of communication, which by its very definition involves more than one party, the onus for any breakdowns in communication seems to rest solely on the shoulders of the autistic person.

As noted above, this deficit model is widespread in the literature, and leads to interventions aimed at training the autistic person to exhibit fewer autistic behaviours in an attempt to be more acceptable to their neurotypical peers, a perspective which is propagated in the Human Computer Interaction (HCI) field. Much of the research in HCI focusses on finding a solution to a “problem”, typically by designing a new technology that aims to solve this problem. It follows that the more severe the problem/issue, the more any technological solution will be noteworthy and important. This stance is seen in multiple papers aiming to design technology for disabled people, whether it is autism, ADHD, dyslexia or other disabilities. For example, in a survey of technologies designed to address issues associated with ADHD (manuscript in preparation), many articles started with a description of people with ADHD as follows: “burden on society”, “unable to make meaningful connections to other people”, “strain on families”, “high likelihood for criminal conduct” and, always and persistently, “deficits in academic performance” (Ymous et al., 2020)

However, whatever the source of these social and communication difficulties, there is no denying that they can have a profound and sustained impact on an autistic individual’s social and emotional well-being, leading to issues with making and maintaining friendships (Kuo, Orsmond, Cohn, & Coster, 2013), resulting in loneliness (Locke, Ishijima, Kasari, & London, 2010), isolation (Chamberlain, Kasari, & Rotheram-Fuller, 2007) and a significantly increased likelihood of being bullied (Cappadocia, Weiss, & Pepler, 2012). Over time, these difficulties can have a profoundly negative effect on mental health (Whitehouse, Durkin, Jaquet, & Ziatas, 2009), and sense of self-worth and self-esteem (Bauminger, Shulman, & Agam, 2004). Furthermore, these difficulties often persist throughout life, with many autistic adults reporting a marked sense of isolation, despite their desire to be more engaged with others (Müller, Schuler, & Yates, 2008; Mazurek, 2014).

In contrast to this traditional, deficit model of autism, there is an increasing movement, particularly amongst autistic researchers and adults, to instead describe autism as a different way of being, as evidenced by this definition from, Nick Walker, an autistic advocate:

Autism is a genetically-based human neurological variant. ...Autism is a developmental phenomenon, meaning that it begins *in utero* and has a pervasive influence on development, on multiple levels, throughout the lifespan. Autism produces distinctive, atypical ways of thinking, moving, interaction, and sensory and cognitive processing. One analogy that has often been made is that autistic individuals have a different neurological ‘operating system’ than non-autistic individuals (Sutton, 2015, p. 11).

Indeed, a number of researchers, many of them autistic, are suggesting that our understanding of autism, and its very definition, is incorrect, on many levels, for example, the long-held belief that autistic individuals are lacking in empathy (Fletcher-Watson & Bird, 2019). Similarly, an increasing number of autistic adults are speaking out against autism interventions that they experienced in childhood which were, at best, ineffective (Bellini, Peters, Benner, & Hopf, 2007) and, at worst, positively harmful (Kupferstein, 2018; Milton, 2018).

In terms of the development of technology to support autistic people (as well as other disabilities), this has serious implications. Firstly, our understanding of autism, and other disabilities, is changing profoundly. In some cases, widely held beliefs are being challenged. As noted above, there is an increasing call to see autism as a different way of being, rather than a deficit that needs to be corrected. However, technology developers are often in search of a problem that can be “fixed” through the technology they design. With autistic individuals increasingly speaking out against the idea that they somehow need “fixing”, then technology designers need to work closely with autistic individuals to understand how technology may support them in ways that are respectful, and learner driven.

2. Autism and social skills development

With respect to social interaction and communication skills, there is evidence that, in the absence of a clear understanding of their needs and desires, and the inefficacy of current interventions, some autistic

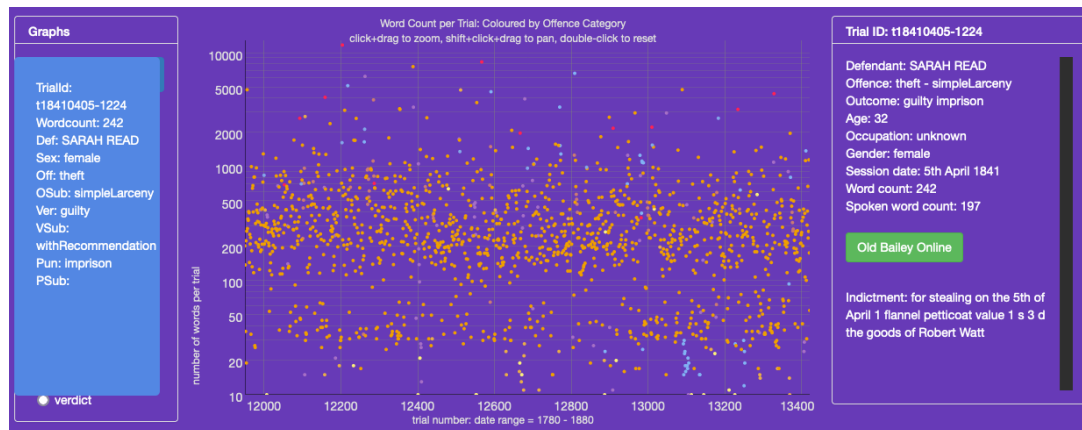


Figure 1 – The Old Bailey Voices macroscope

teens are starting to take matters into their own hands using social media. In some cases, this involves creating their own online communities, for example, AutCraft, a Minecraft server for autistic individuals (Ringland, 2019). However, anecdotal evidence suggests that other teens are using social media such as YouTube as a way of observing social interaction so as to better understand the nuances of social interaction, and reflect on how they might integrate this understanding into their own everyday physical interactions with others.

This research was motivated by an informal chat between the author and a young autistic adult, Louis¹, who explained how, by watching live streams of groups of friends playing Minecraft², he had been able to observe social interaction, and put the skills he had learned into practice in his own life. This way of using YouTube was also noted by another researcher (Beckley, 2019, personal communication), who interviewed autistic teens about the ways in which they use social media. One of Beckley’s respondents noted that, “When I watch British YouTubers just hanging out with their friends and copy what they do, I’m learning how to act British.”

Based on the informal chat with Louis, and with at least one other account suggesting that YouTube had been used in a similar way by another autistic teen, I began to wonder whether it might be possible, whilst still maintaining the self-directed nature of this exploration, to develop tools which could support this process and allow teens to delve more deeply into the specifics of social communication. I was inspired by the Old Bailey Voices project, which is based on the Old Bailey Proceedings Online (<https://www.oldbaileyonline.org/index.jsp>). The Old Bailey Proceedings Online is a fully searchable dataset containing the texts of 197,745 trials which took place at the Old Bailey between 1674 and 1913. Users of the dataset can search for the accounts of specific trials by, for example, the names of those involved, the offence, the verdict and the sentence, amongst others. The Old Bailey Voices project builds on this dataset by providing what the creators call a “macroscope” (see Figure 1), allowing users to visualise the dataset at scale and in detail. Each dot in the graph represents a unique record of a trial, and users can set parameters like those above (e.g. offence) to look at trends in the data, adjusting the level of granularity according to their aims (where, at the level of an individual trial, they can examine the transcript).

An addition to the original project, which was not fully implemented, aimed to recreate the physical experience of appearing at the Old Bailey as a defendant. The aim was to allow users of the dataset to understand the physical and emotional experience of speaking truth to power, and to understand the ways in which the courtroom architecture and layout accentuated this difference, for example, the fact

¹Louis was asked how he preferred to be identified in this article, and the use of pseudonyms was explained to him. Louis stated that his preference was to use his real name so that his contributions to this article, and the ultimate direction of this research, could be correctly acknowledged.

²The Mindcrack network, a group of 24 internet games from across the world - <https://www.mindcracklp.com/>



Figure 2 – The Old Bailey physical recreation

that the judge and jury were in an elevated position with respect to the defendant, the large windows letting in light which would shine directly on the face of the defendant, etc. (See Figure 2).

I therefore decided to carry out an initial pilot interview with Louis in order to better understand, firstly, how he had used YouTube, and the benefits it may have had for him in contrast to traditional methods of teaching social skills. A second aim of the interview was to explore whether there might be technological supports that could scaffold this self-directed learning process in ways that autistic teens might find meaningful, using the Old Bailey Voices project as a starting point for reflection. This first interview was followed by a very brief second interview to seek clarification on some points.

This is obviously just the very first step in the process: the next step will be to work with a larger group of autistic teens to understand firstly, the different ways in which they explore and develop their social skills and whether there is any commonality and secondly, to hear their thoughts on whether technological tools might better support them, and the form that these might potentially take.

3. Pilot Interview: Method

Before starting the interview, the overall aim of the session was explained. Louis was told that he did not have to answer any questions that he did not wish to, that he could stop the interview at any time, and that he could request that part or all of the data not be used, in which case the data would be destroyed. Louis was assured that the data would be stored safely, and would be anonymised (although as already noted, Louis requested that his real name be used). Louis was also asked for his permission to audio record the interview, as it was particularly important that his precise wording was used, rather than being paraphrased, so as to avoid any potential misunderstandings.

Once verbal consent was obtained, a semi-structured interview was carried out using the following guide questions:

1. How did you use YouTube as a teen?
2. Was there a moment when you consciously decided to study social interactions on YouTube?
3. Do you think it helped you?
 - If so, how?
4. Do you remember doing social skills training in school?
 - If so, did it help you in the same way?
 - Why did it help or not help?

A number of leads were followed up during the interview and probed further.

Once Louis indicated that he had nothing further to add about his experiences, he was shown the Old Bailey Voices project (<https://oldbaileyvoices.org/>).

The audio recorded interview was then transcribed. Several passes through the transcript allowed a number of key themes to be uncovered, as described in the section below.

4. Pilot Interview: Observations

Louis reported that he originally started watching videos on YouTube in order to understand how to win certain levels in a game (typically referred to as a “Let’s Play” or LP). He then moved on to watching videos in which groups of people played videogames together and live streamed their experience.

Louis noted that watching live streams allowed him to observe social situations. In his words, it gave him the opportunity “to be within a social situation, a conversation between friends without having the stress of having to say anything, but just being able to be part of it.”

He noted that this type of learning felt very natural to him, in much the same way as young children learn language, i.e. by observing and copying.

He felt that watching these conversations allowed him to observe every facet of conversation, for example, seeing when someone uses a particular facet, and the type of person who uses it. For him, it was, “seeing people who had friends, were clearly good enough at conversation to do all that, to see how they do it.”

He noted that the fact that he had an interest in the topic was also important: “For me, it happened naturally. I didn’t think, ‘I’m going to learn social skills’, I just happened to enjoy watching people play video games, and then found myself constantly listening to conversations, hearing jokes, hearing stuff like that, then wanting to say that myself.”

Louis felt that this process was very helpful “because you know what to do”. He noted an analogy to sports, where there were huge gains in skill level in basketball in the 1980s and 1990s as a result of basketball games being televised, a phenomenon that has increased significantly with the advent of the internet. As Louis noted, “...you get kids who are just glued watching perfection, all the time.”

In terms of the social skills training that Louis took part in at school (involving him and three other autistic young people), he did not feel that it had been helpful. He noted that in contrast to the social skills group at school, “his training” (i.e. watching YouTube videos of gamers) involved him being with a demographic of people he liked, and aspired to be like, whereas the school group involved him being with people he was not friends with. He was also concerned that the age differential between the participants and the facilitator could be problematic: “Realistically, you want to be getting better at social skills to talk to the people that *you* want to talk to. If you’re a teenager, you’re not going to be wanting to be talking to 40 year old academic professors. But those are the people who are going to be training you. So those are the people that you’re going to learn to be comfortable with. And while it’s not a bad thing, it’s not as specific as being more comfortable with people your age and your demographic.”

Louis further noted, “Surely, the best way of ‘social skills training’ would be a mix of what I did, being able to observe social situations between the kind of people that you somewhat aspire to be like, or conversations you want to have. And then a mix of having those people in real life to experiment with.” He made an interesting observation that neurotypical children develop their social skills naturally through being at school, however, because these skills may be somewhat delayed in autistic children, relative to their peers, they may not be able to practice these skills in the same way. Louis stated this very eloquently as follows:

‘And that’s why I think what I did was so useful as an autistic person because I’d reached the point ... where I wasn’t on the same level as my peers conversationally, so I wasn’t going to keep getting better because I couldn’t get on their level already, so how was I going to

get better? So being involved in those YouTube conversations: no one was ever going to take me out of those conversations, I was never going to be awkward, I was always going to be there, and so I was always going to be able to keep observing things. And if I didn't understand something, I'd go back 10 seconds.

Louis also felt that the YouTube videos were an important source of information because they offered a realistic view of human interaction whereas watching television provided an idealised view. He was concerned that autistic people might think that the idealised view portrayed on television is the norm and, consequently, feel even worse about their own skills:

How's an autistic kid, when they've only ever seen people say perfect things, how is he going to react when he messes up what he's saying? But I've heard real people mess up what they're saying, and still get their point across. So that's what I did, instead of freaking out.

When Louis was shown the Old Bailey Voices project, and asked whether a tool which would similarly allow autistic teens to examine conversations and social interactions in a structured and analytical manner, he was sceptical. On the one hand, he felt that breaking a conversation down to that level of detail would be too much for an autistic person, and would lead to cognitive overload. But he also questioned whether it might lead to decontextualised skills:

I think autistic people would be better suited to learning more the general cues of other people, so that, instead of thinking, 'Oh, I've talked for this long and I'll stop', they can talk and then let the situation guide them, and look over at the people with them, and think, 'All right, this person is responding like this, this person is responding like that. Clearly, I'm getting a bit boring. I should change what I'm saying, or involve someone else in the conversation.' I think this takes it a bit too far away.

Louis also felt that adding these analytical tools would alter the incidental nature of the learning he experienced: "I wasn't learning, I was just enjoying myself watching content. It's like I said, it's like kids learning languages, you just do it because you're there."

Louis did mention that perhaps such a tool would be useful for practitioners, rather than autistic children in the sense that they could use such tools to select specific videos which depicted certain situations with which the child was struggling:

So if a child has problems with, when someone teases them a bit, they get a bit flustered, and even if no one's really trying to hurt them, they get hurt and they can't function in the conversation, then maybe some of the content they watch heavily has a guy who's constantly getting [aside to the interviewer: 'Can I swear?', Interviewer: 'Yes'] the piss taken out of him and he deals with it really well. And so then they get to watch that and see, "All right: he says this. He says that".

In terms of advice for tools that might be useful, Louis again drew an analogy with sports, and suggested that good coaches create sports interventions which are clearly aligned with the situation in which they expect the skills will ultimately be used. He noted the importance of specificity and of understanding all of the variables at play:

Because immediately when you said, "Oh, they do that stuff in their little group", that makes me think, "All right, well, when they go into a classroom with thirty people, whatever they *could* do with four people, does that mean anything when their anxiety is much higher? Does this "training" transfer?

He reiterated the need to examine the extent to which what you are doing in a training/practice situation is similar to what you're trying to accomplish.

Being in a group of four: that might transfer a little bit to a group of thirty. But it's kind of like getting stronger at the gym for sprinting. Being good at expressing force in a really slow environment (the gym): will that really help you express it in a fast environment? Similarly, learning social skills in a really small environment (a social skills group): will that help you express them in a big environment?

5. Pilot Study: Reflections

A number of very important points came out of the initial interview. The features which contributed to the success of Louis' experience seemed based on a perspective in which learning:

1. is incidental, occurs naturally;
2. occurs in the context of a topic of interest;
3. involves one's peers and people that one admires and aspires to be like;
4. involves two stages: an initial observation stage, and the opportunity to try things out;
5. features realistic, rather than idealised, content.

This creates some obvious issues with respect to the approach initially considered, based on the Old Bailey Voices project. For a start, the Old Bailey Proceedings Online is a purely text-based dataset, even if it is being used as the basis for trying to create a 3D experience of the trial. Secondly, providing such tools transforms the learning from something which occurs naturally in a motivating environment, to something which takes centre stage, thus fundamentally changing the nature of the endeavour. Thirdly, it was felt that this additional information would simply be too overwhelming.

Another interesting point which arose from the interview was that, although strictly speaking Louis was only observing these conversations, he frequently spoke of them as if he were actively involved, for example, "**to be within a social situation**, a conversation between friends without having the stress of having to say anything, but **just being able to be part of it.**" or "**So being involved in those YouTube conversations: no one was ever going to take me out of those conversations**, I was never going to be awkward, **I was always going to be there...**". This issue needs further exploration, given that it is based on a single account, but it might suggest that young people who are observing these types of social interactions might be experiencing a greater sense of immersion and social presence than one might typically expect.

6. Pilot Study: Follow up

During the first interview, I was struck by Louis' observation that it was important to create an environment for developing skills that would be as close as possible to the situation in which the skills would be used. Indeed, he noted that learning skills in a small group might not translate to a classroom setting where anxiety levels are likely to be higher. At the same time, it would probably be very difficult to develop these skills in the larger classroom because of the associated anxiety.

I probed these aspects further in a very short second interview, asking specifically about the transfer from small settings to large, and how technology might support that:

Louis' immediate response was:

Background noise. If you add increased background noise, you've got that [simulates chaotic noise], because that's something that they'd have to deal with in a class of thirty, but not in a room with four people.

You know, this is not my field, but that is something that they will have to deal with in a class of thirty. So depending on whatever sort of training this is, I don't see why, unless it made them too uncomfortable, why it wouldn't be a good stimulus to help them try and get used to dealing with that, like increased background noise levels or something like that.

We discussed the idea of creating a virtual practice environment where the setting could be modulated in such a way that teens could experiment with their skills in different settings (e.g. a group of fellow gamers, a classroom setting, etc.). This means that the initial activity of observing social skills via videos is not altered in any way, and thus retains its enjoyable quality.

Louis agreed with the general idea, but felt very strongly that these skills should not be explicitly taught.

Like I said, I'll reiterate: it's not about *teaching*. It's not about *knowing* something, it's about *doing* something. And so I think, who gives a shit if you *know*? Like if you ask the most charismatic person how they do a conversation, they're not going to *know*, they just *do* it.

Instead, he felt that children should be able to develop these skills as a result of interacting within a virtual environment in which various elements of the environment (e.g. background noise, number of participants, setting) could be modified so that children can experience practising their skills in many different contexts and become more confident in doing so.

We shouldn't teach autistic kids "Oh, this type of sentence" and whatever, we should just throw them in, say that you're going to have to deal with it, you're going to get better, and eventually you'll know what to do.

When we're having a conversation, we're not thinking about what we're doing. We're just seeing information and we're reacting to it and whatever. So why should we teach it as something you should think about? We should teach it as something reflexive. And so, in that, I think it should always be that your job is to create the environment, and the child should just have to respond. The child should just only ever have to respond to the environment and your job is to make the right environment for the kid.

A further important point highlighted by Louis was the fact that the environment should not just be a replication of reality. Instead, it should be highly modifiable so as to give the child experience of interacting in environments which they might typically find challenging.

7. Conclusion

This paper was a initial reflection on how to best support self-directed social skills development for autistic teens and children, against the backdrop of our evolving understanding of autism, and of the types of support which might be helpful.

Through an initial interview with Louis, an autistic young man, we were able to sketch out a vision for technology in which young people can begin by observing groups of people involved in activities that they themselves value (in this case, video games), a stage in which any learning is incidental to the main activity. In a later stage, teens can enter a virtual environment in which different aspects of the environment can be modulated so as to allow them to practice their skills in a safe space before trying them out in a physical setting. It's important to note that in some cases, teens may be able to determine their own goals, and areas for practice (and should be encouraged to do so where possible), but at the very least, this goal setting should be a discussion between a young person and a facilitator (if necessary), such that the young person retains as much autonomy and self-directedness as possible.

As noted above, this is just the very start of an investigation into the desirability and feasibility of providing this type of support, and it may be that the direction changes over time (as it will continue to be

guided by the desires of autistic teens). At the same time, whatever its final form, this interview points to the importance of moving away from behaviourist methods of training for autistic young people, which have limited effectiveness in any case, and reduce the young person's autonomy and sense of control over their learning, to constructivist approaches which allow for exploration, choice and autonomy in more realistic settings.

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