



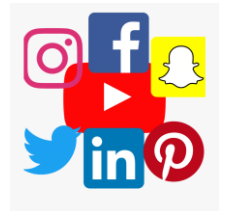
The type and prevalence of technology-use in people with Down syndrome

Thank you for taking part in our questionnaire exploring patterns of technology-use in people with Down syndrome. We hope you find this research summary interesting and useful.

What we already knew

In typical development, technology plays an important role in young people's cognitive, social, emotional, and physical development. It provides opportunities to be creative, to build and maintain social contacts, to enjoy leisure activities such as gaming, to access educational activities, and to develop independence e.g., through assisted navigation. Many learning interventions have successfully made use of technology to develop skills in areas such as spatial ability, working memory, early mathematics, and reading, but there are also plenty of leisure-time activities that use technology.

Gaming and social media are two particular aspects of technology-use that are often associated with parental concerns. Gaming can encourage sedentary behaviour and take time from other activities such as homework. Caregivers have concerns about inappropriate content, the risk of being bullied, and the pressure to buy in-game content. Similarly, greater use of social media relates to lower satisfaction with body image, and caregivers have concerns about access to dangerous people and inappropriate content, as well as bullying online.



What we wanted to find out

There is limited research about technology-use in people with Down syndrome. This research is vital for ensuring that technology-based learning and intervention tools can be designed most-effectively for individuals with Down syndrome, and to give caregivers useful information about technology use in the wider community.

Our research had three main aims

1. To identify patterns of technology, gaming, and social media use
2. To identify associations between caregiver characteristics and technology-use
3. To determine the impact of individual differences (e.g., age) on technology, gaming, and social media use

What we did

We designed a new questionnaire, **the Technology, Gaming, and Social media Survey (TOGSS)**, and invited caregivers with a son/daughter aged 5 to 35 years with Down syndrome, to take part. We had 220 participants who completed the whole questionnaire.

Note when we use 'participants' in the next sections, we are referring to the son/daughter with Down syndrome.

- The average age of participants was 15 years 8 months (Age range from 5 to 34 years). 51% were male and 49% were female.

Patterns of technology, gaming, and social media use

- Televisions and tablets were the most popular devices.
- The most popular activities were watching programmes, listening to music, gaming, and viewing/taking photos. Other very popular activities were social communication, school-related use, social media, finding out information and everyday life skills.
- 76% played computer games, and 41% used social media. The most popular reason for not gaming was that their son/daughter wasn't interested, whereas the main reason for not using social media was that they weren't allowed.
- Almost all caregivers (98%) felt that technology played an important role in their son/daughter's life.



User-difficulty and concerns:

- Only 7% had hardware adaptations such as colour-coded keys, larger keys, and a special mouse. 27% used software support, e.g., apps for reading, writing, & maths.
- 53-55% of participants had difficulties using a mouse, trackpad or keyboard and this increased to 65% for voice-activated technology. 84% preferred touchscreen technology and only 36% needed particular settings in order to use technology.
 - More than half of caregivers' were concerned that social media might have a negative impact on mental health (55%) and 47% worried about online communication. A fifth of caregivers had concerns about their son/daughter accessing inappropriate material, and a third were worried about bullying.
 - Conversely, over half (57%) said that social media helped their child to make friends, and 81% considered it important for communication and friendship.
 - There was lots of variation in when caregivers plan to stop monitoring technology use, including once they are 18 years or older (25%), and others who will always monitor (17%).



Caregiver concerns and level of confidence:

- Caregivers who had greater confidence in using technology themselves, were more confident teaching and supporting their son/daughter.
- Concerns about social media were associated with greater desire for information about using technology.
- Caregivers who set access or time restrictions on social media had a higher level of concern.

Impact of caregiver characteristics on their son/daughter's tech use:

- There was an association between greater caregiver concern about social media and lower social media use.
- There was no other evidence that caregiver concerns, confidence, or time and access restrictions related to technology, gaming, or social media use.

Impact of individual differences:

- Participants spent more time on activities using technology than activities which don't use technology.
- There was a greater use of technology and social media with increased age.



Take home messages

- Need improved design of technology-based interventions and learning programmes using touchscreen rather than mouse and incorporating engaging features – colours, movements, sounds
- Integrating technology may be particularly useful for older individuals
- To increase uptake, parents/caregivers are key
- Need for parental information on safe use of technology and social media
- Need to improve parental confidence in supporting their son/daughter with technology



Next steps

We will be inviting other participants to complete the survey, so we can find out more about technology use in other groups of people with neurodevelopmental disorders, such as those with Williams syndrome. If you have any questions or would like any further information about this study, please contact us at DSresearch@surrey.ac.uk.

Thank you for taking part in this important study.

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