Abstract

The current study sought to learn more about the difficulties people with Down syndrome and other forms of intellectual disability encounter when using social media. The study also sought to understand the complexities of online safety and cybersecurity issues this demographic faces and identify the unique obstacles they face while using social media platforms like Twitter. The posts on Twitter are highly subjective, which makes them appropriate for sentiment classification. In supervised machine learning approaches, data labelling is integral, and it is often difficult to manually verify labels on a large data set. The first step was to label the tweets for this study using Python-based libraries such as VADER and SentiWord Net. The sentiments were categorized as either positive, negative, or neutral based on the overall sentiment expressed in the tweets. Using the transformers model and the Top2vec model, the study performs polarity detection of the sentiments an compares the polarity of these sentiments between the IDD participants and the control groups. The study establishes that people with IDD face more negativity in cyberspace than in the control group.

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Purpose

This study seeks to learn more about the difficulties people with Down syndrome and other forms of intellectual disability encounter when using social media and understand the complexities of online safety and cybersecurity issues this demographic faces.

Methods

Twitter application programming (API) was used to search for self-identified profiles that tweeted in English. The collected profiles helped in creating the cyber challenges data set.

Keywords were used to identify individuals with an intellectual or developmental disability (IDD) and other general learning disabilities. Approximately 150 profiles were established and filtered based on common expressions to remove individuals who did not meet the inclusion criteria, and a final 128 profiles were identified.

Results

The sentiments were categorized as positive, neutral, and negative. Each group's frequency was evaluated based on the number of tweets. Individuals with IDD profiles expressed significant neutral (47.2 %%) and negative (36.2%) emotions in cyberspace. A majority expressed experiencing bullying, attributed to the sentiment scores in the figure below. Only a small fraction of users (16.5%) reported positive sentiments in cyberspace. Compared to individuals without IDD, individuals with IDD recorded a higher average of cyber challenges (cyberbullying and toxicity). Non-IDD users had an increased frequency of positive sentiment scores (52.5%) in social media. However, a significant proportion of negative sentiments was recorded (31.3%). A small section of the participants (16.2%) expressed neutral emotions in the cyber environment.

Conclusion

The study establishes that people with IDD face more negativity in cyberspace than in the control group.