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**Title: Online Safety Experiences of Autistic Young People: An Interpretative
Phenomenological Analysis**

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Abstract

Background: Many autistic young people use online devices for social connection and to share interests. However, there is limited research regarding autistic online safety behaviours. Compared with non-autistic children, parental surveys have indicated that autistic young people are less likely to block people and/or online sites. To date, no research has explored autistic young people's perceptions of their online safety experiences. This qualitative research explored autistic young people's experiences of communicating with others online, as well as their online safety experiences.

Method: Semi-structured interviews were conducted with 14 autistic young people aged 11 to 17 years ($M= 14.0$, $SD= 2.2$), including 8 males ($M= 13.9$, $SD= 2.1$) and 6 females ($M= 14.5$, $SD= 2.5$). These were conducted face to face ($n= 1$), phone call ($n= 2$), or via Skype ($n= 8$) or live web chat ($n= 3$). Questions explored factors relating to autistic young people's online safety experiences.

Results: Interpretative Phenomenological Analysis was used to analyse the data. In line with previous studies, autistic young people reported being victims of cyberbullying. Young autistic females reported being subject to online sexual harassment. While participants' online experiences varied, there were commonalities, including a desire for more support to block online comments and/or individuals.

Conclusions: Our results support previous findings that autistic young people are subject to online harassment and are not confident blocking unwanted contact from others online. Future interventions will be more readily accepted and ecologically valid if they address the unique needs of autistic young people.

Keywords: autism; online safety; qualitative research; IPA

Introduction

Autistic young people are active online users¹ (Hedges et al., 2018; MacMullin et al., 2016), many use social media and online gaming sites for social connection and to share interests (Grove et al., 2018; Mazurek et al., 2015; van Schalkwyk et al., 2016). Autistic children can have difficulty pausing and/or switching off their online devices and engaging in other hobbies (Mazurek et al., 2015, Mazurek & Wenstrup, 2013). Studies have reported a positive correlation between the likelihood of children experiencing online security risks and time spent online (Rideout, 2013; Rideout, 2017). Therefore, autistic young people could be considered an “at risk” group for online safety issues.

Online risks incorporate a heterogeneous set of intended and unintended experiences which increase the likelihood of harm to an individual. These include contact risks (where the child participates in risky peer or personal communication), content risks (where the child is a recipient of unwelcome or inappropriate mass communication) and conduct risks (where the child acts themselves to contribute to the risky contact or content) (Hasebrink et al., 2008; Staksrud & Livingstone, 2009). Contact risks cover sexual grooming and cyberbullying, content risks include phishing attacks and downloading harmful malware, conduct risks encapsulate, but are not limited to, inappropriate posting and unauthorised spending. Each of these will be discussed as to whether autistic young people are at risk pertaining to certain online safety risks.

1.1 Contact Risks

With regards to contact risks, autistic young people may be susceptible to experiencing these. Existing studies suggest that online contexts promote a more “autism friendly” environment for this

¹ For clarity, 'autistic young people' will refer to autistic young people aged 11 to 18 years. Therefore, we will use the term 'autistic children' to refer to those below the age of 11 years and 'autistic adults' for those aged 18+ years throughout this paper, where appropriate.

population to communicate. Many autistic adults use social media for interactions, with some stating a preference for online over face-to-face communication (Gillespie-Lynch et al., 2014; Mazurek & Wenstrup, 2013). On one hand, there are benefits to online communication for autistic adults, including increased comprehension and control of the pace (Gillespie-Lynch et al., 2014). However, online risks and miscommunication can occur. Psychological theories posit that autistic and non-autistic people have difficulties understanding each other, which can lead to breakdowns in two-way social interactions (Milton, 2012). The increased reliance on online communication, together with difficulties understanding communication with non-autistic people, may together increase the risk of cyberbullying victimisation.

Adult studies have raised some of the issues that autistic females face. A recent study found that 79% of autistic women had suffered sexual exploitation or abuse compared with 26% of non-autistic women (Sedgewick et al., 2019). Another qualitative study used semi-structured interviews with 6 autistic women aged 19 to 29 years. Key themes from the interviews included child sexual exploitation. One participant disclosed that she had experienced online grooming (Landon, 2016). These results indicate that autistic females may be vulnerable to online sexual exploitation. However, it is unclear if a similar pattern exists for all autistic young people. Further investigation is warranted to explore whether autistic young people report similar experiences, regardless of gender.

1.2 Content Risks

Phishing or hacking involves the “unauthorised use of, or access into, computers or network resources, which exploits identified security vulnerabilities in networks” (McGuire & Dowling, 2013, p.5). Detecting these attempts will involve identifying visual cues that indicate the link is fake. Autistic adults can outperform their non-autistic peers on visual search tasks (Shirima et al., 2017). These enhanced skills may help autistic young people detect potential content risks. A recent phishing study compared 15 autistic versus 15 non-autistic adults performance on distinguishing between real and fake websites. No significant differences in detection accuracy were reported (Neupane et al., 2018).

To the best of knowledge, there have no studies investigating the ability to detect phishing attempts among autistic young people. Inhibitory control refers to the suppression of goal-irrelevant stimuli and subsequent behavioural responses (Tiego et al., 2018). Research suggests that autistic children struggle to inhibit responses and actions to risky scenarios (Christ et al., 2007), particularly if it is associated with a special interest or reward (Mosconi et al., 2009). Depending on the perceived reward, the heterogenetic nature of autism may make some autistic young people less prone to phishing attempts than others. It is possible that if a reward is in line with an autistic young person's interests, they may be less likely to spot potential content risks. However, if not, the perceptual abilities of some autistic young people may act as a protective factor. Nonetheless, no studies to date have investigated first-hand experiences of these among this population.

1.3 Conduct Risks

Considering the above evidence regarding potential inhibitory control among autistic young people, this may play a role in whether they are subject to "conduct" risks, where they contribute themselves towards the risky contact or content. Just and Berg (2017) reported on the results of two workshops with 16 parents/carers of autistic children and young people in which they used pictures and group discussions to identify online safety concerns. Risks experienced included unauthorised purchases and inappropriate posting on social media sites. A recent parental survey of parents of autistic and non-autistic children and young people reported significant associations between having autism and unauthorized online purchases (Macmillan et al., 2020). These findings suggest that autistic young people may experience difficulties anticipating the potential consequences of their online decision making. However, these studies were carried out with parents/carers of autistic young people. Given that online safety risks may not all be captured by parental reporting, it is important that autistic young people are involved in research about their online safety experiences.

1.4 Managing Online Safety Risks

From the few studies addressing online safety risk management, parents are reported to restrict autistic children's online use via parental apps or switch off and remove device(s) (Clark et al., 2015; Sasse, 2015). However, this is likely to involve a compromise between reducing the likelihood of a child experiencing risks online and limiting their independence (Livingstone & Haddon, 2009). Considering the benefits of online devices for social interaction and sharing interests, restricting autistic young people's online device use will remove opportunities for pleasure and managing risks themselves. Moreover, the settings on parental app(s) may be switched off or not readily accepted by autistic young people. To date, no published research has investigated autistic young people's accounts of online risk management. It is therefore important to understand their lived experiences to increase insight regarding their online safety awareness and how this affects their risk management strategies. Therefore, it is crucial that a framework is chosen that focusses on how an autistic young person makes sense of their online safety experiences.

1.5 Rationale for Chosen Framework

Within the field of autism, qualitative research has often received less consideration and funding (Bolte, 2014). There is a growing call for research that engages stakeholders, including autistic people (Fletcher-Watson et al., 2018). Autistic narratives have highlighted the benefits of co-production, including originality of thought, that autistic people provide to research (MacLeod, 2019). A review has highlighted that qualitative interviews have been successfully utilized to investigate the lived experiences of autistic people (Howard et al., 2019). This study will use a qualitative methodology to explore the online safety experiences of autistic young people, to improve understanding of autistic online safety behaviours by providing insight into their subjective experiences.

Interpretative Phenomenological Analysis (IPA) requires researchers to consider the impact of their own experiences and preconceptions on research design and procedures. This reflexivity acknowledges potential discrepancies between the participant's words and the researcher's interpretation of them. Therefore, a 'double hermeneutic' forms, whereby the researcher is making sense of the participant's account, who is, at the same time, making sense of their own experiences (Smith, Flowers & Larkin, 2009). Given IPA's reflective nature, autism researchers have argued that this helps to alleviate the 'double empathy problem' that can reduce the credibility of autism research as well as being an effective research tool (Howard et al., 2019; MacLeod, Allan et al., 2018; Milton, 2012).

With regards to autism research, there is a growing move away from a medical framework in which the autistic people's experiences are judged from the outside (Williams, 1996). IPA encourages exploration of how societal factors influences an individual's experience, (Lopez & Willis, 2004). Considering that autistic young people's lived experiences are largely shaped by such factors (Cresswell et al., 2019), IPA is useful for exploring these (Howard et al., 2019). There is limited understanding of 'insider interpretations' (Pellicano et al., 2013), therefore IPA will be used to develop more in depth understanding of autistic online safety experiences.

1.6 Aims and Research Questions

The aim of this study was to explore autistic young people's online safety experiences. This study sought to answer the following research questions:

- (1) *What are the lived experiences of online safety among autistic young people in our sample?*
- (2) *What are the lived experiences of managing online safety risks among autistic young people in our sample?*
- (3) *What are the preferences in terms of improving online safety among autistic people in our sample?*

2. Method

2.1 Participants

This study used purposive sampling for participant recruitment with the following inclusion criteria; that they had a diagnosis of autism in the United Kingdom (UK), were aged between 11 to 18 years, and used online devices. 14 autistic young people aged 11 to 17 years ($M= 14.0$, $SD= 2.2$), including 8 males ($M= 13.9$, $SD= 2.1$) and 6 females ($M= 14.5$, $SD= 2.5$) were recruited. Participants' and parents of those under the age of 16 years responded to a recruitment call for autistic young people aged 11-18 years who used online devices. All of the participants (and parents where appropriate) confirmed that they had an autism diagnosis via email with the first author. Our sample size is small and homogeneous, thus adheres to the principles of IPA and is in line with the wider body of autism research studies which have utilized this framework (Howard et al., 2019).

2.2 Materials and Design

The semi-structured interviews were designed to explore factors relating to the autistic young people's online safety experiences. Interviews were recorded on a Sony ICD-B140 dictation machine before being transcribed. A debriefing form was emailed to participants aged 16 years and over at the end of the interview. If the participant was under the age of 16 years, the parent/guardian who consented for them to take part in the research was emailed the debriefing form.

2.3 Procedures

Ethical approval was granted from the Department of Computer Science Ethics Research Panel at Heriot-Watt University. Before collecting any data, participants were directed to complete a physical or

online information and consent form. Parents of autistic young people under the age of 16 years were required to read an information form and consent to their child taking part in the interview. Participants aged 16 years and over were directed to read and approve their own information and consent form. All were required to consent before proceeding further.

Upon receiving the completed consent form, participants were given the choice of the interview format. Studies suggest that some autistic people find face to face communication and direct eye contact uncomfortable (Madipakkam et al., 2017), so interview options included having it via phone call, Skype or live webchat, as well as face to face. Phone call interviews have been cited as a useful method for conducting qualitative research (Sturges & Hanrahan, 2004). Moreover, phone calls have been used successfully in IPA research as a method of interviewing autistic children/adults (Petalas et al., 2015). IPA studies in the autism research field have used a range of data collection methods (Tsai et al., 2018), so options were provided, including live-webchat. To the best of our knowledge, no IPA studies with autistic young people have utilized live webchats for data collection. However, research suggests that many autistic adults prefer online communication over face-to-face interaction (Gillespie-Lynch et al., 2014; MacLeod et al., 2018), so the live-webchat option was included.

Interviews were conducted face to face (n= 1), phone call (n= 2), Skype (n= 8) or live web chat (n= 3). In line with previous studies (Maloret & Scott, 2018; Petalas et al., 2015; Tierney et al., 2015), the interview questions were piloted with an autistic adult and revised to ensure that they were readily understood and an appropriate length for participants. For example, it was discussed that the original wording of “technological devices” was unclear and the phrase “online devices” was clearer, so this was changed to reflect this feedback. An outline of the interview questions was emailed ahead of time to allow participants time to familiarise themselves with it. Previous autism studies have done this to help reduce any potential anxiety regarding what to expect in the interview (Cridland et al., 2014; Huws & Jones, 2015; Petalas et al., 2015). Each interview was audio recorded to ensure an accurate record of interviewees’ perspectives. Participants were interviewed individually but were given the option to be accompanied by an adult. One participant chose to have a parent present. All interviews were conducted by the first author. Prior to the interviews, it was emphasised that participants could

stop the interview at any time and/or move onto the next question. Before beginning, the interviewer asked participants an introductory question about their interests. This was done to try and make the participants feel comfortable as special interests are indicated to be important to autistic people and discussions about said interests have been noted to help build a rapport (Grove et al., 2018; Howard et al., 2019). A semi-structured approach and interview script was used to allow the interviewer to guide each participant through their online experiences (see Table 1). To facilitate this process, reflecting and probing techniques (e.g., 'You mentioned that ... tell me a little bit more about that?') were utilized. This allowed the participants to direct the content of the interview and prioritise issues which they felt were important to talk about. Previous studies in the area were reviewed and interview questions were based on those as well as a previous online parental survey conducted by the authors which identified key areas in autistic children and young people's online safety behaviours (Macmillan et al., 2020). The interviewer wished to understand how the sample viewed online communication given that there is published evidence that autistic young people are active online users and use online activities for social participation. The interviewer sought clarification throughout ensure that they were interpreting the participant's account appropriately.

Interviews with the autistic young people lasted on average 30 minutes, ranging between 19 and 45 minutes. None of the participants indicated distress pre, during or post interview. Each participant received a £20 Amazon gift voucher as a thank you for participating. This was unconditional to them finishing the interview.

Table 1

Interview Script

1	a. What kind of online devices do you use? b. Where do you use online devices? c. Why do you use online devices?
2	a. How do you find communicating with other people online? b. How do you find this compares with how you communicate with other people face-to-face?
3	Can you please describe what online safety means to you?
4	Can you please describe what kind of online safety risks you have experienced?
5	a. How do you find going online makes you feel? b. Can you please describe anything positive or negative?
6	Can you please describe how you try to keep yourself safe online?
7	a. Can you please describe what others do to try to keep you safe online? b. Can you please describe who does that/these things?
8	Can you please describe what things would make going online better for you?

2.4 Analysis

All interviews were recorded, anonymised and transcribed verbatim in English. These were analysed using IPA. In order to ensure that this was the most appropriate analysis, the first author consulted with an IPA researcher regarding the length and depths of the transcripts prior to data analysis. Therefore, these were deemed appropriate to undergo IPA in order to explore the linguistic features and meaning in the data. In order to maintain an idiographic approach (Smith et al., 2009), each transcript was analysed separately. The first author sought to understand the individuals' own perceptions of their experience, without extensive prior theorising. This is in line the phenomenological aspect of IPA (Smith, 2017; Smith et al., 2009). The first interview transcript was read and re-read line by line by the first author in search of descriptive, linguistic and conceptual

significance. The first author engaged in a process of repeated reading, annotation, and reflection. Once an initial list of themes was established, the other transcripts were analysed, and amendments were made where necessary. This process then led to the clustering of superordinate themes followed by subsequent readings of the transcripts to confirm the suitability of these themes (Smith et al., 2009). Following checks, insignificant and overlapping themes of the sample data were then discarded or collated to create a master list of superordinate and subordinate themes. The prevalence of themes across participants is recorded in the results section.

Smith's (2011) guide for evaluation of IPA research was used to increase the rigour of the analyses. The first author wrote down reflections during the data collection and analysis process. Moreover, they discussed their prior assumptions regarding the area of research before and during these two stages to check for any potential biases. The themes were checked by the second, third and fourth author in order ensure that these were evaluated with checked by the second and fourth authors to ensure this process was carried out with more than one with perspective. In instances when there was disagreement, all authors discussed these and, where necessary, amended the subthemes and superordinate themes. For example, following checking of the extracts by all of the authors, a subtheme formerly referred to as "Yearn to Block Unwanted Contact" was revised to "Support to Block Unwanted Contact" following discussions that the latter captured participants experiences of wanting support to block unwanted contact, as opposed to doing this completely independently by themselves more accurately than the former. This process was carried out until all the authors were satisfied. In the write up of the results section, all authors endeavoured to adhere to four quality indicators of high quality IPA research: constructing a compelling, unfolding narrative; developing a vigorous experiential and/or existential account; close analytic reading of participants' words; attending to convergence and divergence (Nizza et al., 2021). As for the abbreviation at start of the quotes, F marks extracts from female participants, and M marks those male participants. The second letter stands for the participant ID. It is noteworthy that [...] represents missing text.

3. Results

Three superordinate and nine subordinate themes were extracted from the data (see Table 2). The first superordinate theme, 'Impact of Online Activity', illustrates the impact of online contexts on participants experiences. The second, 'Online Risk Management' refers to the strategies participants perceive as keeping them safe online. The third, 'Desire for Practical Solutions' encapsulates what participants reported would help to improve their online safety experiences. Each subtheme is outlined below with extracts from the participants' own words to capture the nuances of their online safety experiences to increase 'internal coherence' (Smith, 1996).

Table 2

Emergent Themes

Superordinate Theme	Subtheme
Impact of Online Activity	Benefits of Online Communication
	Drawbacks of Online Communication
	Challenging to Inhibit Online Responses
	Unwanted Online Sexual Harassment
Online Risk Management	Avoids Online Contact
	Parental Mediation
	Checks for Visual Clues
Desire for Practical Solutions	Require Contemporary Training in Schools
	Support to Block Unwanted Contact

3.1 'Impact of Online Activity'

3.1.1 Benefits of Online Communication

With regards to online communication, this subtheme draws upon the associated benefits compared with offline. Participants highlighted that online contexts facilitated the removal of direct eye contact (M2: "don't have to look at them'), which reduced pressure on online social interactions (F5: "means I

can talk to my friends without being pressured to make eye-contact”). One participant vividly highlighted the allowances that online platforms offered her:

F3: ‘It’s easier than in person. It’s not as intimidating, and you don’t get as anxious because they can’t see you and you have more time to think about what you are going to say rather than saying something very quickly. Because I am autistic I don’t really recognise social cues. I struggle to make eye contact and if people are getting bored I won’t notice. I sometimes won’t know what to say so need to think for a bit longer and you can’t really do that when someone is talking to you or waiting for an answer.’

Specifically, participants described it enabled more clues for gaging online interactions. One participant specifically noted the benefits of online profiles providing information for her to draw on in online conversations:

F2: ‘[...] let’s say you see a stranger on the let’s say you see a stranger on the street, you are not going to be able to gage too much from them, but if you have someone online and you want to talk to them they will have this profile where you go and see what they look like and they like this and ooh I can bring that up in conversation or go onto that. So, you have this backlog of stuff to look at I guess’.

3.1.2 Drawbacks of Online Communication

This subtheme relates to the lived experiences of flaws specific to online communication. Participants reported that there was a lack of clues (F1: “When you’re online you don’t know what they’re doing so you don’t have that don’t have that physical reaction”), including physical reactions to utilize in online interactions:

F3: ‘Sometimes it’s harder to communicate what you mean because you haven’t got intonation in what you say online’.

In relation to the lack of cues to help assist them in gaging their own responses in online settings, participants reported how the lack of online context exacerbated misunderstandings between them and other parties:

F2: 'I think sometimes you can say something, and you do not know the adverse reaction that some people are going to have to it, and they will pile on to you and you will just be left in the dark. I mean like, you'll post something that you either think isn't serious or like it's a joke, people will understand what I am trying to say. Then all of a sudden people don't get it or people will get really angry, and you don't understand why they have reacted in that way because you think you have made something really, really clear and people don't get it all. I think it's just miscommunication because online you can't tell if someone is being sarcastic or it's satire'.

3.1.3 Challenging to Inhibit Online Actions

This sub-theme was only observed from the male participants' data. This captures the difficulties they experienced with controlling their online reactions. One participant highlighted that online contexts enabled him to make faster decisions, which could lead to consequences in the future:

M4: 'It is kind of down to technology because it allows you to make split second decisions that you wouldn't make otherwise. It is a lot easier to send a text with an unsavoury photograph than it is to save it, print it off and put it in a letter. Because you have that process where you have time to think about if you are going to do it whereas online it is very easy to send it as you think and you instantly regret it'.

In situations, where there was an incentive that interested them, male participants found the reward aspect appealing:

M7: 'This one time, this random thing came up saying that I had won a laptop or an iPhone 6S or an Xbox. I was so excited at first, but then I learned literally the next day and by my dad that these people just need your information'.

Another participant described a scenario he had experienced where there was an online incentive that interested them, so they had entered personal information, which caused them issues at a later stage:

M8: 'There was one time when I signed up for a thing, then I got a load of spam, so eventually I had to create a new email address. It was just a thing I signed up for. Can't remember exactly what it was, but I signed up for it and it gave me a lot of spam so I stopped using that email address.'

3.1.4 Unwanted Online Sexual Harassment

This subtheme was extracted exclusively from data of female participants. This reflects their lived experiences of receiving unwanted contact of a romantic and/or sexual nature in online contexts. For participants, such experiences were often unexpected:

F1: 'There was a time when a boy was trying to chat me up on social media and I was like "this should not be happening!'

When such scenarios arose (F6: "when they start asking personal questions"), female participants found it difficult to handle these unwanted interactions:

F2: [...] 'sometimes people kind of draw you in, and they will start talking to you and all of a sudden, it turns sexual and it's really uncomfortable because you have started talking to this person that you enjoy talking with and then all of a sudden you know they are like "let's make it about sex" and you are like "woah!" It's too much, I don't like it! And you're really uncomfortable because you want to be polite, but you don't want to be in that situation anymore'.

3.2 '*Online Risk Management*'

3.2.1 Avoids Online Contact

Participants reported that they avoided online contact with others to keep themselves safe online. Specifically, they described how they limited online contact (F6: "staying away from creeps") and kept their online contacts to a small, trusted circle of family members and/or friends:

M1: 'As a precaution for online safety, I only really speak to my friends, most of the time'.

By avoiding online contact, participants restricted sharing of information about themselves in online contexts (F3: "don't share everything"). Specifically, one participant vividly described their rules for what they were and were not willing to share online:

M3: 'Not sharing your email/password. Not sharing where you live. Don't trust anyone because you don't know them because you could be sharing information with anyone.'

3.2.2 Parental Mediation

Participants reported various form of parental involvement in their online risk management. These included a range of monitoring and restrictive strategies (M2: "set up all my social media accounts"). One participant spoke about her experiences of online parental monitoring:

F5: '[...] know that my family has done quite a few things to help me stay safe, but I can't remember exactly what. My mummy installed something on my phone that tells her what I'm looking at.'

Despite the impact on their independence, participants highlighted that they understood that parents restricted their online activity to help prevent risky scenarios online:

F4: 'Parental controls are a good thing because it helps me stay safe online. I have the chat on the online games turned off so people can't chat to me online.'

M7: 'She (mother) checks my phone to see that I am not clicking on anything unsuitable by accident'.

On the other hand, some participants were unaware of what strategies their parents used to manage their online risks (F5; "can't remember exactly what"); (M3: "ask mum and dad"). One participant noted how her parents managed an unwanted online contact scenario on her behalf:

F1: 'So I went to my parents, and I didn't know what they were going to do because it's parents! They did their magic parent mojo thing, and he didn't bother me again.'

3.2.3 Checks for Visual Clues

In terms of strategies, participants reported checking for visual clues to help them detect potentially unsafe websites (M3: “I check if the website url has https in it”). One participant described how they spotted a potential phishing attempt:

M5: ‘The website was all black market themed and there was ‘get a £100 Amazon gift voucher for free!’ Just give us lots of personal information. Also, when I looked at the actual post, it was quite obvious it was someone pretending to be this famous person saying that. It was just because it was in a comments section of a YouTube video, and someone had made it so that it looked exactly like the YouTuber’s channel then said, ‘Do this please and stuff’. That was the first time I saw it, but they do that quite a lot. I think it is just an automated computer thing. YouTube had a thing which highlighted the person who made the actual videos, so you know that is not the actual YouTuber’.

This corresponds with another participant’s strategy of looking for specific visuals as part of his online safety risk management:

M8: ‘Usually if you don’t have the padlock thing, you don’t put any details in.’

3.3 *Desire for Practical Solutions*

3.3.1 Require Contemporary Training in Schools

In terms of future solutions, online safety training was extracted from the participant data. Specifically, participants reported a lack of up to date online safety awareness updates in schools. One participant recalled that the scenarios she was given were not ones that she had hoped for:

F3: ‘School gives us online safety talks, but I always find them extremely unrealistic. The scenarios they put in don’t seem like they could ever happen. They could, but not frequently.’

This resembles the accounts from other participants who reported fatigue with the lack of changes to the online safety strategies offered to them:

M7: 'Every year just like any other, the school shows the same online safety video over and over and over again. "Don't share anything like your password or information, make sure you have a stable account, blah blah blah" so I do them as they are engraved on my memory and never removed ever again [...].'

3.3.2 Support to Block Unwanted Contact

In terms of future solutions, participants reported that they would like more practical support to block unwanted online contact (F2: have more control) Specifically, participants noted that support to manage message requests would be beneficial to avoid engaging in unwanted contact:

F3: 'It would be useful to know what to do if someone message requests you so you don't answer them because some people will and will end up having long conversations with them'.

With regards to the support to block people, participants highlighted that the tools had to be appropriate and effective for the online platform (F5: "someone who checks over messages"). For instance, one referred to current programmes which he had experienced which filtered unwanted messages, however these had restrictions which he found frustrating:

M7: 'Nintendo has proven that they can block certain messages that are not suitable for online, but they only allow you to say nine different things. You can type things while playing levels, but that is restricted. Why can't they do it all online?'

4. Discussion

Using the IPA framework, this study sought to explore 'insider' accounts of autistic young people's online safety experiences. Our findings offer valuable insights regarding autistic young people's perspectives of communicating with others online and demonstrate the complexity and diversity of their online safety experiences. The superordinate themes and subthemes are discussed below in relation to our research questions and the existing literature.

4.1 What are the lived experiences of online safety among autistic young people in our sample

Our superordinate theme 'Impact of Online Activity' encompassed 'Benefits of Online Communication' and 'Drawbacks of Online Communication' as subthemes. On one hand, the former described positive aspects to online communication for autistic young people. Some participants highlighted that the removal of direct eye contact facilitated their online social interaction. This is in line with previous findings that many autistic people find eye contact uncomfortable (Madipakkam et al., 2017). Online contexts were cited as useful in allowing participants more time to process information. This is supported by existing literature with autistic adults (Gillespie-Lynch et al., 2014). Therefore, there were aspects to online communication which some autistic young people found easier compared with offline communication.

On the other hand, the latter subtheme captured challenges autistic participants associated with online communication. This included a lack of physical reactions to gage social interactions. This challenge has been previously reported in large scale social media surveys (Burke et al., 2010). An existing study has suggested that autistic children draw on integrated clues, including facial, vocal expressions as well as body language for emotion recognition (Friedenson-Hayo et al., 2017). Online contexts may remove information that autistic young people rely on to understand others. Moreover, some of our participants described how their communication could be misconstrued, which could lead to negative online experiences. Considering the prevalence rates of autism, it is likely that they were interacting with a majority of non-autistic people online. Therefore, this can support evidence regarding the double empathy problem theory, that autistic and non-autistic people have difficulties understanding each other, which can lead to breakdowns in two-way social interactions (Milton, 2012; Crompton et al., 2020). A lack of physical reactions may increase the likelihood of miscommunications between autistic young people and others in online contexts, which may make them vulnerable to experiencing contact risks.

It is noteworthy that gender-specific subthemes were extracted from the data. Autistic male participants' reported challenges with inhibiting online responses. Previous studies suggest that autistic young people have difficulty inhibiting responses in online contexts, particularly inappropriate posting and unauthorized purchases (Just & Berg, 2017; Macmillan et al., 2020), so our subtheme supports these recent findings. Compared with young females, males are posited to engage in more risk taking behaviours (Renate et al., 2016). Therefore, it is possible this extends to the autistic male participants in our sample. Interestingly, some of our male sample described how online contexts allowed them less time to change their mind about carrying out actions, which they went on to regret. In addition, some participants described scenarios where they were tempted by the incentive of a reward e.g., an iPhone in return for providing personal information. Spear phishing is a type of attack that is more targeted than other types of phishing as it uses social engineering to target an individual (Amro, 2018). For example, fraudulent emails are sent to an individual from a company providing smartphones in exchange for personal information to carry out such attacks. Considering that special interests, including online devices are motivating for autistic people (Grove et al., 2018), it is possible that autistic males are at risk pertaining to examples of spear phishing. Therefore, our findings suggest that autistic young males experience challenges with regards to conduct risks.

In our sample, autistic females reported unwanted online sexual contact. Previous studies with parents and autistic adults have suggested a possible vulnerability of autistic female adults to sexual exploitation (Cridland et al., 2014; Sedgwick et al., Landon, 2016). This is the first study to report lived accounts of unwanted online sexual harassment among autistic young females. Some of the participants reported being overwhelmed when presented with these scenarios, and still wanting to come across as 'polite'. Studies have suggested that many autistic adults 'camouflage' their autistic traits by trying to hide behaviour that might be viewed as socially undesirable to seem socially confident and is often motivated by a desire to make friends (Hull et al., 2017; Tierney et al., 2016). Compared with autistic males, autistic female adults have been reported to engage in higher rates of camouflaging (Lai et al., 2017). One potential explanation is that autistic females try harder to come across well in online social situations than autistic males, thus potentially increasing the likelihood of

someone else trying to take advantage of them. Consequently, elevated camouflaging among autistic females may put them at increased vulnerability of experiencing online sexual exploitation.

4.2 What are the lived experiences of managing online safety risks among autistic young people in our sample?

In terms of autistic young people's online risk management, our sample reported avoiding online contact. Some participants described only interacting with a small, trusted circle of family or friends. This corresponds with the findings of a small scale qualitative study of autistic children who reported preferring to be alone/and or have a small group of friends (Calder et al., 2013). This may help to avoid unwanted contact risks. However, it may be that autistic young people want to reach out to more people online but are wary of experiencing contact risks. Participants within our sample also reported avoiding giving out personal information as a means to protecting themselves. To date, no research has examined this strategy. It would be beneficial to investigate if this particular behaviour is reported in future studies. However, our findings suggest many autistic young people follow this rule when trying to keep themselves safe online.

Parental mediation was extracted from the data as a subtheme. Participants reported a degree of parental involvement in their online risk management. These included accounts of monitoring and/or restrictive parental techniques. This supports previous findings that parents of autistic children restrict their online use via parental apps (Clark et al., 2015; Sasse, 2015). Given that evidence suggests that autistic people like to keep their trusted circle small (Calder et al., 2014), parents may act as an additional protective factor. Nevertheless, this will involve a trade-off between reducing risks online and an autistic young person's independence. It is unclear how parental mediation will benefit autistic young people as they transition into adulthood. Therefore, it will be beneficial to examine ways in which future interventions can help to increase autistic young people's confidence in managing their online safety risks independently.

Interestingly, autistic young people in our sample described using visual search strategies in their online risk management. This included checking for verification symbols or text that looked suspicious. This supports previous research from Neupane et al (2018) which found that many autistic adults were able to differentiate between real and fake websites and noted differences, including that 'URLs and logos were different' (p. 474). Whilst we acknowledge that not all participants reported this, for some autistic young people, these strategies could help to reduce the likelihood of them experiencing content risks. Therefore, it is important to establish if this finding extends to other studies, as it could be utilized in online safety interventions.

4.3 What are the preferences in terms of improving online safety among autistic people in our sample?

In terms of future solutions, two subthemes were extracted from the data. Participants described a lack of contemporary online safety training in schools. Given the variety of online devices and contexts are expanding at an elevated rate (Fletcher-Watson & Durkin, 2014), it is likely that school resources are unable to keep up with the most up to date online safety developments. To date, there has been no published study investigating autism online safety interventions in education. Thereby, it would be useful if future collaborations could involve autistic young people and educators to find out more about how training in schools could be improved.

Support to block unwanted contact was extracted from the data as a subtheme. Considering that all our participants reported avoiding online contact, this would allow them to have agency over their online interactions, whilst being able to independently use online devices. Participants in our sample noted issues or restrictions with existing online platforms e.g., lack of options available. Visual symbols are recommended in supporting autistic people in clinical practice (Rutherford et al., 2020), so future interventions should focus on harnessing visual cues that some autistic people will find useful. Researchers have advocated for the involvement of non-autistic children's input on the design of online safety tools (Hartikainen et al., 2016; Wisniewski et al., 2017). More researchers are

advocating for a co-participatory design approach with autistic children and technology (Spiel et al., 2017; Spiel et al., 2019). To develop online safety tools that autistic young people will both use and benefit from, it is important that this population is consulted and involved in the design of future online safety interventions.

4.4 Limitations

We included 14 speaking; autistic young people aged 11 to 17 years. Therefore, the study findings cannot be generalised to all autistic people, including nonspeaking autistic young people out with our age range. All participants were based in the UK; so, our results may not apply to autistic young people in other countries as online safety experiences may not translate across cultures. Ethnicity and co-occurring conditions were not assessed in this study. Further investigations in this area, whilst exploring factors related to ethnicity, socio-economic class will be beneficial. Non-binary autistic young people were not represented in this study. Considering that more autistic people identify as non-binary than non-autistic people (Warrier et al., 2020) and report gender-diverse experiences (Kourti & MacLeod, 2019), future research should endeavour to include non-binary autistic young people. The majority of interviews were carried out remotely. Diagnosis was not verified with medical records for this study as this would not have been feasible. However, every participant's autism diagnosis was confirmed via email with the first author in response to the recruitment call. Some of the autistic participants' whose parents/guardians gave consent for them to take part may have been unaware that they had an autism diagnosis, so this was not relayed to them during the interview. This study specifically investigated the perspectives of autistic young people. On one hand, steps were taken to involve autistic people in the development of this research e.g., asking an autistic adult to review the initial interview script. Nevertheless, it was not a participatory action research study. Future research may benefit from involving autistic young people and parents to examine further how autistic young people's online safety experiences converge and diverge e.g., a co-operative inquiry design involving small, separate groups of autistic young people and groups of parents input on low-fidelity prototypes of online safety tools.

5. Conclusion

To the best of our knowledge, this is the first study to investigate autistic young people's perspectives of their online safety experiences. The outcomes from this study support previous findings that autistic young people are subject to online harassment and would like support to block unwanted contact from others online. Overall, our findings posit the need for interventions that address the unique needs of autistic young people. In doing so, this will promote autistic young people's independence, whilst helping to keep themselves safe online.

Declaration of Competing Interest

The authors declare that they have no financial or other conflicts of interest.

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