Article

Social Isolation and Online Relationship-Risk Encounters among Adolescents with Special Educational Needs

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Abstract: While all vulnerable adolescents are more at risk online than their non-vulnerable peers, those with special educational needs (SEN) require targeted and specialised support. Although they are not a homogenous group, SEN adolescents commonly experience social isolation and a lack of connection or meaningful relationships with peers in their offline lives. Many perceive the internet as a route to alternative means of communicating and interacting with others. Accessibility tools enable autonomous access to the online world, which offers support groups, new friends, entertainment, and connections. This can lead to both potential online relationship-risk encounters and positive experiences. With the attraction of online environments comes the need for digital skills and awarness of possible online risks, yet for adolescents with SEN, their difficulties dictate a need for more than rules, controls, and digital skills. In this study, 4894 adolescents aged 13 to 17, of whom 1207 had SEN, completed the Cybersurvey 2019, an online questionnaire about their digital life. Adolescents were asked about the benefits of using the internet, their online safety support, offline social support, and any online relationship-risk encounters. All participants were recruited through their schools. Descriptive statistics and multiple analysis of variance tests showed that, compared with their peers, adolescents with SEN experienced significantly more social isolation and less parental online safety support. They were also more likely to use the internet for positive purposes, such as socialising and coping. Overall, adolescents with SEN encountered more online relationship risks than their non-SEN peers, with older teens more likely to encounter such risks than younger peers, regardless of their SEN status. Multiple analysis of variance tests also identified that boys perceive internet use as positive to a greater extent than girls, suggesting a gender difference in experiences of the digital environment. A multiple linear hierarchical regression revealed that SEN status, age, social isolation, poor parental online safety support, and greater perceived positive internet use, all significantly predicted online relationship-risk encounters. This article discusses important implications and recommendations for policy and practice related to SEN and online safety and highlights areas for future research to consider.

Keywords: relationship-risk encounters; parental online safety; social isolation; internet use; socialisation; special educational needs; vulnerability; digital literacy

1. Introduction

Online environments continue to grow in popularity, with young people's digital lives comprising a central aspect of their daily routines. However, with this dominant presence comes concerns about what children and adolescents see, do, or interact with when they go online. For young people with special educational needs (SEN), anxieties are increased as this vulnerable population may lack the cognitive and digital skills required to recognise or deal with online risks and potential harms, depending on the type of difficulties they have.

SEN is a term used to define the needs of a child with a disability or difficulty which makes learning harder for them compared with same-age peers. A pupil with SEN requires

educational provisions to be made for their effective learning [1] and will generally have an Education Health and Care (EHC) Plan or receive SEN support within their learning environments [2]. Recent statistics revealed a steady increase in pupils with SEN: an increase of 4.3% from 2021. A total of 1.5 million pupils in England have SEN, with the most prevalent type of SEN being autism spectrum disorder (ASD) [3]. SEN is also more prevalent in boys than girls, with 72.8% of students with an EHC Plan being male, alongside 63.5% of those with SEN support [3].

SEN is generally categorised into four areas of need [1,2]. The first of these is communication and interaction, which includes a range of difficulties related to speech and language, including the use and understanding of verbal and non-verbal communication, social behaviours, and speech production. The second area, cognition and learning, refers to difficulties with learning, concentration, and behaviour. These needs can present as struggles in understanding concepts and curriculum-based skills. Several types of SEN are included here, e.g., specific learning difficulties (SpLD), such as dyslexia and dyscalculia, as well as general learning disability [GLD], which presents as slow progress and learning compared with peers. The next area of need is social emotional and mental health, which encapsulates pupils with a range of needs such as being withdrawn or isolated, or displaying challenging and disruptive behaviours, as well as hyperactivity. These behaviours may reflect underlying mental health difficulties, e.g., anxiety, depression, or self-harming, but can also indicate disorders such as attention deficit disorder (ADD), attention deficit hyperactivity disorder (ADHD), or ASD. Finally, sensory and physical needs include those children with a physical disability or sensory impairment, e.g., hearing, vision, or multisensory.

1.1. SEN, Relationships, and Social Isolation

Although individuals with SEN are heterogenous in their neuropsychological profiles, abilities, and impairments [2], feelings of loneliness and isolation are shared amongst many. This leads them to value a sense of belonging [4] which reflects the safety and security dimension of Maslow's hierarchy of needs [5,6]. Margalit and Raskind [7] noted that pupils with SEN experience both emotional and social loneliness, related to a lack of intimate relationships and connections to social groups. The social relationships and friendships of children and adolescents with SEN are of interest as they are essential to their social lives and well-being [8]. Friends provide reassurance, support, and opportunities for the young person to feel valued and useful, as well as being a source of trust and closeness [8–10].

However, despite describing an awareness of the ideal characteristics of a friend, namely, being kind, generous, and supportive [8,10,11], research suggests that students with SEN struggle with social relationships [12] and therefore lack a crucial sense of social support and belonging. They tend to experience difficulties with retaining friendships over time and maintaining a cohesive friend group [9,13]. Pinto, Baines, and Bakopoulou [14] highlighted that fewer reciprocated friendships, low levels of peer acceptance, and a lack of integration with peer groups were commonplace for those with SEN.

Amongst adolescents with SEN, gender differences have been identified, suggesting differences in how females and males with SEN experience friendship and relationship challenges. Sedgewick, Hill, and Pellicano [15] reported that autistic females experienced greater difficulties maintaining friendships but were also more likely to rate their best friendships as stronger, closer, and more secure than their male peers.

The relationship difficulties and struggles of these vulnerable teenagers can be understood by considering the needs of pupils with SEN. For instance, communication difficulties have been highlighted as contributing to social and interaction problems [16], as understanding social cues and processing language can complicate interactions. With the importance of friendships being described and explained by those with SEN, the role of technology and the internet should be considered as a facilitating tool.

1.2. Positive Internet Use: Online Socialisation and Coping

Whilst technology and the internet can offer unique benefits for users with SEN, such as supporting accessibility, learning, and educational needs [17–20], they also provide opportunities for interactions and the development of new friendships, as well as the formation of one's identity. Given that young people with SEN often lack meaningful relationships or social connections, the use of the internet for socialisation is particularly pertinent. Previously, poor social support has been found to be associated with greater online risk exposure [21], though this was not specifically explored in relation to the use of the internet to communicate and interact.

It has been established that SEN is associated with social difficulties which can relate to self-esteem and self-concept [22], but the internet can facilitate identity formation by providing a safer environment for the exploration of self-identities, thoughts, and feelings [23]. Caton and Chapman [24] conducted a systematic review of the experiences of young people with an intellectual disability online and showed that social networking allowed them to express their social identity and opinions. The anonymity afforded to internet users and the ability to present oneself freely means identities can be expressed and projected without needing to match offline identities. For example, Holmes and O'Loughlin [25] noted that individuals with a learning disability can remove themselves from this 'label' and explore other aspects of their identity online. Suler's online disinhibition effect identifies how features of the internet, e.g., anonymity and minimisation of authority, allow for the disinhibition and exploration of identity, thoughts, and feelings in a way that the individual does not experience offline [26].

Being online also allows adolescents with SEN to build new friendships and relationships, whilst facilitating the maintenance of existing offline relationships [27,28]. Caton and Chapman [24] highlight friendship development as one of the key positive online experiences for people with an intellectual disability, noting the suggestion that the internet increases the frequency and quality of social interactions and relationships, ultimately reducing feelings of loneliness [29]. It has been suggested that online interactions provide people with ASD with a sense of comfort [30], which may be explained by the difficulties these individuals have with face-to-face interactions because of the need to understand and interpret social cues and information, as well as removing the role of eye contact [31–33].

Online communications may also be easier for young people with SEN because they provide an alternative to face-to-face interactions, which require complex and simultaneous interpretation and understanding of body language and facial expressions, on top of language processing [34]. The social compensation hypothesis explains how individuals who find face-to-face communication difficult are more likely to benefit from online interactions, seeking them out to compensate for their difficulties offline [35–38]. For young people with SEN, the internet can facilitate their interactions with others by minimising difficulties they may face offline.

1.3. Being Online: Relationship Risks

With such perceived positive uses of the internet come undeniable risks; whilst young people with SEN feel more able to explore their identity and build relationships online, they may unknowingly expose themselves to online relationship-risk encounters. Online risks are generally defined and identified by their probability to cause harm [21,39], and this is the case for the relationship-risk encounters which are of interest. These Contact-type risks involve potentially dangerous or problematic communications with other internet users [40], who may be known or unknown to the individual [41,42]. Given that the internet can be used to form relationships and to facilitate communication and interaction, the likelihood of encountering online relationship risks is potentially high for associated harms.

The association between SEN and online risk experiences is well established [43,44]; youth with SEN are more likely to report online victimisation [45], as are young people with ADHD or ADD specifically [46]. Ofcom [44] reported that children with an impacting or limiting condition were more likely to have negative online experiences, specifically

being contacted by someone they did not know, and feeling pressure to send personal information or photos to online contacts. These findings are corroborated by Cavallini and Cavallini [47] in a sample of young people with LDs and ADHD, whilst case vignettes and reviews have focused on more intimate, sexual relationship risks, such as grooming, blackmail, and sexual solicitation [48,49].

El-Asam and Katz [50] explained that, for young people with SEN, the boundaries between offline and online life can become less clear, and aside from being targeted by online strangers, they can also be targeted by someone who knows them offline and is therefore aware of their vulnerabilities, using this knowledge to manipulate them. Furthermore, when it comes to online relationship-risk encounters, young people with SEN are more likely to believe they are in a loving relationship with someone they met digitally and subsequently feel pressure to send explicit photos or messages. This can be understood through impairments related to poor insight, judgement, and ability to detect deception [51], difficulties in perceiving threats, problem solving, or critical thinking [52].

A young person's vulnerability may be further exacerbated by their gender; differences in how boys and girls use the internet and technology to communicate may explain why gender has been previously shown to heighten susceptibility to online relationship-risk encounters. Generally, boys are believed to behave in a riskier manner online [53,54], but certain gender differences in online activities may explain this. Sasson and Mesch [55] suggested that boys are more likely to disclose information and meet strangers offline, whilst Pujazon-Zazik and Park [56] identified males as more likely to be sexually explicit in chatroom conversations and to actively seek a partner on such sites. There are disparities in research into gender differences in the use of the internet to socialise and communicate; Sasson and Mesch [55] proposed that females are more likely to use the internet for communication purposes, but Eduljee, Kumar, and Buhariwala [57] found that males were more likely to frequently use the internet for communication. In contrast, van Deursen, van Dijk, and ten Klooster [58] showed no gender differences in online social interaction activities of their Dutch representative sample. Despite the lack of a definitive conclusion as to whether there are gender differences in the use of the internet to socialise and communicate, research has shown differences in susceptibility and exposure to certain risk types. Savoia et al. [41] identified females as more likely to experience online harassment and unwanted conversations, whilst Heiman and Olenik-Shemesh [59] stated that females were more likely to be cyber victims than cyber perpetrators. Whether such differences are also present for adolescents with SEN is not currently clear as there is very limited research into gender and SEN as predictors or correlates of online relationship-risk encounters.

1.4. Digital Literacy

Although many young people with SEN show an awareness of the risks of being online and ways to stay safe [60], parents remain concerned about the risks their children face, and there appears to be a disparity between understanding of safety skills and actual online behaviours. Online safety knowledge and understanding can be learnt from many sources, particularly from schools, parents, and peers, with parents playing a significant role in supporting their child to stay safe online [21]. For young people with SEN, their parents gain information about online safety from a range of sources but are less likely to receive support from their child's school [43]. Livingstone et al. [43] reported high levels of skills for tasks such as bookmarking websites and blocking messages, but there is more to consider when it comes to online safety. Previously, digital literacy has focused on teaching technology skills [61], rather than directly addressing online safety awareness or skills to deal with risk encounters. Good and Fang [52] identified the need for programmes for young people with conditions impacting their learning, social competency, and emotional regulation, to balance their unique needs and vulnerabilities whilst acknowledging their developmental desire for autonomy and independence.

1.5. Current Study

Research on the online risk experiences of young people with SEN tends to adopt a narrow focus on specific groups of pupils with certain types of SEN, such as ASD or LDs, generally. Though SEN is an umbrella term that encapsulates these individual disorders, disabilities, and difficulties, there is research value in treating this group as homogenous; previous research suggests that many of these individual groups are more vulnerable online than their non-SEN peers, and it can be assumed that this vulnerability exists across a general SEN population [21]. Moreover, although previous associations have been found between SEN and online risk experiences [43,44], there is a need for research into the motivations behind the online behaviours of adolescents with SEN and how their vulnerabilities make them more susceptible to online relationship-risk encounters. It is clear that young people with SEN benefit from the technical affordances provided by the internet, but the social benefits are less explored in relation to the possible associated risks. One missing aspect is the interaction between gender and SEN status. Gender is perhaps more widely researched with respect to online risk encounters, but the role of gender amongst young people with SEN is a neglected topic despite previous, contradictory research findings arguing for gender differences in online activities and risk encounters.

In line with the rationale above, this study aims to explore the digital experiences of adolescents with SEN, particularly their experiences of online relationship-risk encounters. Additionally, this study explores differences in perceived positive internet use (socialising and coping), social isolation, and online parental support. Gender is also explored in relation to these variables. It is hypothesised that:

Hypothesis 1. *Adolescents with SEN encounter more online relationship risks than their non-vulnerable peers.*

Hypothesis 2. *Adolescents with SEN experience greater levels of social isolation (or less social support) than their non-vulnerable peers.*

Hypothesis 3. *Adolescents with SEN receive less parental support with their online safety and digital lives than their non-vulnerable peers.*

Hypothesis 4. *Adolescents with SEN use the internet for socialising and as a coping mechanism more than their non-vulnerable peers.*

Hypothesis 5. *Males/boys experience different levels of online relationship-risk encounters compared with females/girls.*

Hypothesis 6. *Demographic variables (age, gender, and SEN status), social isolation, poor parental online support, and the use of the internet for socializing and coping explain encounters of online relationship risks.*

2. Methods

2.1. Design and Participants

This study utilised a cross-sectional design and gathered quantitative data using the 'Cybersurvey 2019'. Non-probability opportunity sampling was used to gather data from children and adolescents from educational settings across England. A total of 15,278 young people took part in this study (11–17 years old) from 94 schools and colleges across England. However, for the purpose of this study and based on age (13–17 years) and vulnerability (SEN-related conditions), the extracted data represented 4894 young people. A total of 1207 participants had SEN (49.4% boys, 45.4% girls, and 5.2% other/missing), with the remaining 3687 representing the non-SEN group (49.6% boys, 38.4% girls, and 12% other/missing).

2.2. Measures

The Cybersurvey is an annual data collection tool that is used to generate an understanding of children's and adolescents' digital lives and online experiences, including their use of the internet, online risk encounters, understanding of online safety, and the impacts of their internet use. The Cybersurvey has been adapted and updated on a yearly basis since 2008 to reflect new areas of interest or to target specific areas of concern. The Cybersurvey 2019 was enhanced and made more robust based on earlier work by El-Asam and Katz [50] and other leaders in the field of online risks, e.g., Livingstone et al. [43]. In the development of the tool, local authorities, schools, and youth advisers were consulted, and face and content validity were achieved through feedback from psychologists, social workers, and online safety experts. Although the Cybersurvey 2019 used in this study included a variety of measures [21], the researchers are mainly concerned with specific key variables: demographic variables (age, gender, and vulnerability), relationship/contact-based online relationship-risk encounters, social-support, parental online safety support, and perceived positive internet use.

2.2.1. Demographic and Background Variables

Participants were asked to insert their age in an open-ended question and were also asked to state their gender based on three categories (girls, boys, and other—representing those who answered 'Prefer not to say' or 'I identify as'). Another question asked participants to state if they consider themselves to have any social, physical, educational, or emotional needs or difficulties (13 choices). Participants with SEN-related conditions (vulnerable) were selected in this study, namely, those with a vision impairment ($n = 508$), hearing impairment ($n = 144$), speech difficulties ($n = 226$), learning difficulties ($n = 406$), and/or autism spectrum disorder ($n = 302$). Participants with no vulnerability (non-SEN) were selected as a comparison group ($n = 3687$). A total of 1207 participants were categorised as having SEN, whilst the remainder had no SEN. It should be noted that participants were able to select multiple vulnerabilities (16% had two SEN conditions, and 5% had more than 2 conditions); hence, the sum of participants with each individual SEN is greater than the total population of the SEN group. Full demographic information for SEN and non-SEN groups is provided in Table 1.

Table 1. Demographic and background variables.

	Non-SEN		SEN	
	Frequency (*n*)	**Percentage (%)**	**Frequency (*n*)**	**Percentage (%)**
Age				
13 years	1772	48.1	516	42.7
14 years	934	25.3	346	28.7
15 years	612	16.6	245	20.3
16 years	189	5.1	53	4.4
17 years	180	4.9	47	3.9
Gender				
Girl	1822	49.4	463	38.4%
Boy	1673	45.4	599	49.6%
Other/missing	192	5.2	145	12%
SEN Status *				
Vision Impairment	-	-	508	42.1%
Hearing Impairment	-	-	144	11.9%
Speech Difficulties	-	-	226	18.7%
Learning Difficulties	-	-	406	33.6%
Autism Spectrum Disorder	-	-	302	25%
Total	3687	75.3%	1207	24.7%

* 21% of the SEN group had multiple needs.

2.2.2. Perceived Positive Internet Use

Participants were asked a number of questions about the benefits they thought online life offered them. Of interest in the current study, and used in analyses, were six items related to perceived positive impacts of the internet. These items were rated on a 4-point Likert scale (1 = never, 2 = hardly ever, 3 = sometimes, and 4 = most of the time) and reflected the use of the internet for purposes such as socialisation or as a coping mechanism to deal with offline daily issues. For example, 'Has helped me to find and talk to people like me', and 'Helps me escape my issues'. Cronbach's alpha showed a good reliability coefficient (α = 0.815).

2.2.3. Social Isolation

A block of questions relating to friendship and school support was used to measure participants' level of social isolation. A total of 7 items were rated on a 4-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree) and included statements such as 'I feel alone', and 'I often feel left out by others at school'. Some items were worded positively, e.g., 'I have good friends', and so relevant scores were reversed prior to analysis so that higher scores indicated greater social support. Low scores, therefore, reflect more social isolation. This measure showed an acceptable reliability coefficient (α = 0.763).

2.2.4. Parental Online Safety Support

To address the role of parents as a source of online safety support and information, participants viewed three question blocks related to online safety [21]. The first of these related to online safety monitoring and consisted of six items reflecting ways in which parents/carers can support or monitor their child online, e.g., 'They try to limit the time I spend online.' The second block concerned online safety advice and contained four items, e.g., 'I don't think my parents/carers understand enough about this,' and the final block was regarding online safety competence, consisting of three items, e.g., 'I can manage my online safety.' All items were measured on a 4-point Likert scale (1 = never, 2 = hardly ever, 3 = sometimes, and 4 = most of the time), but some items needed reverse coding so that higher scores indicate greater parental online safety support. As a 13-item measure, items showed a good consistency level (α = 0.815). Refer to Table A1 in the Appendix A for more details.

2.2.5. Online Relationship-Risk Encounters

The main outcome variable in this study is the experiences of online contact risks amongst young people with SEN, specifically those relating to or involving relationships [21]. To measure these experiences, participants answered several questions on different types of online risks. A total of 7 items were relevant to relationship-risk encounters, 6 items were measured on a 3-point Likert scale (1 = never, 2 = once or twice, 3 = often). These items were related to: being persuaded into unwanted sexual activity, revenge porn, being controlled or stalked, being misled or lied to about an online contact's age, adding strangers as friends online, and meeting up with offline contacts. An additional yes/no (1,0) item reflected exchanging nudes/sexting online. Items within this scale were re-coded to reflect a binary outcome (never/once or twice = 0, and often = 1). An acceptable reliability score was achieved (KR-20 = 0.71).

2.3. Procedure

The Cybersurvey 2019 was used as a tool to gather responses from children and adolescents about their online and digital lives. Researchers approached schools and colleges across England via emails and phone calls, wherein the aims and objectives were explained and headteachers were informed of any ethical considerations, e.g., relationship-risk encounters that may involve private information that young people may be reluctant to disclose. However, on joining the Cybersurvey, schools received a set of instructions

that included safeguarding precautions and the systems in place through which schools could be notified of any cases of concern. Before starting, all young people were told that their participation was voluntary and that they did not have to answer all questions and were also reminded that responses were anonymous. Participants completed the survey on school premises, and each school was provided with an identifying code for safeguarding purposes, for these aims, IP addresses, dates, and time of entry for each young person were also recorded.

2.4. Data Analysis

Prior to analysis, data were screened and cleaned as the dataset used was extracted from a much larger set containing many other variables which were not of interest in the current study. Reverse coding was needed, such as for the social isolation and parental online safety items. Descriptive statistics, i.e., mean scores and percentages, were used to demonstrate the differences in the online and offline experiences of adolescents with and without SEN. The mean score was computed for social isolation, perceived positive internet use, and parental online safety support. Higher scores indicate more social support, better parental online safety support, and more positive internet use. A total score was computed for all relationship-based risk encounters, with higher scores indicating more experiences of risk. Multiple analysis of variance (MANOVA) tests were then conducted to determine the main and interaction effects of SEN status and gender on social isolation, parental online safety support, positive use of the internet to socialise and cope, and online relationship-risk encounters. Finally, a three-step hierarchical multiple linear regression analysis was carried out to examine the moderating role of SEN status, age, gender, social isolation, parental online safety support, and the use of the internet for socialisation and coping on adolescents' online relationship-risk encounters.

3. Results

3.1. General Prevalence of Relationship-Risk Encounters

Descriptive statistics, e.g., percentages and cross-tabulations, were used to examine the differences between the SEN group and non-SEN group in relation to their online relationship-risk encounters (see Table 2). Overall, those adolescents with SEN often experienced all types of relationship risks more than their non-SEN peers. For example, 7.1% of those with SEN had often met someone online who tried to persuade them into unwanted sexual activity, compared with 3.3% of those with no SEN.

Once the difference between SEN and non-SEN was established, further descriptive statistics revealed the differences between specific SEN conditions. All SEN conditions were more likely to often add people as friends online without knowing who they are, followed by meeting up with these online contacts. The group most likely to have often experienced attempts at being persuaded into unwanted sexual activity were those adolescents with a hearing impairment (12.5%). This group was also more likely to often experience revenge porn (8.8%) but were closely followed by those with speech difficulties (8.3%). Adolescents with speech difficulties were, of the SEN conditions, most likely to have often felt that someone online was trying to control or stalk them (12.7%), been misled about someone's age (8.9%), add unknown contacts as a friend (39.4%), and have met up in real life with an online contact (27.6%). Only sexting, or sharing nude or explicit images, was more often experienced by an SEN group other than those with hearing impairments or speech difficulties; adolescents with ASD were more likely to have often done this (12.1%).

3.2. Perceived Positive Internet Use

Descriptive statistics were also examined for the perceptions of positive uses of the internet, specifically for socialisation and coping purposes. The percentages of participants who responded 'most of the time' for each of the positive internet use items revealed that adolescents with SEN perceive greater positive uses of the internet. The greatest perceived

uses of the internet are stopping the user from feeling bored (56.1%) and helping them to relax after school or college (53.8%). Refer to Table A2 in the Appendix A for more details.

Table 2. Prevalence of online relationship-risk encounters across different SEN groups compared with the non-SEN group.

	Non-SEN	SEN	Vision Impairment	Hearing Impairment	Speech Difficulties	Learning Difficulties	Autism Spectrum Disorder	Overall
Has someone you met online tried to persuade you into some sexual activity you did not want?	3.3% (113)	7.1% (79)	7.9% (38)	12.5% (17)	9.8% (20)	7% (25)	6.6% (18)	4.2% (192)
After a relationship has ended, has an ex-partner or friend tried to take revenge by sharing a photo or videos of you without your consent?	2.4% (83)	5% (55)	5% (24)	8.8% (12)	8.3% (17)	5.2% (19)	4.4% (12)	3% (138)
Have you ever felt someone was trying to control or stalk you?	3.2% (111)	6.6% (73)	6.8% (33)	11.9% (16)	12.7% (26)	7.5% (27)	5.9% (16)	4% (184)
I believed someone who seemed interested in me online was a young person, but they were not who they said they were	2.3% (79)	4.3% (47)	4.4% (21)	7.4% (10)	8.9% (18)	4.2% (15)	5.2% (14)	2.8% (126)
I shared nude or explicit pictures (sexting)	5.8% (200)	9.4% (104)	9.6% (46)	9% (12)	11.8% (24)	10.4% (37)	12.1% (33)	6.7% (304)
I have added people as friends without knowing who they are	21.9% (774)	30.5% (347)	34.2% (167)	31.6% (42)	39.4% (84)	26.2% (99)	28.2% (78)	24% (1121)
I have met up in real life with someone I met online	14.2% (500)	22.4% (254)	22.5% (110)	19.9% (27)	27.6% (58)	23.2% (86)	26% (72)	16.2% (754)

Note: Table represents the percentages of individuals within each group who have experienced risk 'often' times.

3.3. Group (SEN) and Gender Differences

This section of the analysis explores possible group (SEN and Non-SEN) and gender (girls and boys) differences in encountering online relationship risks, experiencing parental online safety support, social isolation, and perceived positive use of the internet. A 2 × 2 multiple analysis of variance (MANOVA) was used to assess the main effects of group type and gender along with the interaction effect between both. Table 3 shows mean scores between groups.

Table 3. Mean scores for the SEN and non-SEN groups across measured variables.

		Non-SEN	SEN	Overall
Online relationship-risk encounters	Girl	0.42	0.82	0.51
	Boy	0.52	0.75	0.58
	Overall	0.47	0.78	0.54
Parental online safety support	Girl	2.51	2.42	2.49
	Boy	2.44	2.41	2.43
	Overall	2.47	2.41	2.46
Social isolation *	Girl	3.08	2.82	3.02
	Boy	3.20	2.92	3.13
	Overall	3.14	2.88	3.08
Positive internet use	Girl	2.81	2.97	2.85
	Boy	2.96	3.05	2.99
	Overall	2.89	3.02	2.92

* Low score indicates more social isolation.

Group type showed a significant main effect on participants' encounters of online relationship risks [$F(1, 4415) = 81.06$, $p < 0.001$], on participants' perceived parental online safety [$F(1, 4415) = 4.91$, $p = 0.027$], on social isolation [$F(1, 4415) = 231.73$, $p < 0.001$], and positive use of the internet [$F(1, 4415) = 26.42$, $p < 0.001$]. The SEN groups showed

more online relationship-risk encounters, less parental online safety support, more social isolation, and more positive use of the internet.

Gender showed a significant main effect on participants' social isolation [$F_{(1, 4415)}$ = 43.07, $p < 0.001$] and perceived positive use of the internet [$F_{(1, 4415)}$ = 24.17, $p < 0.001$]. Boys showed significantly higher scores on both scales, meaning that they experience more social support (less social isolation) and perceive the internet to offer them more positive use compared with girls. Gender had no significant main effect ($p > 0.05$) on online relationship-risk encounters [$F_{(1, 4415)}$ = 0.091, $p = 0.763$] or perceived levels of parental online safety support [$F_{(1, 4415)}$ = 2.24, $p = 0.134$].

A significant interaction effect was noted on experiences of online relationship risks only [$F_{(1, 4415)}$ = 6.06, $p = 0.014$]. This is explained in Table 3 which shows that although boys experienced more relationship-risk encounters overall and in the non-SEN group, the opposite is true in the SEN group, i.e., girls in the SEN group encountered more online relationship risks. No significant interaction effect was noted on perceived social isolation [$F_{(1, 4415)}$ = 1.03, $p = 0.309$], parental online safety support [$F_{(1, 4415)}$ = 0.202, $p = 0.653$], or perceived positive internet use [$F_{(1, 4415)}$ = 2.14, $p = 0.143$].

3.4. Regression Analysis

As highlighted in an earlier analysis, SEN adolescents appear to be disadvantaged online in terms of relationship-risk encounters, and they are also more socially isolated and less supported by parents online in terms of online safety. Furthermore, the internet seems to offer them more positive benefits. This section of the analysis seeks to explore the association between online relationship-risk encounters and all other variables.

A three-step hierarchal multiple linear regression was conducted to explain encounters of online relationship risks (outcome variable). The first model included demographic/background variables (SEN group, age, and gender), the second model further included social isolation and parental online safety support, and the third and final model included perceived positive use of the internet. In doing so, all three models were found to be significant (see Table 4).

Table 4. A 3-step hierarchical regression analysis predicting online relationship-risk encounters.

	Model 1			Model 2			Model 3		
	B	**SE**	**t**	**B**	**SE**	**t**	**B**	**SE**	**t**
Group (SEN)	0.300	0.034	8.819 ***	0.242	0.034	7.051 ***	0.207	0.034	6.128 ***
Gender (Male)	0.049	0.029	1.688	0.061	0.029	2.135 *	0.024	0.028	0.858
Age	0.148	0.013	10.981 **	0.114	0.014	8.404 ***	0.115	0.013	8.628 ***
Parental online safety				−0.184	0.018	−10.00 ***	−0.174	0.018	−9.634 ***
Social Isolation				−0.175	0.029	−6.115 ***	−0.184	0.028	−6.545 ***
Positive use							0.281	0.021	13.544 ***
F	68.43			73.37			94.25		
R^2	0.044			0.077			0.114		
R^2_{adj}	0.044			0.076			0.112		
ΔR^2				0.032 ***			0.037 ***		

* $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$.

The first model was significant in explaining relationship-risk encounters [$F_{(3, 4415)}$ = 68.43, $p < 0.001$]. The results showed that SEN adolescents (B = 0.300, $p < 0.001$) and older adolescents (B = 0.148, $p < 0.001$) are more likely to experience relationship risks online. However, gender was not found to be a significant predictor. The second model was also significant [$F_{(3, 4413)}$ = 73.37, $p < 0.001$] and further showed that lower parental online safety support (B = −0.184, $p < 0.001$) and greater social isolation (B = −0.175, $p < 0.001$) explained more encounters of online relationship risks. The addition of both variables

appeared to strengthen the predictive power of gender, showing that males are more likely to encounter online relationship risks (B = 0.061, $p < 0.05$). The third and final model was significant [F(3, 4412) = 94.25, $p < 0.001$] in that by adding positive internet use (B = 0.281, $p < 0.001$), gender was no longer a significant predictor (B = 0.024, $p > 0.05$). Group type (B = 0.207, $p < 0.001$), age (B = 0.115, $p < 0.001$), parental online safety support (B = −0.174, $p < 0.001$), and social isolation (B = −0.184, $p < 0.001$) remained significant predictors of online relationship-risk encounters. This illustrates that the addition of positive internet use appeared to reduce or moderate the predictive power of gender.

4. Discussion

The current study aimed to explore the online experiences of young people with SEN, with a number of hypotheses formulated regarding their digital lives. It was hypothesized that adolescents with SEN would, in comparison with non-SEN peers, experience: greater levels of social isolation, less parental online safety support, and more positive perceptions of internet use as a coping mechanism or tool for socialisation. Gender differences were also expected. Furthermore, the study aimed to examine whether several variables (SEN group, age, gender, social isolation, parental online safety support, and perceived positive internet use) could predict online relationship-risk encounters amongst adolescents. All variables, aside from gender, were found to predict online relationship-risk encounters. These findings confirm all hypotheses, except that related to gender.

Descriptive statistics revealed that adolescents with SEN experienced higher levels of online relationship-risk encounters than their non-vulnerable peers, i.e., those without SEN, thus supporting previous research identifying young people with SEN as more vulnerable online [44,45]. Considering the different types of SEN included within our sample of vulnerable young people and the range of online relationship-risk encounters measured, descriptive statistics enhance our understanding of the digital lives and experiences of these groups. Adolescents with SEN experienced intimate risks more often than their non-vulnerable peers, including attempts at being persuaded into unwanted sexual activity, sharing nude or explicit images, and being victims of revenge porn, therefore corroborating previous research focusing on sexual solicitations [48,49]. Additionally, risks involving strangers and trickery were also more prevalent amongst adolescents with SEN, namely, feeling that someone was trying to control or stalk them, believing that they were talking to someone their age but being misled or lied to, adding unknown people as 'friends', and meeting up with online contacts.

The analysis also highlighted interesting trends in risk encounters across different SEN conditions. Adolescents with hearing impairments and speech difficulties were more likely to encounter online relationship risks than those with other types of SEN, including vision impairments, learning difficulties, and ASD. These two SEN conditions, alongside those with ASD who were the most prevalent group engaging in sexting, had the highest prevalence of all other relationship-risk types, suggesting a heightened susceptibility to these encounters. This may be explained by the specific needs associated with hearing impairments and speech difficulties, and the difficulties they could experience with offline, face-to-face communication. Hearing and speech difficulties are likely to contribute to struggles with interactions, which may be solved by using the internet and online technologies to communicate and socialise. Previously, Thorén, Öberg, Wänström, Andersson, and Lunner [62] discussed the benefits of using the internet to communicate, as being online allows those who are deaf or have hearing loss to interact without having to deal with background noise mixing with speech. These results provide support to the social compensation hypothesis as it can be argued that these adolescents use the internet to compensate for their communication and interaction difficulties by making use of written and visual methods by communicating online.

The effect of SEN status was also explored in relation to social isolation, parental online safety support, positive uses of the internet, as well as relationship-risk encounters. There was a significant difference between the SEN and non-SEN groups related to online

relationship-risk encounters, but also on parental online safety support, social isolation, and positive use of the internet. The results suggest that adolescents with SEN experience significantly greater levels of social isolation, concurrent with significantly less parental online safety support. These adolescents are also significantly more likely to perceive positive uses of the internet for socialising and coping than their non-SEN peers. Findings further suggest that adolescents with SEN receive less social support than their non-SEN peers, and this is both offline in the form of friendships and support in school, and online, i.e., support in staying safe and aware of risks. The findings related to this lack of social support corroborated previous findings related to feeling lonely and isolated [4,6,7]. The findings related to the lack of parental online safety support enhance our understanding of the digital literacy and skill levels of adolescents with SEN. Despite the important role of parents and their concerns about their child's online lives, research has previously illustrated that parents of children with SEN are less likely to receive support from their child's school than parents of non-SEN children [43]. This discrepancy may be because the adolescent's online abilities are underestimated, or because a risk-averse approach is adopted, encouraging control, restriction, and monitoring, rather than teaching and supportive engagement. Results also revealed that adolescents with SEN are more likely to use the internet for perceived positive reasons, such as socialisation and coping, than their non-SEN peers. This offers support to previous findings which state that online platforms, and the internet more generally, can act as a tool through which users can compensate for difficulties in offline communication and relationship formation [38].

MANOVA results revealed that gender had a significant effect on social isolation and positive use of the internet, with males facing greater social isolation and perceiving the internet to offer them more benefits with regard to socialisation and coping. These results corroborate research which has suggested males to be more isolated across their life course [63]. The male perceptions of the benefits of the internet to socialise and cope may be explained by previous research which highlights the role of online gaming as a platform for interaction and connectedness, with gaming an online sphere often believed to be dominated by males and which was often used for such purposes by males during the COVID-19 pandemic [64]. There was no main effect of gender on online relationship-risk encounters but there was a significant interaction effect, with the effect of gender reliant on SEN status. This means that, whilst encounters did not significantly differ between males and females in our entire sample, females with SEN were more likely to encounter these online relationship-risks than males with SEN. In contrast, males without SEN were more likely than non-SEN females to encounter such risks. These results further our understanding of the impact of gender on the digital lives and experiences of adolescents with SEN, though it might be argued that this only further complicates the role of gender overall. Previous research has suggested that female internet users are more susceptible to online harassment [41], whilst boys were found to behave more explicitly in their online interactions [56], but the significant interaction effect identified in this study indicates a more complex relationship between gender, SEN, and online relationship-risk encounters, which should be afforded greater attention in future research.

A hierarchical regression was conducted to explore how encounters of online relationship risks are explained, or predicted, by demographics such as SEN status, age, and gender (model 1), social isolation and parental online safety support (model 2), and the perceived positive use of the internet for socialisation and coping (model 3). The first model revealed age and SEN status, but not gender, to be significant predictors of online relationship-risk encounters, with older teenagers and those with SEN more likely to encounter these risks. In the second model, social isolation and parental online safety were added, with both being significant predictors. As such, it can be argued that online relationship-risk encounters can be predicted by a lack of friendships or meaningful connections and also by an absence of parental online safety support. Importantly, in this model, gender was a significant predictor, suggesting that males with SEN who lack social support are more likely to encounter relationship risks than females in the same circumstances. The role of

parental online safety support in predicting risk encounters online has been previously established; El-Asam et al. [21] identified the importance of parental online safety support (engagement and communication rather than restriction or monitoring only) in reducing the negative impact of the internet for vulnerable young people. This regression analysis corroborates this, suggesting that adolescents whose parents play a greater role in teaching them about online safety skills and risk awareness, and who support their digital lives, are less likely to encounter online relationship risks.

In the final model of the regression, the positive use of the internet for socialisation and coping reasons was added. This revealed that all variables, aside from gender, were significant predictors of online relationship-risk encounters. This suggests that older teenagers with SEN who have high levels of social isolation and low levels of parental online safety support, and who use the internet to socialise and cope with problems in their daily lives, are more likely to encounter relationship-risks online. The non-significance of gender in the final model suggests that gender does not have a direct effect on relationship-risk encounters and can instead be explained by perceived positive internet use, which MANOVA results indicated to significantly differ according to gender. As such, it may be that the gender differences in relationship-risk encounters can be explained by the gender perceptions of positive internet uses.

4.1. Implications and Recommendations

The results of this study have highlighted the need for a different model of support for adolescents with SEN to help them to keep safer online and manage their digital lives and relationships. Educators of adolescents with SEN may struggle to find online safety materials successfully adapted for the varied needs and developmental stages of pupils with SEN, along with accompanying material for parents so that they can deliver coherent messages. Understandably, parents of children with SEN are very protective of their child. This can lead to over-reliance on technological controls, intense monitoring, and restrictive approaches to keep their child safe. They may be less supportively engaged in their child's online life through building competence and resilience [65]. Importantly, therefore, schools need to adapt online safety programmes and teaching to meet the individual needs of a pupil with SEN, considering their vulnerability online and susceptibility to experiencing relationship-type risks. Schools should also work with parents and carers to support them in striking a balance between incorporating online safety practices at home and encouraging online activities that enhance their child's development in skills and socializing. The digital skills of a young person with SEN may be vastly underestimated and parents may be unaware of how adept their child is at using technology. The delivery of tailored support to enable young people with SEN to benefit safely from technology is a field that requires coherent and sensitive, yet nuanced, educational materials and advice for parents. Multiple formats of these resources are needed. Given that adolescents with hearing impairments and speech difficulties appear to be more likely to encounter online relationship risks, tailored responses for these young people are urgently needed and should include a focus on healthy relationships and intimate-image sharing as specific relationship risks [66].

Online safety education and policies should consider several factors, not only limited to SEN but also including age. Nuanced support is needed for older teenagers with SEN, particularly as they move into adulthood and leave school or educational settings, a milestone that may coincide with greater isolation and lack of social support from school peers or staff [67,68]. Online safety programmes might consider a stepped approach, in which teaching is tailored to the age and development of the pupils, with more in-depth learning for older teenagers, reinforcing earlier learning and building upon it. As memory is a challenge for some pupils, reiterating concepts in varied ways would be helpful if not delivered in a boring repetitive manner. Real-life case stories may be adapted as appropriate with stories that resonate for age and stage. Additionally, pupils with SEN are likely to require support to understand why their online behaviours and actions might be putting them at risk, such as explaining that online 'friends' might not be who they say they are,

or understanding that people online can be manipulative. Further, support is required for those young people with SEN who are particularly isolated, as well as those who are noted to spend large amounts of time online for purposes such as socialisation or to cope with difficulties in their offline daily life. This should involve a monitoring of sorts by parents and teaching staff to remain alert to the social experiences of SEN pupils.

Online safety policies and programmes should not only focus on the negative aspects of digital environments or scaremongering, as it can result in young people avoiding online life. Instead, pupils should be encouraged to build their digital resilience to potential dangers and risk encounters online. This resilient, risk-management approach aids autonomy and independence through support that is child-centered and focused on developing confidence and capabilities [65]. For adolescents with SEN, this sense of autonomy and freedom is often unaccounted for in online safety teaching [52].

Given the findings that young people with SEN experience high levels of social isolation and tend to feel alone, left out by others at school, and have worries about their friendships, it is recommended that parents, carers, and teaching staff should endeavour to facilitate the building of friendships in school environments or other offline spaces such as clubs and youth or sports groups. Care would need to be taken to encourage natural development of friendships and offline interactions with others. However, given the difficulties that many young people with SEN experience with offline communications, and the attractiveness of the internet in offering easier ways to interact and talk to others, online safety should consider that online socialisation provides a desirable alternative to offline socialising. Rather than simply telling these young people not to use the internet to talk to others and form relationships, or preventing them from doing so, they should be taught how to socialise safely in securely set up small groups of friends or relatives. Positive online activities should be encouraged, such as pursuing hobbies and interests and adolescents should be educated about potential risks and how to recognise signs that they might be increasing the likelihood of encountering harms.

4.2. Limitations and Future Research

This research is limited as it does not provide a comprehensive sample of young people with SEN. Whilst a range of types of SEN were included, namely, hearing and vision impairments, speech difficulties, learning difficulties, and ASD, this does not offer an inclusive representation of all young people with SEN. For example, those with social emotional and mental health needs, such as behavioural difficulties or mental health disorders, are not represented, nor are those with physical disabilities. Further research should be conducted to provide a fuller illustration of the online experiences of pupils with SEN, particularly given that 16% of the participants had 2 types of SEN and a further 5% had more than 2 SEN conditions, and this was not taken into consideration as a possible confounding variable in the current study.

Future research should consider exploring similar variables amongst an older sample population to determine whether adults with SEN experience similar levels of social isolation, positive use of the internet to socialise and cope with difficulties, and online relationship-risk encounters. Whilst adults are not normally labelled as having SEN, we here mean adults who have long-term intellectual, sensory, mental, or physical impairments such as those described in the definition of SEN. These adults with additional needs may still experience similar vulnerability online and are likely to remain susceptible to relationship-type risks when using the internet.

In addition, future research may consider directing their focus towards the experiences young people with SEN have of other types of risk, such as content, cyberscams, conduct and compulsion risks, as well as potential predictor variables associated with these experiences. Moreover, such research should consider the significance of a young person's type of SEN; that is, based on their primary area of need (e.g., communication and interaction, and cognition and learning), are young people more likely to experience certain types of risk? Given the variety of SEN conditions and associated psychological impairments and

profiles, findings of such research would further enhance our understanding of why young people with SEN are vulnerable online with a specific regard to their offline developmental or educational needs.

In summary, this study showed that the digital lives of adolescents aged 13 to 17 with SEN were significantly different to their peers without SEN. Namely, those with SEN encounter more relationship-risks when online, but also have less social support offline and from their parents when online. They are more likely to use the internet to compensate for this lack of support and to cope with related difficulties. Gender was also shown to influence levels of social isolation and perceptions of the internet as a tool for socialising and coping; males are more likely to experience greater social isolation and benefit more from using the internet to cope and socialise. A hierarchical regression analysis showed that social isolation and a lack of parental online safety support, and positive use of the internet to socialise, moderated the relationship between SEN and online relationship-risk encounters. Such results allow for important implications and recommendations to be made for parents and carers of young people with SEN, as well as for educators with regard to online safety education programmes and policies.

Appendix A

Table A1. The percentage of participants selecting 'Never' for each of the items in parental online safety support.

	Non-SEN	SEN	Overall
They check that games are rated OK for my age	32.7% (1181)	38.5% (447)	34.1% (1628)
They check that films I watch are OK for my age	28.7% (1035)	33.8% (393)	29.9% (1428)
They try to limit the time I spend online	15.1% (548)	18.4% (215)	15.9% (763)
They have set up controls to keep me safe	39.8% (1432)	41.9% (483)	40.3% (1915)
They talk to me about my online life	24.8% (889)	33.2% (384)	26.8% (1273)
We are learning to stay safe online together	18.1% (645)	21.4% (245)	18.9% (890)

Table A2. The percentage of participants selecting 'most of the time' for each of the items within perceived positive internet impact/use.

	Non-SEN	SEN	Overall
My online life has helped me to find and talk to people like me	20.5% (730)	28.3% (327)	22.4% (1057)
My online life has made me feel supported and connected to people	27.6% (988)	33.6% (387)	29.1% (1375)
My online life helps me escape my issues	19.4% (687)	32.7% (373)	22.6% (1060)
My online life helps me relax after school/college	46.3% (1652)	53.8% (618)	48.2% (2270)
My online life stops me feeling bored	48.8% (1732)	56.1% (639)	50.6% (2371)
My online life opens up lots of possibilities for me	25.7% (914)	34.8% (400)	28.0% (1314)

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