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The role of screen-based media in the development and maintenance of peer relationships in adolescents with and without autism spectrum conditions in Malta

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Abstract

This study examined the way cognitively able autistic (n=24) and typically developing (n=24) adolescents in Malta use screen-based media, with a focus on the potential ways in which it might relate to young people's peer relationships. The study also examined the views of parents of autistic (n=12) and typically developing (n=12) youngsters in relation to their adolescents' use of screen-based technology and the ways in which they feel this helps or hinders their interactions with others. The study employed a mixed methods approach, including semi-structured interviews with young people and their parents, adding a qualitative dimension to existing, quantitative research. Quantitative information on the nature of their best-friendships and a recording of their screen-media habits over a one-week period was also carried out. Findings indicate that typically developing young people report using screen-based media more frequently to connect with known peers than autistic adolescents, although face-to-face communication was preferred to online interactions in both groups. Screen-based media was also used to support leisure and academic activities across both groups, although autistic individuals prefer using screen-based media alone rather than with others. Parental perceptions of screen-media use focused mostly on risk and safety. These issues, together with cultural factors, emphasised family contact time and face-to-face interactions, which may have a role in shaping Maltese adolescents' preferences for communication with peers. Limitations, implications for future research and educational psychology practice are discussed.

Declaration and Word Count

I hereby declare that, except where explicit attribution is made, the work presented in this thesis is entirely my own. Word count (exclusive of appendices and references): 34,948 words

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I could not have done this without my husband Kristian, who has kept me grounded, provided unyielding patience and accepted that our lives had to be put on hold, especially over the past few difficult months. I am grateful for his support which ensured I was able to juggle my work as a trainee educational psychologist and researcher as we were both learning the ropes in our new role as parents to our dear Francesca. I am very much looking forward to spending some quality time as a family. This thesis is dedicated to you.

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1. Introduction

Over recent decades, the prominence of technology in the lives of children and young people has grown radically. The internet, digital and social media have undoubtedly become a large part of an adolescent's social life (Lenhart, et al., 2015; Livingstone & Helsper, 2007) and technology has become an important social variable connecting the physical and virtual worlds (Subrahnamyan, Greenfield & Tynes, 2004). Such changes allow for the creation of new contexts for adolescents to interact with other people and to construct and experience their identities (Davis, 2013; Shapiro & Margolin, 2014)

Throughout adolescence, young people experience a multitude of physical, cognitive, and social changes (Yurgelun-Todd, 2007) impacting on most aspects of their lives. For young autistic people, these changes exist in addition to the often-significant difficulties in social communication and interaction that they face as a result of being autistic (American Psychiatric Association (APA), 2013). Friendships and social networks are especially important during the teenage years, and autistic adolescents' difficulties with developing and maintaining friendships potentially places them at risk of social isolation (APA, 2013; Bauminger, 2002).

The social difficulties experienced by autistic adolescents combined with the popularity of screen-based media use, seem to create an area of both risk and opportunity for this population (Mazurek and Wenstrup, 2013). The tendency to develop intense preoccupations that characterise ASC (APA, 2013) puts autistic children and young people at greater risk for problematic use of some screen-based media, such as engaging in excessive or negative types of media use.

Nonetheless, the use of socially interactive media may offer potential benefits for young autistic people in terms of socialisation. Online communication offers opportunities for social interaction in a format that does not require attention to nonverbal cues and facial expressions (Walther, 2007), areas that are specifically challenging for autistic individuals (APA, 2013). Therefore, communicating online may offer users more control over social interactions than face-to-face interactions (Mazurek & Wenstrup, 2013) and for this reason, communicating online is thought to facilitate better social interaction among autistic individuals (Benford & Standen 2009; Brownlow, O'Dell & Taylor, 2006).

A growing body of research has examined the appeal that technology and screen-based media hold for autistic children and young people (e.g. Chonchaiya, Nuntnarumit & Pruksananonda, 2011; MacMullin, Lunsky & Weiss, 2016; Mazurek, Shattuck, Wagner & Cooper, 2012; Mineo, Ziegler, Gill & Salkin, 2009; Ploog, Scharf, Nelson & Brooks, 2013; Nagar & Sah, 2013; Porayska-Pomsta et al., 2012; Shane & Albert 2008). However, there is a paucity of research investigating the specific role of screen-based media in supporting autistic young people's relationship with peers.

In view of the above, the aims of this thesis research were to investigate:

(a) the ways in which autistic adolescents in Malta used screen-based media compared to typically developing peers of similar age and ability;

(b) the extent to which autistic adolescents used screen-based media to create and reinforce social connections and peer relationships;

(c) whether there were any differences between online and offline peer relationships between autistic and typically developing adolescents; and

(d) the views of Maltese parents of autistic and typically developing adolescents in relation to their children's use of screen-based media and perceived peer relationships.

In Chapter 2, I will provide an overview of the literature on the friendships and peer relationships of autistic and typically developing children and young people as well as the screen-based media use of these adolescents. The literature review will focus on the use of screen-based technology as a tool to create and support the development of friendships in young people. The research around parental mediation and involvement in the use of such technologies with their children, will also be reviewed.

In Chapter 3, I will provide an outline of the methodology which was used in this thesis research, including a rationale for the use of a mixed-methods approach, as well an explanation of the pragmatic epistemological stance within which the research will be framed and a description of the research design and process.

In Chapter 4, I will report the results of the study and discuss them within the context of the extant literature in Chapter 5. Limitations of the study, recommendations for future research as well as the implications of the research to the educational psychology profession will be discussed in the final chapter of the thesis.

1.1 Terminology

For the purposes of this study, the term 'screen-based media' will be used to refer to technological devices including computers, television, video games, computer games, electronic social media and online social networking sites (as

defined in Mazurek & Wenstrup, 2013), as well as mobile phones, tablet computers and game consoles.

In referring to autism spectrum conditions (ASC[1]), this thesis will make use of identity-first language to refer to autistic individuals and participants, since this is the preferred language of many autistic people and their parents (Kenny et al., 2016; Sinclair, 1999).

1.2 The Local Context

This study was carried out in my home country, Malta. As a trainee educational psychologist on the Doctorate in Educational and Child Psychology (DEdPsy) programme, I carried out the first year of this course in London, which included placements in two Local Education Authorities. However, the second and third year placement required by the programme were carried out at the School Psychology Service in Malta. Although there is a dearth of research about autism spectrum conditions in Malta this study contributed to the small but growing body of local literature emerging from various disciplines including medicine (James & Grech, 2018), speech and language therapy (Agius & Vance, 2016), education (Gauci, 2016) and psychology (Bartolo, 2002; Camilleri, 2013).

Statistics from the Maltese National Statistics Office (NSO, 2017) indicate that the current Maltese population stands at 440,433 and accounts for 0.1 % of the total population of the European Union, of which Malta has been a member state since 2004. The employed population in Malta is 191,378. People under 18

[1] Researchers (e.g., Baron-Cohen, 2000; Gernsbacher, 2007; Pellicano & Stears, 2011) and autistic people and their family members (Kenny et al., 2016) have begun to turn away from terms such as ‘‘disorder’’ and ‘‘deficit’’, which can be disparaging and potentially stigmatising. These authors - as do I - favour the term ‘condition’, which acknowledges that, while being autistic can be disabling, autism is considered one particular cognitive style or mode of interaction among a ‘‘diversity of minds’’. In this thesis, I therefore use the term ‘autism spectrum condition’ rather than ‘autism spectrum conditions’.

years of age make up 17.2% (75,754) of the total population, while people aged 65 and over make up 19.4% of the Maltese population. Although Maltese is the national language, Malta has two official languages, Maltese and English.

Similar to other southern European nations, Malta shares a strong Catholic family culture (Abela, 2001), which is evident through the close connections people maintain with family members, even throughout adulthood. The family structure is typically nuclear. Yet, as most married couples live in the same town or village as their parents a modified form of the extended family is evident (Abela, Frish and Dowling, 2005). Therefore, regular contact with extended family members is a common feature of life for Maltese children and young people.

NSO (2018) data also shows that in 2016, 81.9% of households in Malta had access to the internet, with people aged between 16 and 24 years of age being the highest registered internet users (98.1%) when compared to older people aged 65 to 74, whose level of internet use is the lowest at 37.9%. Results show that the internet is mostly used for communication purposes (95.1 per cent) and for providing access to information (91.8 per cent). A recent survey study (ICON, 2016) conducted in collaboration with the University of Malta about the local use of social media in 799 Maltese adult consumers, showed that Facebook is by far the most popular type of social media among respondents, with 89% reporting that they use it regularly. YouTube is also very commonly used, with 63% of respondents making reference to using this social media platform.

1.2.1 Autism spectrum conditions in Malta

The prevalence of autism in Malta is not known, although it is estimated to be similar to that found in other European countries, i.e., 1 in every 100 individuals

(Baird et al., 2006). Autism diagnoses of Maltese children are usually carried out as part of a multi-disciplinary team decision involving a number of professionals, namely psychiatrists, psychologists and pediatricians working with the child and his/her family, according to either DSM-5 (Amercian Psychiatric Association, 2013)) or ICD-10 (World Health Organisation, 1992)) criteria.

Research has shown that the manifestations of autism may vary according to the sociocultural context in which the condition presents (e.g., Mandy, Charman, Puura & Skuse, 2014). Although ASC is a universal condition with strong biological underpinnings, the manifestation of its symptoms appears to be influenced by cultural factors (Daley, 2002). Cross-cultural comparisons are especially important for ASC since cultural views regarding appropriate behaviours and typical development for a certain culture may impact parent andcaregiver reports as well as the diagnostic process of ASC (Mandell, 2005).

In an attempt to determine how best to accommodate the cultural influences that impact on the psychological assessment of ASC, Rogler (1993) suggested that rather than controlling for cultural influences in research, culture should be regarded as an integral factor in psychiatric and psychological conditions. He proposed a framework for understanding how culture affects the diagnostic process that may help to conceptualise how culture influences the diagnosis of ASC which includes considering cultural influences on the assessment of symptoms and their severity. For example, research conducted in the United States suggests that American parents tend to be more concerned about language delays (Coonrod & Stone, 2004) when compared to Indian parents who

tend to have early concerns about social difficulties (Daley, 2005). The use of culturally-sensitive diagnostic and screening measures also needs to be given due consideration. In fact, several ASC screening and assessment measures such as the Modified Checklist for Autism in Toddlers (M-CHAT; Robins, Fein, Barton, & Green, 2004) and the Baby and Infant Screen for Children with aUtIsm Traits (BISCUIT; Matson, Boisjoli & Wilkins, 2007) have been adapted for cross-cultural use. In this regard, in Malta there is no official protocol that guides professionals in the diagnostic process of ASC, as opposed to, for example, the National Institute for Health and Care Excellence (NICE, 2014) guidelines in the United Kingdom. With regard to screening and assessment, while the M-CHAT has recently started being used as part of a national initiative at identifying autism in order to provide the necessary early intervention, there are no specific diagnostic tools that are culturally sensitive to the Maltese population.

1.3 Education in Malta

Education in Malta consists of kindergarten, primary, secondary, post-secondary and tertiary education. Compulsory education in Malta is between 5 years of age up to the age of 16 years. State-funded education is provided from the pre-primary stage up until the tertiary stage (18+ years of age) alongside education provided by church and independent schools.

Since 2005, schools in Malta have been organised into college networks under the headship of college principals. Each college comprises a number of primary schools, catering for students aged between 3 years and 11 years, and a smaller number of secondary schools catering for students aged between 11 and 16 years.

Three major changes to the education system have taken place in the last eight years. The first major change was the shift of secondary schools from a selective towards a more inclusive comprehensive schooling in 2010, whereby students were no longer being separated according to their academic performance although gender segregation was still practiced. Following an educational reform entitled 'For All Children to Succeed' (Ministry of Education and Employment, 2005) the local education system has been strongly focused on inclusive education. To mediate the consequences of teaching mixed ability classes which teachers found particularly challenging (Borg and Giordmaina, 2012), banding was introduced to restrict somewhat the range of abilities in any class. Furthermore, setting, which is ability streaming in a subject, started being applied in Mathematics, English, and Maltese. Following this development, another two major changes saw their outset in the scholastic year 2014-2015. First, students entering the first year of secondary schooling were no longer being segregated according to gender, hence the introduction of co-education schooling. Secondly, the concept of Middle Schools was instituted. Thus, students in the first two years of secondary education were physically separated from the older. Senior students, aged between 13 and 16 years started attending Senior Schools.

1.3.1 The education of young autistic people in Malta

In view of the inclusive education culture that the country adopts, the majority of students with autism spectrum conditions attend mainstream schools. Apart from mainstream and special education settings, a number of other educational institutions offering services to autistic children and young people in

Maltese schools as well as in the community include: INSPIRE Foundation, Equal Partners Foundation, the Malta Autism Centre, and National School Support Services Department (NSSSD). The Ministries of Education and Health provide the services of both educational and clinical psychologists. Educational psychologists work within clusters of schools, referred to as colleges, and provide services to children, young people and their families as part of the School Psychology Services (SPS) team. The Ministry of Health provides the services of clinical psychologists, pediatricians and other allied health professionals at the Child Development Assessment Unit (CDAU). Professionals within SPS and the CDAU, together with professionals working independently in the private sector, are involved with identifying and diagnosing ASC in children and young people as well as offering intervention and support to these young people and their families.

To date, there is no single assessment tool standardised on a Maltese population that professionals use locally. Rather, EPs make use of a range of tools and resources standardised mostly on UK and US populations, alongside information obtained from key stakeholders by means of school and family consultations as well as observations of and individual work with children at school. Following assessment and diagnosis, EPs make recommendations for intervention programmes and provision of support, including 'statementing', which is the statutory process through which a child's needs are recognised and appropriate in-class support is provided by means of assigning a Learning Support Assistant (LSA) to identified students. The process of 'statementing' is usually initiated upon a confirmed diagnosis of ASC, with the majority of those diagnosed with an

ASC, and especially having significant difficulties, receiving a statement of support and subsequent in-class support.

1.4 Researcher positionality and reflexivity

Researcher positionality recognises that researchers are part of the social world that they are researching (Cohen, Manion & Morrison, 2011). Positionality implies that the researcher's biography together within the context of the wider society they live in have an influence on the research process (Hammersley & Atkinson, 1995). Throughout the past year as a researcher, I have reflected on my own experiences, values and the cultural context within which this study has taken place in order to help clarify and contextualize my position in relation to this research.

My professional experience as a special education teacher gave me the possibility of meeting a number of children and young people with autism spectrum conditions as well as their families. Furthermore, my interest in the area of autism drew me to spend eight years as an advisory teacher within the autism support service that exists in Malta. Throughout these years, I was involved in supporting autistic and young people in mainstream schools around the country. This also included involvement in projects aimed at raising awareness of autism in primary and secondary schools and in the community as well as training for parents and educators of young autistic people. My involvement as a national representative for Malta on the ICT for Information Accessibility in Learning (ICT4IAL) project within the European Agency for Development in Special Needs education reinforced my interest in the area of technology and special educational needs. On an academic level, my Masters in Learning, Disability and Technology

thesis focused on the use of interactive whiteboards with autistic kindergarten children in Malta, thus combining two areas of interest – autism and technology.

On a national level, there is increasing local support and services for autistic children and young people in Malta, particularly early assessment and diagnosis of youngsters who have significant communication and cognitive difficulties. However, there seems to be less focus on cognitively able or so-called 'high-functioning' young autistic people. For this reason, an exploration of how screen-media technology features in the lives of these young people together with its role in their peer relationships was seen as contributing to an existing gap in the wider literature and more specifically, an area which has not been given due importance locally.

I acknowledge that my personal position, particularly my previous work experience had the potential in influencing the research process especially in the recruitment of young autistic people and their parents. This was because I may have been familiar to and may have had contact with some of the autistic young people and their families in my past roles, which was a factor that facilitated the recruitment of participants. The social context of the country within which the study took place makes it quite possible for people to meet each other regularly in different settings, and within the area of local education, these possibilities are even greater. Nevertheless, I ensured that no participants were service users of the educational psychology service I am presently engaged with as a trainee educational psychologist**.**

2. Literature Review

This chapter presents a review of the current literature relevant to the aims of this thesis. This chapter begins by examining the salient themes relating to autism and adolescence, with a focus on the particular challenges young autistic people face in their peer relationships during this developmental phase. This is followed by a discussion of the existing differences in the nature of friendships of typically developing and autistic adolescents. Next, the review will focus on existing research specifically investigating the role of screen-based media in the development and maintenance of peer relationships during adolescence, together with critical analysis of studies directly related to screen-based media and peer relationships in autistic adolescents, with a focus on video game playing and social media use as emerging areas of research. This chapter concludes with an overview of research of parental mediation strategies on the use of screen-based technology by their young people.

A comprehensive literature search was conducted by searching the following databases: PsyINFO, ERIC, SCOPUS, ProQuest, the Web of Science and the British Educational Index. The UCL Institute of Education database and Google Scholar were also accessed. Keywords included: autism, ASC, ASC, autistic, technology, screen-media, screen-based media, electronic screen-media, peer relationships, friendships, social development, computer-mediated communication and parental mediation.

2.1 Autism spectrum conditions (ASC)

Autism spectrum conditions (ASC) and 'autism', describe a neurodevelopmental condition that features difficulties with social reciprocity, social communication, flexibility and sensory processing (APA, 2013). For a diagnosis of autism to be made, these difficulties must be present in early childhood, impair daily functioning (APA, 2013), and must not be better explained by intellectual disability (APA, 2013).

The estimated prevalence of ASC is around 1% (Baird et al., 2016) but it has also been reported to be as higher, around 2.6%, in children under 17 years of age (Elsabbagh et al., 2012; Hansen, Schendel, & Parner, 2015). This makes it the fastest growing developmental disability over the last twelve years (Baio et al., 2018). Being a heterogeneous condition, autism presents very differently in terms of cognitive, verbal and adaptive skills (Masi, DeMayo, Glozier & Guastella, 2017), resulting in high levels of differences between autistic individuals.

2.1.1 Adolescence and ASC

Adolescence presents particular challenges for young autistic people (Seltzer et al., 2003), as they become more aware of their social difficulties in a more demanding social environment (Tantam, 2003). While a number of studies report that autistic children and adolescents wish to fit in with peers (Carrington & Graham, 2001; Humphrey & Lewis, 2008), research nevertheless shows that they are often excluded and have fewer friends than typically developing children (Bauminger & Kasari, 2000; Calder, Hill, & Pellicano, 2013; Rotheram-Fuller, Kasari, Chamberlain, & Locke, 2010). They are also often bullying victims (e.g. Humphrey & Symes, 2010; Rowley et al., 2012). A review of the literature of the

peer relationships of autistic children and young people is presented in Chapter 2.2 below.

The transition from primary to secondary school is a major event in a young person's life (Zeedyk et al., 2003). Difficulties experienced by autistic children and young people become more pronounced in the context of this transition, which makes adjusting to new school placements more challenging. A recent mixed-methods, multi-informant study by Makin, Pellicano and Hill (2017) looked at the primary to secondary school transition experiences of 15 cognitively able (IQ>70) autistic children in one local authority in England. This study reinforced previous literature documenting the difficulty on behalf of young autistic people to cope with this change (e.g. Dillon & Underwood, 2012). Results from pre- and post- transition questionnaires and semi-structured interviews with parents, teachers and children indicated that transitions were fraught with challenges for young autistic people transitioning to secondary school. Of these challenges, social-relational difficulties featured as a major concern for autistic children who perceive peer acceptance as a priority for successful integration into secondary school.

2.1.2 Gender differences in ASC

A diagnosis of ASC is more common amongst boys than in girls (APA, 2013). The accepted gender ratios across the autism spectrum have had a complex history and are continuing to be developed. The core features of autism were initially identified and diagnosed on populations which were predominantly male, with boys dominating clinical and research samples and the subsequent public awareness of this condition (Lai et al., 2015; Sedgewick, 2017). For example, diagnostic measures for autism were developed with a predominant

male sample (e.g., Volkmar et al., 1994), possibly resulting in diagnostic criteria which are not sufficiently sensitive to capture how gender differences are presented in ASC. This requires careful consideration of whether existing gender ratios in ASC are a representation of how autistic females are underdiagnosed or a reflection of an actual variation in the prevalence of this condition (Koenig & Tsatsanis 2005).

A recent systematic review and meta-analysis of prevalence studies (Loomes, Hull & Mandy, 2017) attempted to give a more accurate assessment of male-to-female ratios in autism, which were previously estimated as being up to 8(boys):1(girl), for example in a community based prevalence study looking at 177 autistic children and young people in the Barwon region of Australia (see Icasiano, Hewson, Machet, Cooper & Marshall, 2004). However, current estimates suggest that gender ratios in autism are more likely to be around 3 (boys):1(girl) across the range of cognitive ability (Loomes et al., 2017). Despite the fact that the authors report a lower male-to-female ratio in ASC than previously estimated, the study also confirmed that boys are still more likely to receive a diagnosis of ASC when compared to girls. Furthermore, apart from being diagnosed less, autistic girls were also, on average, also diagnosed later than boys (Hiller, Young & Weber, 2014; Shattuck et al., 2009). With regard to research examining gender difference in ASC symptomatology, studies have yielded conflicting findings. A number of studies found that females showed fewer repetitive behaviours and fewer difficulties with social communication (Hartley & Sikora 2009; Zwaigenbaum et al., 2012) but other studies have failed to find differences in diagnostic features between autistic males and females (e.g., Carter et al., 2007).

2.2 Friendships and peer relationships of autistic children and young people

An investigation into the multiple uses of screen-based media by young autistic people is also very relevant to the growing interest in the area of friendship formation and maintenance in this population (e.g. Calder, Hill & Pellicano, 2013; Kuo et al., 2013; Shattuck, Orsmond, Wagner & Cooper, 2011). Friendships and relationships with peers become pivotal during adolescence as young people start to become less reliant on their family in an attempt to establish their independence (Furman & Buhrmester, 1992). Indeed, in a qualitative study by Helseth & Misvær, 2010 looking at quality of life perceptions of 31 typically developing Norwegian young people aged between 14 and 15 years of age, friendships were considered to be the biggest contributing factor to their quality of life.

Forming peer relationships and maintaining friendships are considered as main challenges for the majority of autistic children (APA, 2013; Shattuck et al., 2011) who are more likely to be on the periphery of social networks in mainstream school classrooms (Kasari, Locke, Gulsrud, & Rotheram-Fuller, 2011) compared to their typically developing peers, even as they become adults (e.g. Howlin, Goode, Hutton & Rutter, 2004).

However, despite existing research highlighting the range and extent of social interaction difficulties faced by young autistic people, increasing empirical evidence suggests that there also exists a variability in the way young autistic people experience social relationships. Many autistic youngsters desire to form friendships, with a number of studies reporting that these young people are able

to form and enjoy stable friendships (e.g. Bauminger et al., 2008a; Bauminger et al., 2008b; Daniel & Billingsley, 2010, O'Hagan & Hebron, 2017).

Much of the research investigating peer relationships in autistic youngsters has focused on children, with fewer studies examining friendship in young autistic people. A mixed-methods study from the United Kingdom by Calder et al. (2013), for example, investigated the functional role of friendship for autistic (n=12) and typically developing children (n=11). Participants were aged between 9 and 11 years, and matched on chronological age, gender and cognitive ability. The study adopted a multi-informant approach that included parent and teacher perspectives, alongside children's accounts of their friendship development. Data were collected by means of quantitative, qualitative and socio-metric methods including structured playground observations of the children, social cognitive mapping, semi-structured interviews, the Strange Stories test (Happe', 1994), and the administration of the Friendship Quality Scale (Bukowski, Hoza & Boivin, 1994). Most autistic children were satisfied with their peer relationships, despite some qualitative difference in children's expectations of relating to others. This finding, in turn, challenged a common notion that autistic children are unable to form friendships (Calder et al, 2013) and strengthened the importance of understanding the individual experiences of young autistic people in their relationships with others.

In one of the first studies examining the friendships of autistic *adolescents*, Kuo, et al., (2013) examined the number of friends and their characteristics, of 91 young autistic people aged 12 to 18 years in the United States, who had a reading level of 5th grade or higher. They also examined adolescent and parent perceptions of the adolescents' friendships. Data were collected by means of

questionnaires requiring autistic adolescents to record their time spent with friends as well data about their relationship with their best friend by using the Friendship Quality Scale (Bukowski, Hoza, & Boivin, 1994). Their parents, who had an average age of 47 and were mostly white non-Hispanic adults, were asked to provide information about the family's background as well as their children's friends together with a measure of current autistic features, through the Social Communication Questionnaire (Rutter, Bailey & Lord, 2003). Results showed that playing video games on the computer or game consoles was the preferred way for autistic adolescents to interact with others. Results also showed gender differences in the activities that autistic youngsters engaged in, with female autistic participants having a preference for activities more usually associated with typically developing young people, such as having conversations. Males showed a preference for more passive activities such as video game playing and watching television. About half of autistic adolescents spent time with friends on any given day during the summer months, and the activities that they engaged in together differed by gender. The authors did not include, however, a typically developing adolescent comparison sample in their study, thus limiting a broader understanding of the differences and similarities in friendship experiences of autistic and typically developing adolescents.

Studies have also shown that the social and relational difficulties experienced by young autistic people are significantly different to those experienced by young people with different disabilities (e.g., Shattuck et al., 2011), such as those adolescents with intellectual learning and speech and language impairments. This study, which obtained data from the National Longitudinal Transition Study 2 (NLTS-2; Wagner et al., 2003), examined 900 adolescents aged between 13

and 17 attending special education settings in the United Sates (Shattuck et al., 2011). Findings indicated that half of the adolescent participants engaged in limited activities of a social nature with friends and in the community with peers. Research focusing specifically on peer relationships of autistic adolescents indicated that they spend more time with adults, including paid professionals, than they do with peers (Orsmond & Kuo, 2011).

Significant variation also exists in the way relationships with peers are conceptualised, which is in line with the level of individual differences seen across the autism spectrum in general (Sedgewick, 2017). Extant research on the nature of peer relationships in autism shows that compared to typically developing youth, when asked to describe what being a friend means, young autistic people often omitted affective components of relationships in their definitions of friendship (Bauminger & Kasari, 2000), showing a preference for companionship rather than emotional connectedness in their relationships with others (Calder et al., 2013). Even so, other specific characteristics of friendships reported by some autistic adolescents have included trustworthiness, kindness, and patience (Howard, Cohn & Orsmond, 2006; Locke, Ishijima, Kasari, & London, 2010). Therefore, there is evidence that for autistic adolescents, friendship definitions have included deeper, affective qualities and that decreased emotional connectedness cannot be generalised for all autistic individuals.

2.2.1 Gender differences in peer relationships

A large body of research over past decades has highlighted how the friendships and friendship qualities of typically developing males and female differ (Brendgen, Markiewicz, Doyle, & Bukowski, 2001; De Goede, Branje, & Meeus, 2009; Parker & Asher, 1993). Whereas girls are thought to focus on closer

relationships, giving more value to empathy and emotional connectedness, boys generally give more importance to companionship, competition, control, and conflict (DeGoede et al., 2009) A recent US-based study looking into the social context of adolescent friendships (Flynn, Felmlee & Conger, 2017) examined survey responses from a cohort 352 typically developing adolescents with an average age of 17.6 years, together with their parents who had been participants in the the Iowa Youth and Families Project (Conger et al, 2011). Findings echoed past research and demonstrated that when compared to adolescent boys, adolescent girls exhibit higher levels of supportive interactions and friendship quality, with gender differences emerging from the ages of 9 through to 15 years (Sharabany, Gershoni, & Hofman, 1981).

Given the established differences in friendship experiences of typically developing males and females, variations in peer relationships attributed to gender in autistic individuals also exist (Dean et al., 2014; Head, McGillivray & Stokes, 2014; Knickmeyer, Wheelwright & Baron-Cohen, 2008). An Australian study by Head et al (2014) investigated whether gender differences affected emotionality and sociability in autistic (n=50) and typically developing adolescents (n=51). Participants were aged between 10 and 16 years and made up an equally distributed sample in terms of gender and diagnosis. Findings show that autistic girls aged 10-16 years reported better friendships and showed greater interest in relationships than autistic boys, as indicated by higher scores on the Friendship Questionnaire (Baron-Cohen & Wheelwright, 2003), which were similar to typically developing boys.

Similarly, in recent mixed-methods UK study (Sedgewick, Hill, Yates, Pickering, & Pellicano, 2016) investigated gender differences in the friendship experiences

of 46 autistic and typically developing adolescents aged between 12 and 16 years who were matched on age, gender and cognitive ability. The authors reported that adolescent autistic girls had closer and more secure friendships than autistic boys, and were more interested in engaging with people for social purposes rather than because of shared interests, supporting earlier research in the area (e.g., Bauminger & Kasari, 2000). Adolescent girls were also rated higher than autistic boys on social motivation, a necessary skill in initiating and maintaining friendships, again making them more comparable to typically developing adolescents. Such results challenged the theory that autistic individuals have diminished social motivation (Chevallier, Kohls, Troiani, Brodkin, & Schultz, 2012), with this study showing that this cannot be generalised to all autistic individuals, and in particularly, females. The qualitative differences that exist in autistic girls' and boys' peer relationships could therefore have an impact on the way that they use screen-based media to support their friendships.

2.3 Screen-based media use by typically developing adolescents

Children and adolescents' lives are media saturated as technology occupies a significant part of their daily time (Chassiakos et al., 2016; Rosenberg et al., 2018). There is a clear international evidence base indicating that screen-based media use amongst adolescence has increased over recent years (e.g., Kristiansen Júlíusson, Eide, Roelants & Bjerknes, 2013; Rey-Lopez, 2010; Rosenberg, 2018), as the introduction of more novel screen-based media has given youngsters unprecedented access to a wider variety of academic, social and entertainment opportunities (Houghton et al., 2015).

A recent longitudinal study tracked multiple screen-media activities amongst 10- to 17-year-old typically developing Australian adolescents (n=1948) over the

period of 2 years (Rosenberg et al., 2018). At approximately six-month intervals and using the Screen Based Media Use Scales (SBMUS) participants provided reports on the total amount of time they spend using screen-media technologies, together with the time spent specific activities such as social networking, gaming and web searching. Results indicated that older adolescent girls engaged more than boys in all activities except gaming. Although older male adolescent boys' use of screen-based media remained similar over the 2 year period, older girls' use of screen-media media decreased with age. Results also showed that social networking was a preferred activity by young females in particular. This study underlined a high degree of multi-tasking and multiple screen use with young people frequently using several screens at the same time, such as playing a game on the computer while using social media on a smartphone (Rosenberg et al., 2018). Although offering more up-to-date estimates of screen-media use, these findings are in accordance with previous research indicating an overall rise in the time spent by typically-developing adolescents engaging in digital media (e.g., Lenhart, Ling, Campbell, & Purcell, 2010; Lenhart,, Purcell, Smith, & Zickuhr, 2010; Rideout, Foehr & Roberts, 2010). Moreover, there is a common acknowledgement across these studies that using screen-media for communication with peers was one of the most popular uses of technology.

2.3.1 Screen-based media use and peer relationships in typically developing adolescents

The relationships between the development of social connections in adolescence and digital screen-media, in particular the extensive availability of social media platforms has become increasingly investigated (e.g., Antheunis, Schouten, & Krahmer, 2016; Allen, Gray, McInerney & Waters, 2014; Gray, 2018;

Shapiro & Margolin, 2014). Computer-mediated communication (CMC), namely social networking sites such as Facebook, has provided youth, particularly typically-developing young people, with a preferred way of communicating with their friends (Gray, 2018).

Recent research conducted by the Pew Research Centre (Lenhart et al., 2015) using online survey data from 1,056 parent-teen pairs in the United States found that 75% of typically-developing teen participants aged between 13 and 17 years have access to a mobile phone, which is the primary device used for teen internet use. Facebook remained extremely prevalent in young adolescents' social media use, with 41% reporting frequent use of Facebook, followed by Instagram (20%), and Snapchat (11%). Facebook was also more frequently visited by boys rather than girls, who were more frequent users of Snapchat and Instagram as platforms for communicating with peers. Digital media have created new social contexts (Davis, 2013) within which interpersonal relationships can be expressed and constructed. Video game playing, which was once considered to be a solitary activity, has become a platform for social interaction where individuals can play together in each other's presence or online (Trepte, Reinecke & Juechems, 2012).

The impact of social media use on the social engagement of adolescents presents an ongoing debate in the literature with a large proportion focusing on negative effects, such as depression, social isolation and cyberbullying (Hamm et al., 2015; O'Keeffe & Clarke-Pearson, 2011). It has been claimed that "these have created a moral panic about social media" (Gray, 2018, p. 176), and have given rise to online discussions about how best to protect young people from the adverse effects of technology (e.g., Dawson & Pinnock, 2014; Rivett, 2014).

In contrast, some research has outlined how social media can promote the social connections between typically-developing young people (Shklovski, Kraut & Rainie, 2004; Valkenburg & Peter 2007). This promotion of social connection via online communication has been explained by Walther's (1996) hyper-personal communication theory. This theory considers the prominent features of computer-mediated communication (CMC), such as asynchrony, and sees it as encouraging individuals' self-disclosure when compared to face-to-face communication. In this way, CMC is seen as enabling and facilitating relationships, even more so than face-to-face communication. Although research in this area is potentially a little dated, there is also evidence to suggest that the educational and psychological benefits of using social media sites may outweigh the potential risks (Greenhow, 2011; Steinfield, Ellison & Lampe, 2008). Furthermore, Tynes (2007) argued that the use of social networking sites supported the psychological development of young people, in aspects related to critical thinking and perspective taking. Social networking sites may offer opportunities for young people in building self-esteem, supporting the creation of peer relationships together with developing friendship quality (Valkenburg & Peter, 2011).

A comprehensive review paper by Valkenburg and Peter (2011) provided a model of the appeal that various technologies hold for typically developing young people, together with an overview of risks and opportunities related to young people's psychosocial development. In this review, the authors put forward two contrasting hypotheses related to internet use and friendship. The *displacement hypothesis* viewed online activities as hindering the quality of offline relationships. This is because online activities took away from the time that could be dedicated

to face-to-face interactions, thus limiting the quality of these relationships. By contrast, the *stimulation hypothesis* supported the idea that the opportunities afforded by technology provided adolescents with increased feelings of closeness with their friends (Valkenburg & Peter, 2011). Proponents of the stimulation hypothesis regard communicating online as reinforcing offline interactions by increasing the overall time spent communicating with others (Wellman, Haase, Witte & Hampton, 2001; Ellison et al., 2007).

2.4 Autism spectrum conditions and technology – a special affinity?

The presence of superior visual spatial ability in autistic individuals has been highlighted as one of the most interesting characteristics of ASC (Shah & Frith 1983; 1993). Whilst exhibiting difficulties with verbal language (APA, 2013), autistic individuals have been found to relate and respond well to visually represented information and stimuli (Must et al., 2014) and that visual media lies amongst the preferred activities of autistic people (Shane & Albert, 2008). This preference underlies the idea that numerous autistic people have an affinity with computers and digital technology (Mineo, et al., 2009; More, 2009; Ploog, et al., 2013; Porayska-Pomsta et al., 2012).

In an attempt to understand why technology holds such appeal for many autistic people similarities have been drawn, for example, between the cognitive functioning of autistic individuals and the processing of the computer - with the computer's predictability and contained, clear-cut boundaries appealing to autistic people (Shane & Albert, 2008). The affinity towards visually-represented information together with the attraction that technology holds for numerous autistic people has led to the development of various technology-aided educational and intervention programmes for autistic individuals that support their

learning and independence (Shane et al., 2012). The National Longitudinal Transition Study-2 (NLTS2) mentioned earlier in this review also provided more support to the notion that autistic individuals are drawn to technology and revealed that autistic students who enrolled in college courses graduated and pursued careers in computer science more often than the general population - 16.22% vs. 6.6%, respectively (Wei, Yu, Shattuck, McCracken, & Blackorby, 2013).

There is also an emerging body of evidence that new technologies, in particular handheld devices such as smartphones and tablets, can be effective in promoting independence for autistic adolescents (Hume, Boyd, Hamm, & Kucharczyk, 2014). For example, technology provided the possibility of creating personalised systems such as visual supports, behaviour prompts and transition steps for young autistic people to promote independence (e.g., Mechling, Gast & Seid, 2009).

In a recent self-report survey study from the United States (Hedges, Odom, Hume and Same, 2017), 472 autistic adolescents with an average age of 16.8 years were asked about how they used technology in supportive ways within home and school contexts as well as their perceptions of the benefits and possible barriers to its use. Three-quarters of participants were cognitively able young people while the remaining participants had an IQ of less than 70. Results revealed that high-school students reported using various technological devices in a range of ways including to support learning, to stay organised and also to reduce stress. Technology was also found to support communication and increase social interaction opportunities, with the majority of survey respondents (92%) reporting using technology for socialisation purposes across a variety of

settings. Participants reported that their most commonly used technology was the phone (81%) followed by email (60%) and Facebook (47%). More than half of participants also reported being active on a range of social media platforms such as Instagram, Snapchat and WhatsApp. This study's findings showed that digital technology can be seen as a platform that might be able to provide opportunities for autistic individuals to meet others with similar interests; interests which are usually focused, specific and different than those of typically developing people (Hedges et al., 2017). Research has highlighted the benefit of incorporating special interests into intervention programs for autistic individuals (Grove, Roth and Hoekstra, 2016) and the inclusion of special interests in peer activities has been associated with increased socialisation, social engagement, and peer interaction in autistic adolescents (Koegel, Koegel & Schwartzman, 2013)

Therefore, technology and more specifically, the internet can support autistic individuals in the social and relational difficulties they often face (Bernardini, Porayska-Pomsta & Smith, 2014; Gillespie-Lynch, Shane-Simpson, Smith, & Hutman, 2014; Benford, 2008). However, although the use of technology for autistic adolescents is bourgeoning in practice, most of the available research is based on small scale and single-case design studies, contributing only a little to the already limited empirical information about the impact of technological-based interventions for autistic adolescents.

2.4.1 Screen-based media use by autistic adolescents

Studies have revealed that screen-based technology use is a primary and preferred activity for many autistic children and adolescents (Kuo et al., 2013; MacMullin et al., 2016; Mazurek, et al., 2012; Montes, 2016; Orsmond & Kuo, 2011; Shane & Albert, 2008; Stiller & Mößle, 2018). Indeed, in a systematic

review of screen-media engagement by young autistic people (Stiller& Mößle, 2018) sedentary activities related to screen-media use by autistic children and young people were seen as potential barriers to engaging in other leisure and physical activities (e.g., Healy, Haegele, Grenier & Garcia, 2016). Nevertheless, there are mixed findings when comparing the screen-media usage of autistic and typically developing children and young people. For example, a recent cross-sectional parental survey from the United States (Montes, 2016) found that, contrary to the author's hypotheses and other research in the area (e.g. Conchaiya et al., 2011; MacMullin et al., 2016), there were no significant difference in the time a nationally representative sample of autistic (n=1393) and typically developing (n=64,163) children and young people aged 6 to 17 years spent using screen-based media.

In one of the first studies documenting the use of screen-based media by autistic children, Shane and Albert (2008) found that the parents of a sample of 89 autistic children in the United States reported that their children, considered by the authors as individuals younger than 18 years of age, spent significantly more time using television, video and computer games than in any other leisure activity. Children in this study showed a consistent preference towards certain animated characters and more than half of the children were reported to tune out environmental distractions whilst engaging with electronic screen-media. Findings also showed high levels of attention and motivation exhibited by autistic children in relation to electronic screen media (Shane & Albert, 2008).

The findings from the Shane and Albert (2008) study were similar to those emerging from a later study by Mazurek et al (2012) who conducted a comparative study by examining the prevalence and correlates of screen-based

media use among 920 young autistic people and adolescents aged between 13 and 17 years attending special education settings in the United States. The researchers found that the rates of non-social and solitary media use, namely television and video games, were significantly higher among autistic adolescents than among adolescents with other disabilities. Furthermore, the use of screen-based media for socially interactive purposes, such as email and chat, was low amongst autistic adolescents. However, correlates with demographic factors, such as gender, ethnicity and cognitive ability revealed that ratios were significantly higher for internet browsing, email, or chat for autistic female participants, those who were Hispanic or those with higher functional cognitive skills (Mazurek et al., 2012). The authors acknowledge that their study sample of autistic individuals was comprised of youths who met eligibility criteria for special education services under the autism category and not by means of ensuring an independent clinical diagnosis of autism spectrum conditions. For this reason their results cannot be generalised to all autistic young people but only to who were autistic and also enrolled in special education.

In a study comparing television viewing patterns in autistic (n=54) and non-autistic (n=56) children in Thailand, Chonchaiya et al, (2011) found that young autistic children having a mean age of 2 years 11 months and with a confirmed autism diagnosis as per the Diagnostic and Statistical Manual 4th Edition text Revised (DSM-4-TR; APA, 2000) were less likely than their peers to interact with caregivers during media engagement. Furthermore, this study also found that autistic children were more likely to watch TV programmes aimed at an older audience than typically developing peers (Chonchaiya et al., 2011). This is in contrast with Shane and Albert's earlier findings that autistic children preferred

animated programmes across media platforms (Shane & Albert, 2008) highlighting that cultural differences, in this case between the United States and Thailand, play a role in how autistic children engage in screen-based media activities.

As part of a longitudinal study spanning 18 months, Orsmond and Kuo (2011) investigated how young autistic people aged between 12 and 21 in the United States spend their time. In terms of ability, three-quarters of the autistic adolescents were male and more than half had an intellectual disability according to parental report and direct testing. Most adolescents also had functional use of language. Results showed that, similar to earlier findings by Shane and Albert (2008), watching television and using computers were the most frequent activities engaged in by young autistic people as opposed to physical activities, engaging in conversations and visiting peers. All the data in this study were obtained from the mothers of participants, who were required to complete two daily diaries about their children, rather than collecting the data directly from the autistic adolescents, which meant that adolescents' subjective feelings and perspectives toward the activities could not be examined. Despite offering valuable insight into the patterns of media use by autistic adolescents, this study and others described above (e.g., Mazurek et al., 2012; Shane & Albert, 2008) did not include a comparison of technology-use patterns by typically developing adolescents and therefore it is unclear whether the pattern of results is similar across autistic and typically developing young people.

2.4.2 Screen-based media use and peer relationships in autistic adolescents

The relatively structured nature of online interactions, which also contain minimal, or are completely void of, complex information such as facial expressions and non-verbal cues may facilitate social engagement for autistic adolescents (van Schalkwyk et al., 2017). The asynchronous format in which this type of communication takes place (Benford & Standen, 2009) or the fact that online communication can take place from the comfort of a familiar place (Bagatell, 2010) could also be appealing for autistic individuals. Computer-mediated communication also provided a platform for autistic individuals who had a particular inclination towards interacting with others who share their intense interests (Gillespie-Lynch et al., 2014).

However, despite an understanding of how communicating via technology can compensate for some of the social and relational difficulties experienced by autistic people, it is not clear if social interaction is a main priority for them when using the Internet, as much as it is for typically developing people (Gillespie-Lynch et al., 2014). The potential challenges of computer-mediated communication for autistic individuals are also present in the literature. Studies relying on parent-report data have found that young autistic people seem to seek the non-social aspects of the Internet, such as video games, most frequently (Mazurek et al., 2012; Mazurek & Wenstrup, 2013) and found this more appealing than their typically developing siblings. Yet, very few studies have looked directly at the role of screen-based media technology in peer relationship development and even fewer used a direct comparison group of typically developing youths in

their investigations (see Durkin et al., 2010; Mazurek & Wenstrup, 2013; Sundberg, 2018; val Shalkwyk et al., 2017).

In one of the first and few studies to examine and compare screen-media use of autistic and typically developing siblings aged between 8 and 18 years in the United States, Mazurek and Wenstrup (2013) used parent-reported data to investigate the nature and amount of television, video game, and social media use in these groups. The autistic adolescents in the study (n=202) had a cognitive ability score ranging from 55 to over 130, with more than two-thirds of participants having IQ scores greater than 85. The authors reported that autistic children (n=202), spent approximately 62% of their time watching television and playing video games as opposed to being engaged in non-screen activities such as reading, physical activity and interacting with friends. They also found that autistic children who played video games tended to do so alone, which is in contrast with typically developing children (n=179), most of whom played video games with others at least once per month. Autistic young people also experienced more problematic video game use compared to their typically developing siblings. In the light of these findings, the authors challenged the idea that electronic media was widely used for social interaction among autistic children (Mazurek & Wenstrup, 2013). Although including data from a comparative sample of neurotpyical adolescents, this study relied on parent-reported data. Gathering information directly from adolescents with an ASC, as opposed to solely relying on parent reports, could have captured the young people's personal experiences and choices regarding their use of screen-based media. Obtaining direct data from autistic adolescents also allows them to have an active role in research thus encouraging them to have a greater say in their lives as well as to voice their

concerns and perspectives. Additionally, although using both autistic young people as well as a typically developing group of participants offered a comparative opportunity, the comparison group in the Mazurek and Wenstrup (2013) study cannot be seen as fully representative of typically developing adolescents because they were members of families with an autistic sibling, which may have had implications on the way family members interact with and mediate screen-based media use.

A small questionnaire study which employed a sample of 35 Australian adolescents aged between 12 and 17 years with and without Asperger Syndrome (AS) was conducted by Durkin et al (2010) who reported that 60% of AS participants used a cell phone, compared to 94% of a typically developing sample matched on chronological age, school year and gender. Compared to the comparison group, AS individuals were more likely to use their phone to play games and less likely to give importance to calling peers, when compared to adolescents without AS. Autistic adolescents ranked calling family members as the second use of cell phones, with priority being given to playing games. Again, this demonstrated how autistic individuals have a different use of cell phones when compared with their typically developing peers, for whom the phone was first and foremost a device for communication. The authors did not, however, make any reference to any differences in cell phone use between genders across participating use nor did they use qualitative data collection methods to obtain more in-depth information directly from participants about their choices regarding cell phone use.

2.4.3.1 Video game playing in autistic adolescents

Video game playing patterns in young autistic people has been the subject of a number of studies over the last decade (e.g. Durkin, 2010; Kuo, Evans & Zwaigenbaum, 2015; Mazurek & Wenstrup, 2013; Mazurek & Engelhart, 2013). Results have shown that autistic children spend substantial amounts of time playing video games (Orsmond & Kuo, 2011; Shane & Albert, 2008) and surfing websites containing information about video games during their leisure time (Kuo, et al., 2014; Orsmond & Kuo, 2011). Playing video games on the computer or game consoles was also found to be the preferred way for autistic adolescents, particularly males, to interact with others (Kuo et al, 2013), thus also serving a social function for these young people (Durkin, 2010)

Studies have highlighted the frequency with which video games are played by young autistic people. Mazurek and Wenstrup (2013) found that, on average, autistic boys spent more than two hours a day playing video games, specifically of a role-playing nature, exceeding recommendations from the American Academy of Paediatrics (AAP). Whilst excessive use of video game playing has been associated with lower scores on life satisfaction and with elevated levels of anxiety, aggression, low sociability and depression in typically developing young people (e.g. Festl, Scharkow & Quandt, 2013; Gentile et al., 2011; Mentzoni et al., 2011), research has also attempted to explain the problematic use of video game playing by young autistic people by directly relating it to one of the core symptoms of ASC, namely, the restricted and repetitive behaviours that are characteristic of the condition (APA, 2013). This tendency to develop intense interests combined with the audio-visual features and the lack of social demand

that video games offer may reinforce difficulty disengaging from video games (Mazurek & Wenstrup, 2013).

Nevertheless, virtual environments, such as a massively multiplayer online role-playing game (MMORPG) can offer a unique environment in which individuals, including young autistic people, can socially interact with others without the added challenges of face-to-face situations and allows participants to freely develop social connections (Casey & Evans, 2011). A number of studies have also found that the social interaction skills learnt by young autistic people in engaging in MMORPG environments can be generalised to other contexts, such as face-to-face interactions (e.g., Gallup & Serrianni, 2017; Stone, Mills & Saggers, 2018). This highlights the need for a broader understanding of the possible benefits, especially in terms of social interaction opportunities, that video game playing can offer, including opportunities for the socialisation for young autistic people.

One recent, phenomenological study from the United States of three high-functioning autistic young adults' social experiences and perceptions of friendship by means of MMORPG by Gallup, Serianni, Duff, & Gallup (2016) found that, although the participants in the study had very few offline friends and experienced significant difficulty interacting with other people in traditional ways, they nevertheless had a large network of friends in their online virtual environments. One of the three participants, aged between 16 and 21 years, also considered MMORPG as a platform which could support the social and communication skills of autistic individuals which they could then generalise to and replicate in other contexts. In the same way, research by Winter-Messiers (2007) about the intense interests of young autistic people, showed that autistic adolescents saw video games as a social bridge for them to fit in with peers (Winter-Messiers, 2007).

Thus, it is possible that video-game playing creates a context for autistic adolescents to learn to socialise. Therefore, despite the research discussed earlier showing the vulnerability of young autistic people in developing problematic video game use, it is important to recognize the potential for socialisation that video game playing, specifically MMORPG, may offer (Parsons & Cobb, 2011).

Apart from investigating how video game playing can support the social interactions of autistic youngsters, recent research has also looked at the quality of friendships of those who engage in online gaming. A recent study (Sundberg, 2018) investigated the potential connections between online gaming, loneliness and friendship in Swedish autistic (n=85) and typically developing (n=71) adolescents and adults aged between 14 and 69 years (Sundberg, 2018). The research looked specifically at the motives behind engaging in online gaming by teenagers and autistic adults as well as the quality of their friendships when compared to a typically developing comparison group. Despite the fact that the majority of participants in both groups engaged in online games, the author reported that the autistic participants spent significantly more time on online gaming when compared to typically developing participants. This finding is consistent with previous studies, which have shown a higher use of computer and videogames among autistic people (Mazurek & Engelhardt, 2013; Mazurek & Wenstrup, 2012). One of the main motives underlying engagement in online gaming by autistic participants was to escape reality (Sundberg, 2018). Results also showed that autistic individuals who played online games had more friends than those who did not make use of online games. Loneliness was experienced less by those who played online games for less than 1 hour a day, when

compared to those who spent more time engaged in these activities. The author hypothesised that a possible reason for this decreased loneliness could be the result of an ability on behalf of participants to keep their online gaming at a low or moderate level, which allowed them to benefit both from real life as well as online interactions (Sundberg, 2018). Online games could therefore be a platform that can both sustain existing friendships as well as create new connections with others

2.4.3.2 Social media use by autistic adolescents

The number of studies investigating the role of social media in the development of peer relationships of autistic adolescents is limited. Social use of digital media by young autistic people, in terms of the time spent using email, social media platforms such as Facebook or texting, has been found to be less evident than in typically developing populations (Mazurek & Wenstrup, 2013). Interestingly, a study comparing frequency, type and impact of digital media use by autistic individuals (MacMullin et al., 2016) found that they were significantly older when they began using digital media for social activities when compared to typically developing peers.

In a cross-sectional study from the United States examining correlates of social media use in a sample of cognitively able (IQ>70) autistic (n=44) and typically developing young people (n=56) aged between 12 and 19 years, van Schalkwyk et al. (2017) hypothesised that Facebook could be a platform that may be well-suited to facilitate the social engagement in autistic adolescents and could be positively related to their friendship quality. Results obtained from adolescent and parent questionnaire data indicated that greater social media use in the autistic group was associated with better friendships but the same association did not

exist in the typically developing group. This study supported a move towards broadening the opportunities for social engagement for autistic adolescents through effective use of social media.

Research on the use of social media in the autistic population has also focused on adult experiences. Benford and Standen (2009) conducted a qualitative grounded theory study on social media use by cognitively-able autistic adults and those with Asperger's Syndrome in the United Kingdom. Their result indicated that some participants often felt isolated from social interactions when using social media, but that such a position allowed them to reflect upon online and offline communication and to be more in control of how and who to communicate with (Benford & Standen, 2009). In a more recent study, Mazurek (2013) conducted a survey of 108 autistic adults aged between 18 and 62 in the United States and found some general support for Benford and Standen's (2009) findings, with participants reporting an advantage in not having to interpret visual aspects of communication when using social media, as well as having greater control over how they communicated with others.

The literature investigating social media use in young autistic people, although very limited and mostly originating from the United States, shows overall that autistic adolescents are engaged in social media use, but they tend to prefer solitary types of media. More research, however, is needed to understand the ways that social media, and other types of digital technology, influence the friendship development experiences of autistic adolescents.

2.5 Parental mediation of screen-based media use

Since online activities are a main activity for typically-developing children and young people Álvarez, Torres, Rodríguez, Padilla & Rodrigo, 2013) parents have an important role in influencing their children's media use (Collier et al., 2016). Contemporary society requires parents to adapt to managing the interface between digital media and their children. Access to the internet increases parental responsibility in terms of ensuring safe internet practices (Livingstone et al, 2017) especially related to negative influences that could result from prolonged use of screen-based media (Hawi & Rupert, 2015; Rodríguez-de-Dios, van Oosten, & Igartua, 2018)

In recognition of the possibly harmful effects of excessive screen based media use on child development, the Council on Communications and Media within the American Association of Pediatrics (Council, O.C., 2016) issued recommendations about children's use of media. These suggested that for children aged 5 through 18, families should apply consistent limits on the type and amount of time spent using media in order to ensure that media use does not replace behaviours essential to good health, such as sleep and physical activity. AAP guidelines also recommended that families have designated media-free times, such as dinner time and media-free locations, such as bedrooms and that children should not sleep with devices in their bedrooms, nor should they engage in screen-media activities for one hour before bedtime. Recommendations also included having ongoing communication about online citizenship and safety, and online and offline respect towards others. The policy statement encouraged families to engage in co-viewing media with children to promote learning and creativity through shared family experiences (AAP, 2016).

Research has shown that parents' perceptions of media were also important in shaping their use of mediating strategies, as children's screen-based media use is highly contingent on parental attitudes towards media use (Beyens, & Beullens, 2017; Livingstone et al, 2017). Children of parents who were more frequent users of screen-based media exhibited more media usage when compared to their peers with parents using screen-based media less often, and parents who viewed media positively were more likely to support or encourage their child's use, regardless of professional guidelines (Lauricella, Wartella & Rideout, 2015).

It is well recognised that parental mediation of media use is an important factor influencing typically-developing young people's media use (Gentile, Reimer, Nathanson, Walsh, & Eisenmann 2014). Parental mediation strategies can be generally be categorised into three types: restrictive mediation, which focuses on limiting access to technology (Lee, 2013; Schooler, Kim & Sorsoli, 2006); mediation focused on rule-setting, where limits are set regarding media content and time spent on technology (Wang, Bianchi & Railey, 2005) and active mediation, also referred to as co-viewing, where parents participated in their children's media experience with them, for example, being Facebook friends and watching television together (Lee & Chae, 2007; Livingstone & Helpslet, 2008; Schooler et al, 2006). More recent research (e.g., Livingstone et al, 2017) extends the notion of active mediation by proposing the concept of enabling mediation, specifically focused on the complexity of supporting young people's use of online media. Enabling mediation aims at maximising children's positive uses of the Internet by encouraging parent-child interactions together with practices that are restrictive in nature, such as parental monitoring and the use of technological controls to mediate screen-time (Livingstone et al., 2017).

In analysing data from the EU Kids Online (Livingstone, Haddon, Gorzig & O´ lafsson, 2011), Shin (2015) compared parental and child reports of 1004 internet users aged 9 to 16 years. Active mediation has been found to be more effective than restrictions and rule- setting in reducing the perceived adverse effects on children (Shin, 2015) and was more likely to be present when parents hold positive views about digital media technology, confirming earlier research that parents with positive perceptions are more likely to watch television or play games with their children (e.g., Shin & Huh, 2011). Restrictive mediation, however, was more commonly used with younger children (Livingstone et al, 2011) and was found to be more present when parents were concerned about the negative effects of digital media (Lee, 2013; Shin & Huh, 2011).

More recently, in a cross-cultural study conducted in the United States, looking into the effectiveness of parental monitoring of media usage of 799 typically developing adolescents aged between 10 and 16 years, Top (2016) examined in detail various socio-demographic factors, such as ethnicity, gender and SES, as predictors of parental mediation of television and video games during adolescence. Results of data obtained from parents using the Adult Involvement in Media Scale (AIM) (Anderson, Gentile & Buckley, 2007) showed that, interestingly, parents were more likely to limit their son's access to TV and video games than that of their daughter. Moreover, results showed further cross-cultural differences in the way parents monitor media usage, with Hispanic parents being the least likely to limit their children's use of TV and videogames when compared to Asian parents, who were the most likely to do so. In this way, parents' beliefs and the culture they live in might have influenced parental

monitoring reports and therefore, culture and ethnicity may be factors that shape the way parents monitor their children and young people's media usage.

2.5.1 Parental mediation of screen-based media use in autistic adolescents

Very few studies have investigated parental mediation in terms of digital media technology for autistic adolescents. Existing research is in agreement that the management of media use is a common issue for parents and a source of stress within families (e.g. Kuo, et al., 2015; MacMullin et al., 2015; Nally, Houlton & Ralph, 2000) although research also highlights that some parents perceived screen-based media use by their autistic children positively (Finke, Hickerson, & McLaughlin, 2015)

In another study from the United States, Engelhart and Mazurek (2013) investigated the use of parental rules regulating video game playing. They obtained data from parents of typically developing boys (n=41), autistic boys (n=56) and boys with ADHD (n=44) and found that parents of autistic children who set up restrictive rules reported fewer challenging behaviours than did parents who had no rules. Using parent-reported questionnaire data and subsequent multivariate regression models predicting oppositional behaviour, the authors found that having access to video games in one's room was specifically associated with greater oppositional behaviour.

Kuo et al. (2013) found that parents and siblings are autistic adolescents' most frequent companions for watching television as this was also the most frequent way they supervised their children's television viewing (Kuo et al., 2013). Engaging in television co-viewing with their autistic children provided parents with opportunities for regulating their children's viewing but also supported a wider

understanding of their children's preferences and reactions to the television content. Furthermore, co-viewing also resulted in better parent-child relationships as perceived by autistic adolescents when compared to those who did not engage in shared television viewing with their parents.

More recently, Kuo et al. (2015) also found that the differences in frequency of parental mediation between autistic adolescents (n=29) and their typically developing siblings (n=16) on television viewing were not significant. Participants were aged between 12 and 16 years, with 19 participants attending regular education classes and 9 participants attending special education classes. However, parents used more restrictive strategies for video-gaming of autistic adolescents than for their typically developing siblings. Despite generating new insights into how parents of autistic adolescents manage television and video game use, the inclusion of more qualitative data from participants, rather than analysis of quantitative questionnaire data, was also likely to generate more in-depth insights on potential mediation strategies used by parents.

2.6 Summary and conclusion

This literature review has provided an overview of prominent literature regarding the use of digital technology, in particular screen media, by typically developing and autistic adolescents. This review began by examining friendship relations in adolescence, with a particular focus on differences that exist between autistic and typically developing adolescents, and more specifically, the apparent gender differences that exist within and across groups. The existing findings demonstrate that, although some autistic people may experience limited motivation for social interactions, many autistic people have a clear desire to make and maintain friendships. Furthermore, many autistic individuals appear to

conceptualise peer relationships differently than their typically developing peers, focusing on companionship and support, rather than closeness.

The second part of the review examined the role of screen-based technology within young typically-developing and autistic people's lives, particularly the role it has in relation to their social well-being. This review also considered the appeal that technology and screen-based media hold for autistic individuals in terms of its supportive and structured style of interaction, and its role in relation to young people's access to entertainment and communication. Communicating with peers emerged as one of the most important and frequent uses of technology by typically developing adolescents. Yet, the non-social aspects of screen-media usage, such as television viewing and video gaming, were found to be more common preferences in autistic adolescents. Nevertheless, recent research has also started to investigate the various opportunities that screen-based media can offer in the development and maintenance of peer relationships in autistic youth. The literature discussed above has also considered parental views regarding technology use, highlighting that parental concerns with monitoring technology use was a recurrent theme in studies, having significant implications for the types of mediation strategies used to control screen-media use.

The existing literature, however, is not without its limitations. The vast majority of the published work consists of large-scale, parent-report surveys, mainly based in the United States and focusing on the prevalence, type and frequency of screen-based media use in young people with and, less often, without ASC. Indeed, the lack of matched comparison groups in many research studies is a significant limitation, and makes it unclear whether the patterns of reported results in autistic adolescents are similar to, or different from, typically developing

adolescents. Furthermore, there is a dearth of direct qualitative accounts of the experience of screen-based media use by autistic adolescents themselves. These methodological limitations mean that we lack a nuanced understanding of how young autistic people use screen-based media and the ways in which they, and their parents, feel such use helps or hinders their interactions with others, either offline or online.

The current study therefore examined the ways in which cognitively able autistic and typically developing adolescents aged between 11 and 16 years and from one particular cultural context, Malta, use screen-based media and whether this technology has a role in the creation and maintenance of their peer relationships. I sought to overcome some of the limitations stated above by including a comparison group of typically-developing adolescents matched on age, gender and cognitive ability and by providing a rich, multi-informant qualitative account of the experiences of 48 young people as well as the views of 24 of their parents.

3. Methodology

In this chapter, I outline the research design and epistemological stance of the study. I also provide a detailed description of the methodology, including participant identification and recruitment, the quantitative and qualitative measures used, ethical considerations, the study procedure and details of the data analysis process.

3.1 Research Design

Mixed-methods research has been established as a methodological movement complementing established quantitative and qualitative traditions (Teddlie & Tashakkori, 2009). Existing research paradigms justify the separate use of quantitative and qualitative methods but mixed-methods research provides a rationale for the use of a combination of these research tools. The term 'mixed methods', therefore, refers to the use of two or more methods in a research project with the aim of yielding both qualitative and quantitative data (Greene, 2007; Teddlie & Tashakkori, 2009).

The current study used a concurrent mixed methods design (Creswell, 2003) in which data was collected, analysed and integrated into the overall interpretation of the results. Concurrent mixed-method data collection strategies aim to validate and triangulate one form of data with other forms in order to transform the data for comparison, or to address different types of questions (Creswell & Plano Clark, 2007). In many cases of concurrent mixed-methods research, the same individuals provide both qualitative and quantitative data so that the data can be directly compared. In concurrent mixed-methods quantitative and qualitative data

are collected at the same time, although priority may be given to one form of data over the other (Teddlie & Tashakkori, 2003).

In the current study, qualitative data, on the one hand, was obtained by means of semi-structured interviews with autistic adolescents, typically developing young people as well as their respective parents. Quantitative data was collected for two purposes. First, I sought to characterise key features of the participants in terms of their autistic features (using the Social Communication Questionnaire; Rutter, Bailey & Lord, 2003), general cognitive ability (using the Wechsler Abbreviated Scale of Intelligence 2nd Edition (WASI - 2); Wechsler, 2011) and friendship quality (using the Friendship Qualities Scale; Bukowski, Hoza, & Boivin, 1994).

Second, I also sought to gain a more thorough understanding of screen-media use within the context of Maltese family life, by asking adolescent participants to keep a diary of screen-based media activities that they engage in over a one-week period. Parents were also asked to keep a week-long diary outlining different family activities taking place over a week. Descriptive statistics were used to present relevant data identified in diaries completed by young people and their families.

Table 1 below illustrates the variety of data collection measures used and how these sought to address the main research questions of this thesis. A description of each of these measures follows later on in this chapter.

Table 1.

Data collection measures used to address key research questions.

Key research questions	Measures addressing questions
1. How do autistic and typically developing adolescents in Malta use screen-based media and what are their views regarding technology use?	• Semi-structured interviews • Screen-based media diary
2. What is the extent to which adolescents use screen-based media to create and reinforce social connections and friendship and are these experiences different in autistic adolescents?	• Semi-structured interviews • Friendship Qualities Scale • Screen-based media diary
3. What are the parents' perceptions of their children's screen-based media use? What are their views regarding the role that screen-based media has in facilitating the development and maintenance of peer relationships?	• Semi-structured interviews • Family Activity Diary

3.2 Epistemological Stance

With respect to this study, I subscribed to the philosophical paradigm of pragmatism. Pragmatists utilize research design approaches which are directly linked to the aims and purpose of the study's key research questions (Creswell, 2003) and embrace a worldview which has, as its core, the idea that multiple realities, as opposed to a single truth, can be explored (Mertens 2005; Creswell & Plano Clark, 2011). Within the literature, pragmatism is a philosophical position frequently affiliated with mixed methods research and, as highlighted by Tashakkori and Teddlie (2009), advocates the use of both quantitative and qualitative methods within a single study. In this study, I adopted a pragmatic approach in making use of a selection of methods that would best help to answer the main questions raised by a study investigating an under-researched area.

3.3 Ethical Considerations

3.3.1 Informed consent, confidentiality and anonymity

Approval from the UCL Research Committee was sought prior to commencement of the research (Appendix A). Careful consideration was given to informed consent, the right for participants to withdraw from the study at any time, confidentiality and anonymity.All participants were offered the opportunity to ask any questions regarding the research prior to the commencement of data collection. An information sheet supported each young person to give their informed consent.

All participants were informed about the different stages of the research and were given contact my details should any questions arise during their data collection. All participants were assigned an anonymous identification number to be used on all research materials and within the final written report.

3.3.2 Potentially vulnerable participants

Potential challenges in this study related to social communication difficulties that might arise when interviewing autistic adolescents. Data collection sessions were planned to take place in an environment in which autistic adolescents feel comfortable, such as their own home, school or a place of their own preference.

Participants were told that they could take a break from any of the activities involved in the data collection process at any time. They were also told that they could have a parent or a carer present for the interview and tasks related to data collection.

3.3.3 Sensitive Topics

Some participants may have been uncomfortable talking about friendships, especially if they would have had negative experiences related to peer relationships. I was ready to inform the relevant family members if there were any obvious signs of distress from the participants.

In the case of parents, talking about their children's difficulties may have proved to be a sensitive topic. I was ready to ask whether they would still like to go ahead with the research and offer an alternative time and date for data collection to take place in case they experience distress. Information on further support services available for parents/caregivers of young autistic people in Malta was available if requested by the families.

One key aim of this study was to investigate the use of screen-media technology by young people. I was prepared to consult with the research supervisors if she became aware of inappropriate use of screen media during the study for example,

in case of exposure to inappropriate content. I was also aware of which agencies and authorities may provide support in relation to these issues in the context of Malta.

3.4 Participants

3.4.1 Identification and Recruitment

The target sample for this study was cognitively able autistic and typically developing adolescents aged between 11 and 16 years, as well as their parents. Autistic participants were required to meet the following study inclusion criteria:

1. To have received an independent clinical diagnosis of an autistic spectrum disorder as per DSM or ICD-10 criteria;
2. To be aged between 11 and 16 years;
3. To be cognitively and verbally able to carry out a short interview (IQ>70); and
4. To be able to complete a short questionnaire regarding their views on friendship, either by completing the questionnaire themselves or by having an adult read out the statements for them and complete a week-long diary of screen-media use.

A purposive sampling strategy was employed. Autistic participants were initially identified in consultation with parent members of the Autism Parents Association in Malta. One member of the association's administration, who was also a parent of a young autistic person, also posted my research request in a closed Facebook group for parent members. Consultation was also carried out with the Autism Spectrum Support Team within the National Student Support Services

Department. To increase the number of autistic participants who could take part in the study, approval was sought from the Maltese Directorate of Quality and Services in Education (DQSE) to approach schools to assist with participant recruitment. Following this approval an email with an attached information sheet was sent to College Principals (Appendix D) in charge of the overall administration of schools in Malta requesting the College Principal's permission to ask individual secondary schools falling within their remit to participate in the research.

I contacted Inclusion Coordinators in secondary schools by email in order to ask for their support in recruiting the remaining autistic adolescents. Communication with Inclusion Coordinators was also followed up by a telephone call explaining the inclusion criteria in detail, in order to ensure the correct identification of possible participants. In all, twenty-four autistic adolescents who fit in the inclusion criteria were identified. Once identified, an invitation to participate in the research was sent to all the parents and their autistic adolescents. All parents consented for their autistic child to participate. All typically developing adolescents were recruited from two state secondary schools; one middle school catering for students aged 11 to 12 years and one senior school catering for students aged 13 to 16 years.

Parent participants were invited by means of a separate invitation attached to the main information and consent form. Twelve parents of autistic adolescents agreed to participate in the study. Ten parents of typically developing adolescents agreed to participate in the interview. A further 2 parents of typically developing young people gave their consent to participate following another request.

The final sample of participants consisted of 48 adolescent participants, including 24 autistic adolescents, 24 typically developing adolescents. All participants attended mainstream secondary schools.

The sample of parents of autistic adolescents consisted of 10 mothers and 2 fathers while parents of typically developing adolescents consisted of 9 mothers and 3 fathers.

3.4.2 Participant matching

All autistic participants scored above threshold (score of 15) for an autism spectrum disorder on the Social Communication Questionnaire (Rutter, et al., 2003). All typically developing participants scored well below the cut-off score (see Table 2), reflecting low levels of autistic features.

Adolescent participants were matched according to their cognitive ability, age and gender (see Table 2). Once autistic adolescents were recruited, the Wechsler Abbreviated Scale of Intelligence (WASI-2; Wechsler, 2011) was administered in order to establish the range of ability of participating young people. A group of typically developing adolescents (n=39) were subsequently assessed from which 24 young people were identified to be of similar cognitive ability, age and gender to the 24 young autistic people.

There were no significant differences between the autistic and matched typically developing adolescents on gender, age, $t(46)=0.29$, $p=.34$, verbal IQ, $t(46)=1.33$ $p=.189$, performance IQ, $t(46)=0.36$, $p=0.72$, or full-scale IQ, $t(46)=1.06$, $p=0.28$.

Table 2.

Participant adolescent characteristics as a function of group (autistic, typical) and gender (girls, boys).

	Autistic group			Typically developing group		
	Boys n=17 M (SD)	**Girls n=7 M (SD)**	**Total n=24 M (SD)**	**Boys n=17 M (SD)**	**Girls n=7 M (SD)**	**Total n=24 M (SD)**
Age	13.47 (1.5)	13.14 (0.9)	13.04 (1.33)	13.00 (1.5)	13.57 (1.71)	13.17 (1.55)
Verbal IQ[a]	97.06 (8.34)	99.71 (7.93)	97.06 (8.34)	99.53 (7.03)	103.86 (7.19)	100.79 (7.20)
Performance IQ[a]	97.35 (8.34)	98.71 (8.4)	99.17 (7.60)	100 (4.9)	99.57 (8.01)	99.88 (5.82)
Full-scale IQ[a]	97.94 (7.9)	99 (8.9)	98.25 (8.03)	99.71 (5.3)	102 (8.62)	100.38 (6.33)
SCQ[b]	21 (2.4)	20.29 (2.69)	20.79 (2.47)	4.59 (1.33)	5.57 (1.13)	4.88 (1.32)

Notes: [a] Wechsler Abbreviated Scale of Intelligence (WASI-2; Wechsler, 2011), [b]Social Communication Questionnaire (Rutter, Bailey & Lord, 2003). Scores >15 indicate the likely presence of an autistic spectrum condition.

3.4.3 Data collection procedure

Once parental consent was obtained for autistic adolescents, the families were contacted to make the necessary arrangements for data collection. Families were also told that data collection would not take more than 90 minutes in total.I accommodated the families' requests to meet in a place convenient for both the parents and the young people.

At the start of my encounter with the young autistic person and their family, participants were asked about their language preference. In view of Malta being a bilingual country, I was aware of some participant's preference to speak either English or Maltese, or a mixture of both and I accommodated this preference throughout the interview. Following this, salient ethical considerations such as

confidentiality and anonymity were emphasized and the family was presented with a short structure of the session.

A brief interview was carried out with the young person, after which I asked the young participants to fill in the Friendship Quality Scale (FQS). Interviews with parents followed the young people's interviews. Some young people preferred having their parents near them during their interview. Adolescent interviews were followed by a short interview with parent participants. Most parents filled in the Social Communication Questionnaire (SCQ) during the young person's interviews and a small number filled it in during their children's cognitive assessment. At the end of this process, participants were given a paper copy of the screen-based media and family activity diary, together with an explanation of how these needed to be filled in. A soft copy of these templates was also sent via email and participants were asked to choose the format they preferred.

Data collection with families of typically developing young people followed a similar pattern, except for the administration of the WASI-2, which was administered prior to meeting the families to ensure that the chosen typically developing adolescents were matched on cognitive ability with the identified autistic participants.

3.5 Measures

3.5.1 Semi-structured interviews

Interviews with typically-developing and autistic adolescents aimed to investigate the views of youths in terms of screen-based media usage, with a particular focus on whether this technology had a role in the development and maintenance of socialization and peer relationships (see Table 3 for adolescent

interview schedule). Semi-structured interviews with the parents explored their perceptions regarding their children's use of screen-based media, any concerns they may have about this use as well as their views on how screen-based media use is related to their children's peer relationships (see Table 4 for parent interview schedule). Most interviews with adolescent participants, both autistic and typically, took around 15 minutes. On average, interviews with parent participants took about 20-30 minutes. Given the relatively large sample of participants as well as the multiple sources of data which were being asked of the young people and their parents, semi-structured interviews were kept as focused as possible on answering the main questions outlined in the interview schedules below (Tables 3 and 4).

As a research tool, the semi-structured interview offers a unique amount of relevance to the chosen topic of research whilst also remaining responsive to participants (Bartholomew, Henderson, & Marcia, 2000). The structure of a semi-structured interview is designed to ensure "subjective responses from persons regarding a particular situation or phenomenon they have experienced" (McIntosh & Morse, 2015, p.1). As discussed in the literature review, most of the existing research in the area has been of a quantitative nature, based upon web-based or phone surveys and questionnaires. Whilst offering valuable information, these studies do not provide a deeper understanding of young people's notions of how screen-based media features in the forming and maintaining of peer relationships in online and offline contexts. The qualitative aspect provided by semi-structured interviews as part of the mixed-methods approach adopted by this thesis have given depth to the research by adding to existing knowledge which is primarily descriptive and quantitative in nature. This is the first time, to

my knowledge, that a qualitative account of the role of screen media technology and peer relationships by young autistic people has been used within this area of research.

Table 3.

Interview Schedule: Adolescent Participants

Main questions	**Probe questions**
Can you tell me a bit about the things you like to do?	How do you spend your time? What kind of things do you enjoy doing? Besides school, are you involved in any other activities? (student clubs, sports, religious groups, etc.) What do you like to do in your free time?
Can you tell me about the way you use technology? I'm interested in getting to know more about how you use screen-based media, such as phones, tablets, laptops and TVs.	What do you like to do most online? Why is this enjoyable/important?
I'm interested in talking to you about your friends. Can you tell me about the people you like to hang out with?	Do you hang out in a big group/small group? Do you have one best friend? How did you meet them? What do you do together? Why are they important? How would you describe your relationship with your friend/s?
How do you communicate with your friends?	Do you communicate or play with them through technology? Do you talk to these people offline? Do you have friends whom you talk to online but have never met? What is your preferred way of communicating with others – online or offline? Why? In what ways does technology help you keep in touch with others? Do you think that technology helps you meet new people?

Table 4.

Interview Schedule: Parent Participants.

Main questions	Probe questions
Can you tell me a bit about your son/daughter?	What are some of their likes and dislikes, favourite things? What does your child like to do in their free time?
I'm interested in how your son/daughter uses technology, especially screen-based media such as phones, tablets, computers, TV, etc. Can you tell me a bit about that?	What are some of the activities they engage in? How much time do they spend on such activities? When did they start showing an interest in such technology? How would you judge your son/daughter's skills at using technology?
I'm also interested in talking about your son/daughter's friends. Can you tell me a bit about them?	Do you know who they are? Have you met them? Does your son/daughter talk about them? Where do they meet? Is it at school, after school, in pre-arranged settings?
Do you know whether your son/daughter uses screen-based media to interact with others?	Do you think technology helps your son/daughter meet people, make friends? How do you feel about this? Are his/her online and offline friends the same?
What do you think are the benefits of their use of screen-based media?	What does technology help them with? (e.g., educational progress, supporting friendships etc.)
Do you have any concerns regarding your son/daughter's use of screen-based media?	Does it hinder them from doing anything else?
Do you use any strategies to monitor and control your son/daughter's use of screen-based media?	Do you ask about what they're doing, sit with them, and keep an eye on their activities? Are there any things which your child is not allowed to do when using screen-based media? (e.g., shop, give out information, chat, download, send email, play games)

3.5.2 Cognitive Ability

The Wechsler Abbreviated Scale of Intelligence – 2nd Edition (WASI-2; Wechsler, 2011) is a short, individually administered test that gives a reliable measure of intelligence for individuals aged 6-89 years of age and takes about 20 to 30 minutes to administer. The four-subtest form yields a Full-Scale IQ (FSIQ-4). Vocabulary and Similarities subtests compose the Verbal scale and yield the Verbal IQ (VIQ), and the Block Design and Matrix Reasoning subtests compose the Performance scale and yield the Performance IQ (PIQ). The WASI-2 was administered to participating adolescents as a measure of intellectual ability, and ensured that autistic and typically developing participants were of similar general cognitive ability.

It is important to note that, to date, no cognitive assessment has been standardized and validated on the Maltese population. In Malta, education and health professionals who seek to obtain a measure of cognitive functioning use English language-based assessments to do so, namely the Wechsler Intelligence Scale for Children (WISC-5; Wechsler, 2014), which correlates highly with the WASI-2 (Wechsler, 2011), and the British Ability Scales 3 (BAS 3; Elliot and Smith, 2011). Nevertheless, assessing cognitive functioning without taking into account the cultural and contextual differences that exist between British/American and Maltese young people introduces a limitation in terms of measuring and consequently interpreting test scores

3.5.3 Friendship Quality

Friendship quality in adolescents was assessed using the Friendship Quality Scale (Bukowski et al, 1994). The FQS assesses adolescents' perceptions of their best-friendship quality, and has frequently been used reliably

to examine autistic children's friendship experiences (Bauminger & Kasari, 2000; Calder et al., 2013; Locke et al., 2010). To begin, all participants were asked to think of and choose a peer whom s/he regarded as being their best friend and to answer the questions in the scale in reference to his/her present relationship with this person. Participants who did not have a best friend were asked to think of their closest friend or a friend they most liked to spend their time with. I ensured that participants knew how to use a 5-point rating scale and clarified any queries before proceeding with the questions. The scale has 23 items, rated on a 5-point scale ranging from 1 (not true at all) to 5 (very true). It covers five aspects of friendship: Companionship (e.g., 'My friend and I do things together'); Conflict (e.g., 'My friend and I can argue a lot'); Help (e.g., 'My friend would help me if I needed it'); Security (e.g., 'If I say sorry after a fight or an argument, everything will be alright'), and Closeness (e.g., 'If my friend had to move away I would miss him/her'). In terms of internal consistency, all subscales of the FQS yielded Cronbach's alpha coefficients of between 0.71 and 0.86. Within this study, the full measure showed reasonable internal consistency (Cronbach's alpha = .74). Internal consistency was also estimated for the individual subscales with alpha co-efficients ranging between 0.77 and 0.89, similar to the estimates obtained in the original study (Bukowski, et al., 1994).

3.5.4 Social Communication Questionnaire

The Social Communication Questionnaire (Rutter et al., 2003) is a well-validated screening tool designed to identify children who may be on the autism spectrum. The SCQ is a parent report measure consisting of 40 yes/no questions about their child children's developmental history and current behaviour. Scores

above the cut-off score of 15 (Rutter et al., 2003) suggest the individual is likely to have ASC and a more extended evaluation should be undertaken.

3.5.5 Screen-based media diary

The use of a diary aims to study a target phenomenon intensively for a limited time (Lämsä, Rönkä, Poikonen & Malinen, 2012), where data represent a specific form of social reality that needs to be explored (Alaszewski, 2006). Diary methods for the study of children have been utilized in various disciplines and research traditions, e.g., family research (Hofferth & Sandberg, 2001) and psychology (Bates, Viken, Whalen et al., 2006), and provide a rich source of data for social researchers (Alaszewski, 2006). In autism research, diaries have been used to explore nutrition, sleep patterns/disturbances in autistic children and adolescents (Baker, Richdale, Short, & Gradisar, 2013; Memari & Hafizi, 2016; Sun et al., 2013). Diary data has also been used to investigate aspects of parental relationships in families of autistic children as well as maternal experiences of caring for autistic children (Hartley et al., 2016; Smith et al., 2010).

The diaries used in this research were in the form of a log containing a written record of activities and events. All adolescent participants in the study were asked to complete a week-long time diary recording the type of screen-media devices they used, the activities they engage and with whom. A template for this diary (adapted from Kuo, 2011) was presented in paper format and also sent by email. Participants chose whether they wanted to fill in the paper version and send it in a pre-paid envelope or fill-in the electronic copy of the diary and email it.Eight adolescent participants did not fill-in and return the diary.

Screen Media Diary

Week starting: *02/10/17*

Day of the week	Activity (What were you using this technology for?)	Media Type (e.g., phone, tablet, laptop/pc, TV)	With whom? (alone, with parents, siblings, relatives, friends, others)	Location (Where were you using this technology? e.g., At home, at school, at a friend's house)	Duration (How long did you spend using this technology?)
Monday AM	Chatting on FB messenger	Mobile phone Laptop	With my friend	In my bedroom and in the kitchen during breakfast	Before school from about 7 to 7.30am
Monday PM	Chatting on FB messenger Snapchat Watching cartoons Messaged my father on WhatsApp Chatting on Fb messenger	Mobile phone Laptop Mobile phone Laptop Mobile phone Mobile phone	With my friend With my friend and some other friends from school My father With my friend	In my bedroom Living room Living room In my bedroom	After school until dinner at 6.30pm After I finished my homework until dinner After dinner from 7pm onwards

Figure 1. An anonymised and translated extract from a screen-based media diary of a female, autistic participant's (AG03) week.

Screen Media Diary

Week starting: *13/11/17*

Day of the week	Activity (What were you using this technology for?)	Media Type (e.g., phone, tablet, laptop/pc, TV)	With whom? (alone, with parents, siblings, relatives, friends, others)	Location (Where were you using this technology? e.g., At home, at school, at a friend's house)	Duration (How long did you spend using this technology?)
Saturday AM	Playing Roblox Chatting on Messenger Doing homework Browsing Messaged friend to remind me about homework	Laptop Phone Laptop Laptop Phone	Alone My friends Alone Alone My friends	In my bedroom	All morning except when I was doing homework
Saturday PM	Playing games Chatting with friends Making plans for evening	Laptop Ps4 Phone Phone	With my friends Other players My friends My friends	In my bedroom In the living room	All afternoon after lunch and then I went out

Figure 2. An anonymised and translated extract from a screen-based media diary of a male, typically developing participant's (NTB12) week.

3.5.6 Family activity diary

A family activity diary (Appendix E) was used for parents to record their activities over a period of one week, in order to be able to compare the activities in which families of autistic and typically developing adolescents engage. Similar to the screen-media diary, parents were also offered a choice regarding their preferred diary format, either by post or by email. Six parents did not fill-in and return the diary.

3.6 Piloting

The aims of the piloting process were to develop my interview technique, to inform the final design of interview questions and also to test the two diaries to be completed by participants. Pilot sessions were carried out with one family of an autistic adolescent who attends a church secondary school. Another trainee educational psychologist was also consulted during the piloting process. No major changes were made to the semi-structured interview questions included in the final study, except for some slight modifications to the order of questions which seemed to improve the flow of the interview process. None of the pilot data were included in the final analysis.

Changes to the diaries involved adding examples and prompting questions next to each of the categories being explored as this was seen as helpful in structuring responses. For example, in asking with whom they engaged in the activity, I added the following examples (e.g., alone, with parents, siblings, relatives, friends, online partners, other). It was thought that making such changes would facilitate analysis and interpretation of data.

The pilot sessions highlighted the need to have a visual representation of the tasks that the young autistic people needed to engage in during my meeting with them and their family. This was done by means of a short, typed list depicting the four main tasks that the young person would be participating in, namely: a brief cognitive assessment, a short interview, and a questionnaire about friendship. This was done in order to give structure to the time I spent with the young participants and their families and to accommodate any anxiety they may have had regarding their involvement in the study and meeting me for the first time.

3.7 Data Analysis

3.7.1 Semi-structured interview data

The audio-recordings of the interviews were transcribed, and the typed responses were analysed using a thematic approach (Braun & Clarke, 2006). This type of analysis provides a flexible research tool, which can provide a rich and detailed, yet complex account of data. Ten interviews were carried out in English and their transcription did not necessitate translation. Of the remaining interviews, a further 13 interviews were translated. In this way one-third of the interviews carried out could be accessed in the English language. The remaining interviews were not translated, specifically because of time constraints. However, these interviews were coded in English. Furthermore, once thematic analysis was finalised, selected quotes from Maltese interviews were translated into English and included in the main text of the thesis.

A hybrid approach of incorporating both inductive and deductive thematic analysis was adopted (Braun & Clarke 2006). This enabled the dataset to be explored for repeated patterns of meaning while also allowing the study's research questions and a-priori themes suggested by the relevant literature to be

central to the process of analysis. To ensure quality and transparency Braun and Clarke's (2006) six phase guidelines were followed, as described in Table 5 below.

Table 5.

Phases of Thematic Analysis (Braun & Clarke, 2006).

Phase	Description of the process
1. Familiarising yourself with data	The data was transcribed to an appropriate level of detail according to the language the participants chose to carry out interviews. An example of a transcribed interview in Maltese can be found in Appendix B. A selection of interviews were also translated from English to Maltese.
2. Generating initial codes	Significant features from across the interviews were coded in order to create an initial list of codes. This was followed by re-reading the transcribed texts and using a-priori themes to identify further codes relevant to the research questions. Inter-rater coding was carried out with one trainee educational psychologist in the UK and one educational psychologist working in Malta. Worked examples of a coded interviews carried out in English can be found in Appendix C
3. Searching for themes	Codes were reviewed and recurrent ones were grouped into potential themes,
4. Reviewing themes	An initial thematic map was generated and reviewed several times together with the research and academic supervisors in order to ensure that the identified themes worked in relation to the coded data and to the entire data set. Themes were separated into two sets reflecting ideas emerging from adolescent and parent interviews
5. Defining and naming themes	Ongoing analysis to refine the specifics of each theme was carried out. Supervision was used to explore alternative interpretations of the data and support the selection of themes that encompassed the codes
6. Producing the report	A selection of compelling quotes that illustrate the main themes were selected The final analysis was reported in Chapter 4 and then discussed in Chapter 5.

Although I had carried out thematic analysis in previous academic endeavours, thematic analysis in this thesis was a complex and time consuming process, mainly because of the volume of data resulting from the interview transcriptions. For this reason, initial coding and the subsequent thematic maps that were generated needed to be reviewed a number of times. Rather than illustrating the

key messages emerging from the young people and their parents, the first thematic analysis was found to be replicating the research questions and the interview schedule. For this reason, supervision was sought from both the academic and research supervisor in order to move away from a predominantly semantic method of analysis to a more deductive process, thus ensuring deeper understanding of the interview data was carried out. This process also followed Braun and Clarke's more recent thematic analysis update (2010), in the form of a checklist, where the authors advise against using domain summaries and data collection questions as themes.

A number of factors facilitated the thematic analysis of the interviews. The conciseness of most of the interviews ensured that the transcriptions could be coded in a timely manner. Furthermore, recurrent themes identified in both the parent and the young people's interviews helped the formulation of common themes and sub-themes. However, in order to enhance the quality of the research and to ascertain qualitative trustworthiness (discussed in Chapter 3.8) disconfirming case analysis was also engaged in, whereby findings contradicting a main theme were also reported to ensure that the data set was objectively analysed.

In order to ensure that the views of autistic young people emerged clearly from the young people's interview data, the identification of themes resulted in contrasting sub-themes within the same theme (e.g., 4.2.3). This was necessary due to the different views expressed by autistic and typically-developing adolescents with regard to, for example, the importance they attribute to friendship.

At the end of the thematic analysis process, two thematic maps were created, illustrating themes identified from adolescent and parental interviews (see Chapters 4.2 and 4.3)

3.7.2 Diary data

Diary data offered a means by which to describe in more detail screen-media engagement of autistic and typically developing young people, as well as the type of activities they engaged in with their families. Basic content analysis (Drisko & Maschi015) was applied to the screen-based media diary and the family activity diary data. In basic content analysis data is generally analysed in quantitative manners, mostly utilising descriptive statistics, relying mainly on frequency counts to detail the proportions of a text that is specific to certain topics (Drisko & Maschi, 2015). Moreover, Alaszewski (2006) uses the term content analysis to signify the identification of information, in the form of a specific event or activity by taking a number of written texts such as diaries, breaking them into their constituent parts and reassembling these parts into a new scientific text. In this way, analysis of diary data provided me with initial descriptive data of screen-media use and family activities which was then explored more intensely in semi-structured interviews with the study participants. Together, this combination of data provided a fuller understanding of the use of screen-based media and young people's views regarding whether screen-media contributed to the creation or maintenance of their peer relationships.

Diary analysis posed a number of dilemmas. Initially, a qualitative approach was considered by adding and creating themes and subthemes identified from the diaries to the existing thematic maps. However, given the type of data, which mainly consisted of lists and short phrases, this method of analysis was revised

in favour of the content analysis of a quantitative nature that was used. Furthermore, I wanted to safeguard the rich qualitative aspect of this thesis, resulting from the interviews, which was seen to be as a main strength of the study and addressing a significant research gap in the existent literature.

The content of the screen-media diary was therefore analysed in the following manner:

Step 1: The individual sections of the diary templates were considered as the main units of the analysis. For example, screen-based media diaries were analysed in terms of the individual sections of the diary template, e.g., type of activity and activity partners.

Step 2: The types of screen-media activities noted across the diaries were grouped in order to facilitate analysis. For example, references to ‘Facebook’, ‘Messenger’ and ‘Snapchat’ were grouped into ‘Social media and instant messaging’. Table 6 below presents an example of how this exercise was carried out.

Step 3: A frequency count of the amount of times reference was made to a particular screen-media activity by adolescents (autistic and typically developing) was carried out (see Chapter 4.1.2). A similar frequency count was also carried out recording references to screen-media partners of autistic and typically developing adolescents (see Chapter 4.1.2). This was done to get a general understanding of the companions adolescents chose to engage with in screen-based activities. Frequency counts were carried out by diagnostic group and were then converted into percentages. The main findings of these descriptive statistics are reported in Chapter 4.1.2.

Table 6.

Example of coded screen-media categories

Screen-media category	**Screen-media activity**
Social media and instant messaging	Facebook
	Facebook Messenger
	Video-chat
	Messaging/texting/chatting
	SMS
	Snapchat
	WhatsApp
	WhatsApp group
	Viber
YouTube	YouTube videos:
	Pranks
	Sports
	Music
	Gems
	Drop and smash tests
	Repair videos
	How-To's
	Crafts
	Comedies
	Uploading videos of self
	Food competitions
	Musicals
	Documentaries

A similar procedure was carried out in relation to the family activity diary which provided a context within which the use of screen based media by adolescence in Malta was taking place, by looking at the types of family activities carried out over a week. Similar descriptive statistics were used to illustrate the different types of family activities recorded by parents of autistic and typically developing adolescents (see Chapter 4.1.3).

Analysis of diary data was complicated exercise mainly due to the great variability in responses on behalf of participants, as well as missing data. For example, most participants chose to give rough estimates for time spent in activities (e.g. 'all afternoon', 'after dinner until 9pm', whilst others were more specific, although not always exact in their recordings (e.g., 1 to 2 hours, approx. 30 minutes). For this reason, descriptive statistics could not be carried out for data pertaining to the duration of activities.

3.7.3 Questionnaire data

IBM SPSS Statistics was used to analyse data obtained from the Friendship Quality Scales (Bukowski et al., 1994). Independent t-tests were carried out to test whether there were group differences on the FQS subscale scores. Due to the gender differences identified in the qualitative analysis (see Chapter 4.2.1), we also conducted 2 (group: autistic vs typically developing) x 2 (gender: boys vs girls) ANOVAs to determine whether differences in gender impacted on FQS subscale scores across participant groups.

3.8 Enhancing the quality of the research

Assessment of research quality encapsulates all aspects of a study, from the formulation of research questions to the generation of implications for theory (Bryman, 2007). The discussion of research quality assessment has been complemented with a concern that traditional criteria measuring the quality of research, largely associated with quantitative studies, e.g., reliability, validity, generalisability, are inappropriate in capturing a measure of quality in qualitative research (Bryman, 2006). Over the years, quality standards applicable to qualitative research have been put forward, which offer an understanding of the standards of goodness (Morrow & Smith, 2000) or trustworthiness (Lincoln &

Guba, 1990) of qualitative research designs. In this way, Lincoln and Guba (1990) describe a number of quality standards running parallel to traditional benchmarks of rigour framed in conventional quantitative terms. Thus, credibility in qualitative research is said to correspond to internal validity in quantitative approaches, transferability to external validity or generalisability, dependability to reliability, and confirmability to objectivity (Morrow, 2005).

A number of procedures in this study were undertaken with a view to strengthen the quality of its findings. Since qualitative measures are central to the overall mixed methodology of this study, I undertook a number of initiatives ascertain research trustworthiness, based on procedures proposed by Yardley (2000) (see Table 7).

Table 7.

Initiatives undertaken to ascertain research trustworthiness.

Procedure	Description
Triangulation	In order to obtain a richer understanding of how adolescents in Malta use screen-based media and its relationship to their peer relationships, multiple data collection methods with different groups of participants were employed. This provided multiple perspectives contributing to a better understanding of the areas that I endeavoured to investigate.
Comparing researcher coding	In order to ensure that coding was not confined to one perspective and to aid in the clarification of codes and identification of themes, inter-rater coding was carried out with a trainee educational psychologist in the UK and one educational psychologist in Malta.
Disconfirming case analysis	Disconfirming case analysis, by reporting findings contradicting a main theme, was carried out in order to ensure that all the data set was objectively analysed and that it does not fit just one viewpoint. E.g., Whilst interview data showed strong feelings of suspicion on behalf of parents in their views on the use of technology by their children, the few instances when screen-media use was seen more positively were also noted.
Paper trail	I have endeavoured to link raw data to the final report by attaching extracts of the data collection measures used, descriptive statistics tables, a range of coded interview transcripts as well as thematic maps illustrating the development of themes.
Participant feedback	Due to time constraints, participants were not given the opportunity to feed back on the interpretation of the data. This was a necessary limitation of this study.

4. Findings

Chapter 3 outlined the study's methods, together with a detailed description of the participants, the procedure and data analysis. This chapter presents the quantitative and qualitative findings identified following data analysis of the Friendship Quality Scale (FQS), the screen-based media and family activity diaries, and the semi-structured interviews. It begins with the results of between-group analyses on the FQS. This will followed by a description of the diary results, with the bulk of the results reporting on the thematic analysis of the semi-structured interviews.

4.1 Quantitative Analysis

4.1.1 Friendship quality in autistic and typically developing adolescents

Friendship Quality Scale (Bukowski et al., 1994) subscale scores by gender and diagnostic group are presented in Table 8.

Table 8.

Friendship Quality Scale (FQS) subscale scores by gender (boys, girls) and diagnostic group (autistic, typically developing)

FQS Subscales	Autistic group			Typically developing group		
	Boys n=17 M (SD)	**Girls n=7 M (SD)**	**Total n=24 M (SD)**	**Boys n=17 M (SD)**	**Girls n=7 M (SD)**	**Total n=24 M (SD)**
Conflict	2.66 (0.39)	2.60(0.24)	2.64 (0.35)	2.41 (0.53)	1.92 (0.73)	2.27 (0.63)
Companionship	3.60 (0.53)	3.86 (0.32)	3.68 (0.49)	3.46 (0.47)	3.61 (0.43)	3.50 (0.45)
Closeness	3.50 (0.37)	4.34 (0.38)	3.74 (0.54)	3.83 (0.36)	4.66 (0.22)	4.07 (0.50)
Security	3.59 (0.50)	4.21 (0.28)	3.77 (0.53)	3.98 (0.50)	4.77(0.18)	4.21 (0.56)
Help	4.05 (0.31)	4.40 (0.57)	4.15 (0.42)	3.80 (0.24)	4.34 (0.34)	3.96 (0.37)

Notes. Higher scores on the FQS reflect higher levels of each subscale behaviour for example, higher Closeness scores mean a friendship that is more emotionally close. The exception to this rule is the Conflict subscale, where scores were reversed, such that higher scores reflect lower levels of conflict with a best friend.

To compare the friendship quality of autistic and typically developing adolescent participants, independent samples t-tests were conducted on the FQS subdomain scores. There were significant group differences in the scores between typically developing and autistic adolescents for the Conflict, $t(45)=2.58$, $p<0.014$, Closeness, $t(45)=2.16$, $p<0.04$, and Security subdomain scores, $t(45)=2.79$, $p<0.008$, but not on the Help and Companionship subdomain scores ($ps<.10$). Autistic adolescents reported significantly less conflict, closeness and security than typically developing adolescents.

Given that the qualitative analysis revealed some key differences relating to gender (see Chapter 4.2.1), an additional ANOVA with gender (boys, girls) and group (autistic, typically developing) as between-participants factors was

conducted. Note that this analysis should be seen as exploratory given the small number (n=7) of girls within each group. There were significant main effects of group for Conflict ($p=0.04$) and Security ($p<0.01$) and a marginally-significant effect of Closeness ($p=0.06$), with typically developing children scoring higher than autistic children on these subscales. There was also significant main effects of gender for Closeness ($p<0.01$), Security ($p<0.01$) and Help ($p<0.01$) subscales, with girls scoring higher on these variables than boys. There were, however, no significant interactions between gender and group for any of the FQS subscales (all $ps<0.17$), suggesting that the gender effects operate quite similarly across groups.

4.1.2 Screen-media diary results

Screen-media diary results were analysed in terms of the types of activities carried out by adolescents over a one-week period as well as the people with whom they engaged in these activities.

4.1.2.1 Types of screen-media activities

A frequency analysis of the number of times (Appendix F) adolescents recorded engaging in different types of activities was carried out with a graphical illustration of these percentages presented for both autistic and typically developing groups (see Figure 3). The frequencies for watching cartoons, TV programmes, movies and series episodes were collapsed into one category in order to facilitate analysis.

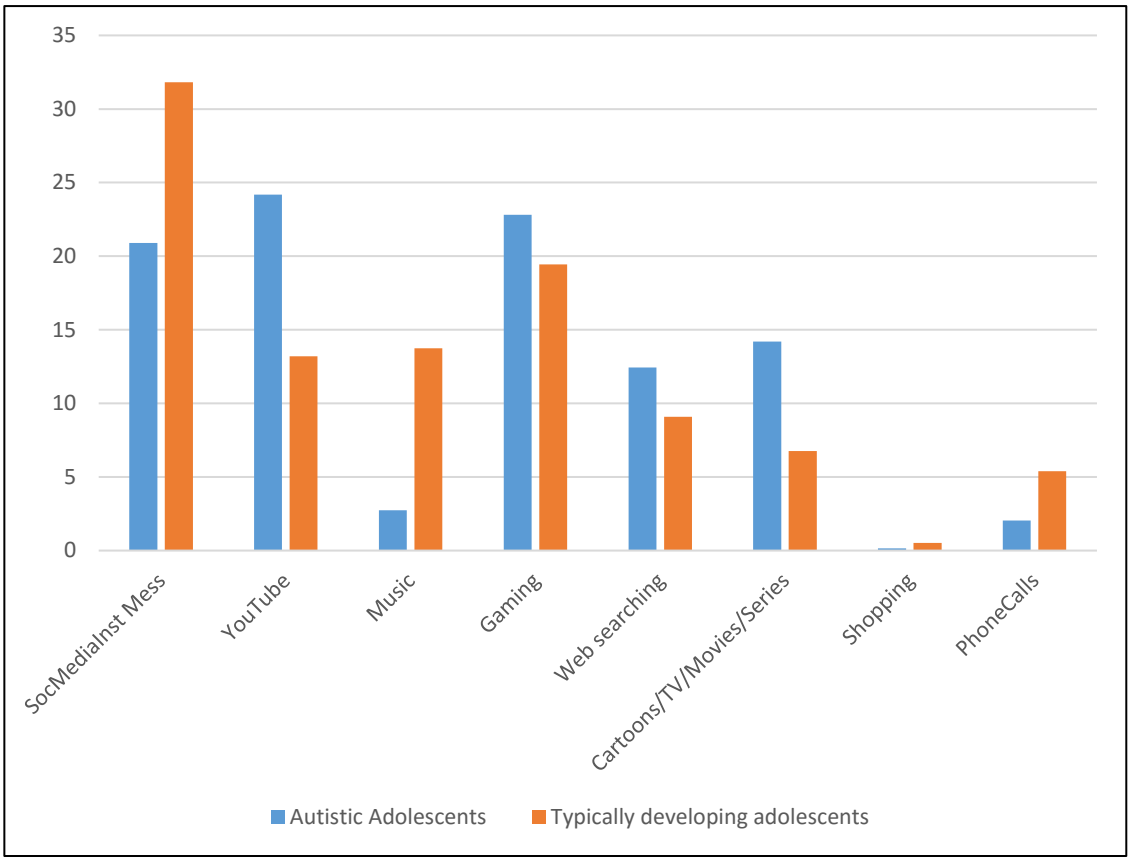

Figure 3. Proportion of recorded number of types of screen-media activities by autistic and typically developing adolescents.

This analysis showed that young autistic people engaged in a wide range of screen-media activities, with the most common being related to the use of YouTube, gaming and using social media and instant messaging. As Table 9 above indicated, YouTube, together with more general web searching were also common platforms through which autistic adolescents pursue their intense interests. Watching cartoon, TV programmes, movies and series episodes also featured as a relatively common activity engaged in by autistic youngsters but using screen-based media for music-related activities and for making phone calls were however the least reported activities by young autistic people.

Social media use and instant messaging were the most popular activity recorded by typically developing adolescent participants. Screen-based activities related

to online gaming, using YouTube and music-related activities were also frequently recorded activities by typically developing participants. This group of adolescents did not seem to frequently engage in watching cartoons, TV, movies and episodes and reported less instances of using screen-based media for general web searching.

Although comparison between groups needed to be considered tentatively in this type of analysis, it seems that that there were some key differences between groups around social media use and music related-activities in which typically developing teenagers engaged in more frequently than young autistic people. Conversely, autistic teenagers used YouTube and watched TV/cartoons more frequently than typically developing adolescents.

4.1.2.1 Screen-media activity partners of autistic and typically developing adolescents

I also examined the frequencies of young people's interactions with others. The different activity partners mentioned in the diaries were regrouped into categories. For example, parents, siblings, grandparents, cousins were all categorised as 'Family'. Although frequencies gave an indication of the types of companions adolescents engaged with, it should be noted that the recording of activity partners by adolescents was not consistent – even within the same person's diary – and therefore this frequency count was based on available data provided by the adolescent participants. A graphical representation of this analysis is provided in Figure 5.

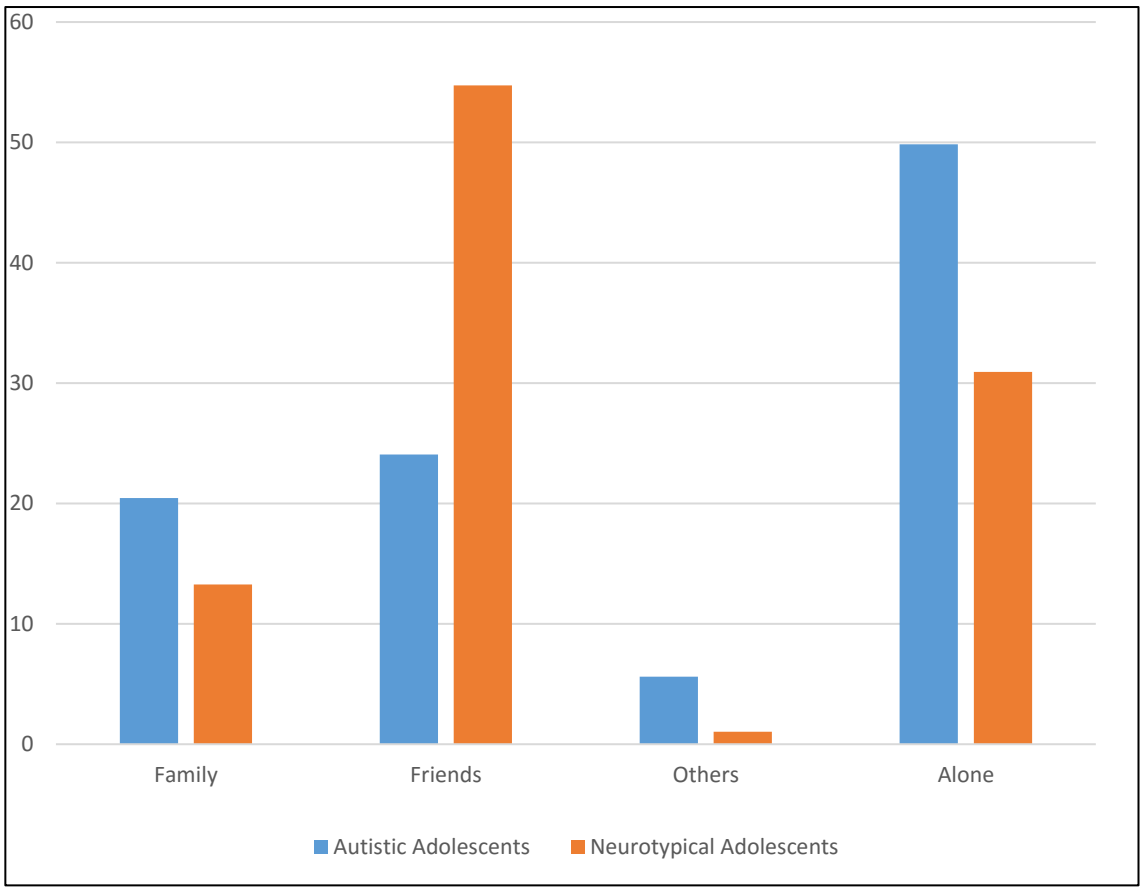

Figure 5. Proportion of screen-media activity partners of autistic and typically developing adolescents, as reported by adolescents.

Diary data showed that most screen-based media activities in which young autistic people engaged were of a solitary nature. These adolescents also reported similar frequencies of engaging with friends and family members, although these were to a lesser extent when compared to activities they carried out alone. In fact, autistic adolescents referred to their friends for less than a quarter of the time they spent using screen-media. Typically developing adolescents also reported a significant amount of solitary screen-media use but recorded engagement with friends for most part of their activities when compared to autistic adolescents. Their engagement with friends was also more frequent

than that with family members. Across both groups, there were very few instances when participants recorded engaging with unknown peers.

4.1.3. Family activity diary results

Family activity diaries completed by parents were analysed by examining the type and frequency of family-based activities over the period of one week. The types of activities varied from going shopping and running errands together, going to mass at the weekend and walks together in the evenings and on weekends. The involvement of extended family members within the family unit featured frequently across both groups of parents. Activities were subsequently grouped into categories to facilitate interpretation. For example, 'lunch and 'dinner' were grouped into 'Dining together at home'. A graphical representation of the data can be found in Figure 5.

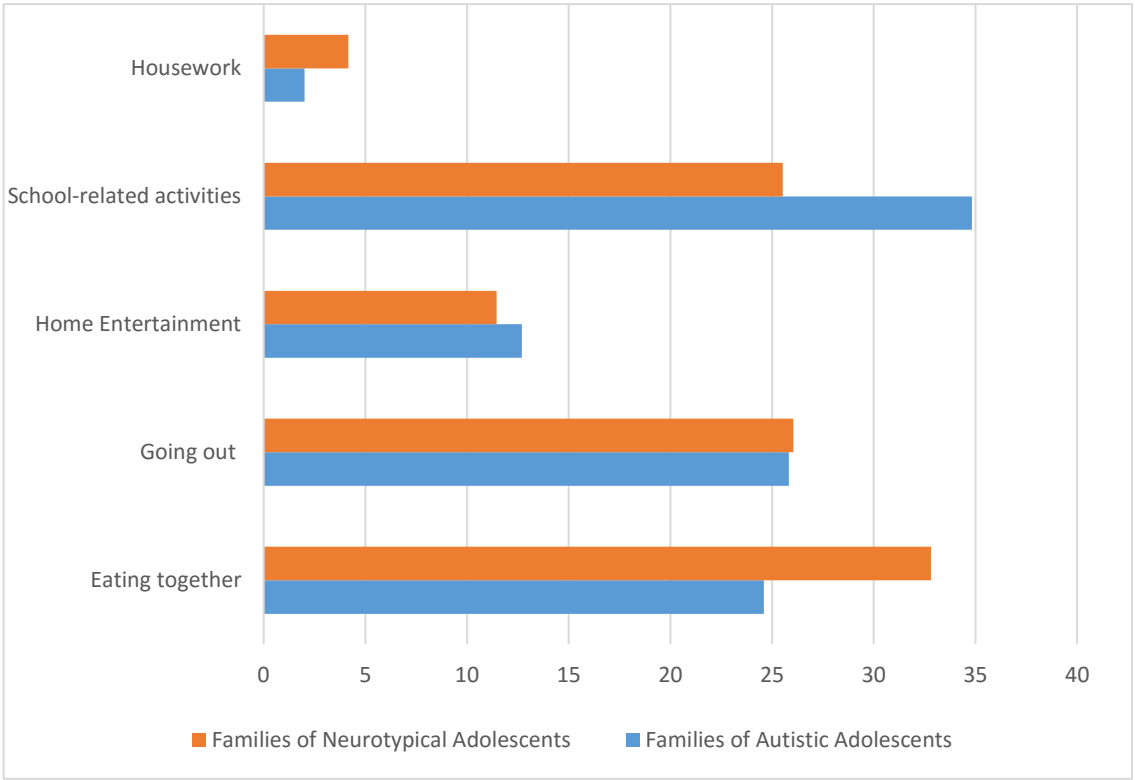

Figure 5. Proportion of activities carried out by families of autistic and typically developing young people, as reported by parents

Figure 6 shows that similar frequency was recorded between groups for activities related to going out as a family, home entertainment and housework. The most frequently recorded activities by parents of autistic young people were related to school-related activities such as supporting them with their homework as well as picking up and dropping them off to school. Eating together was the most reported activity recorded by parents of typically developing adolescents. Table 11 above showed that across both groups, the presence of the extended family featured significantly in both activities related to going out as well as home entertainment. In fact, diary data showed that grandparents visited their children and grandchildren regularly, in most cases more than once a week and family activities also involved visits to grandparents, where mealtimes took place in the presence of extended family members.

4.1.4 Summary of quantitative data

Results from the Friendship Quality Scale (Bukowski et al., 1994) showed differences in the way autistic and typically developing adolescents perceived friendship. In rating their best-friendship autistic adolescents reported significantly less conflict, closeness and security than their typically developing counterparts. Diary data gave an indication of some of the ways autistic and typically developing adolescents engaged in screen-based media activities. Moreover, this data showed that most young autistic people used screen-based media alone while typically developing young people reported using screen-based media to interact with known friends. Data from family diaries showed the range of activities families engaged in, where involvement in school-related activities was a common activity on behalf of parents of autistic young people

while eating together was the most commonly reported activity by parents of typically developing young people.

4.2 Thematic analysis of young people's interviews

The following section presents an analysis of identified themes from interviews with autistic and typically developing young people, as illustrated by Figure 6 below.

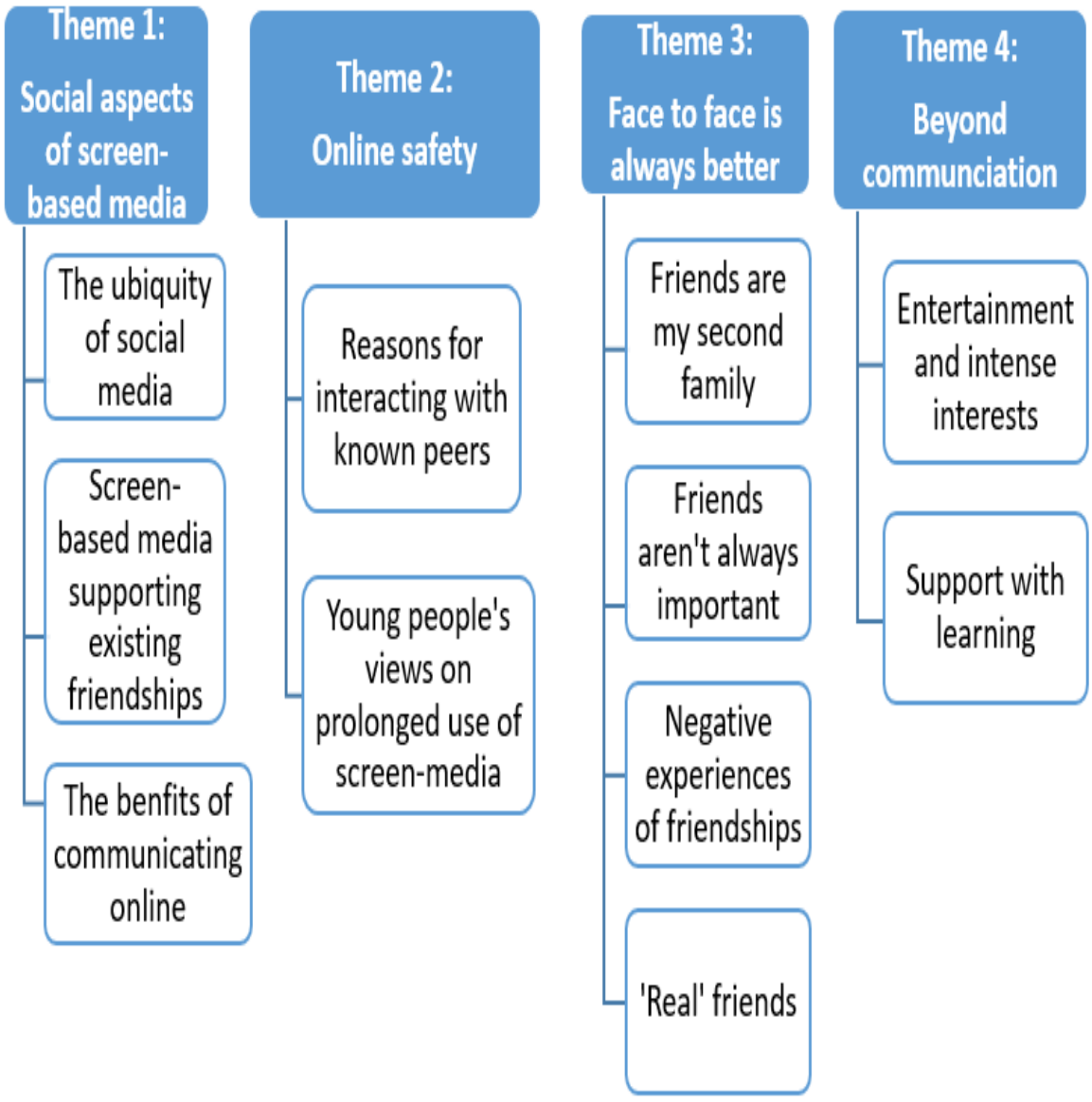

Figure 6. Thematic map (adolescent interviews)

4.2.1 Theme 1: Social aspects of screen-based media

The ubiquity of social media

Social media use emerged as a preferred activity amongst adolescent participants. Both typically developing girls and boys used social media, including instant messaging, and social networking sites on a daily basis. Facebook, Snapchat and YouTube seemed to be the most widely used social media platforms, and messaging friends via instant messaging applications such as Facebook messenger, was the most commonly mentioned activity related to social media. (NTG05*: "And of course texting. All the time! [chuckle] That comes before watching movies and listening to music because it's like all day").*

Facebook messenger was more likely to be used by young people for texting friends, to make plans or to ask specific questions, for example, in relation to homework. Snapchat, seemed to provide a more entertaining messaging application (NTB03: "*I like it because we can really have a laugh using it"*). This is particularly because of its drawing tool features, which was frequently mentioned by adolescents as providing more amusing and creative ways of communication with peers (AG03: "*I really like Snapchat because I can be, like, creative … My friends send me pictures on purpose and ask me to turn them into funny ones. I love it*.").

Embedded within the activity of messaging peers was the idea that social media offered opportunities to share material with others online. For example, a number of participants talked about how they shared YouTube music videos with peers, links to events or photos and videos of places and items they felt would interest

their peers. (NTG04: "*If I'm out shopping I can just snap a photo of something I saw and send it to my friends to see what they think … that way I'll know whether they like it or not*'). Study participants, across groups, indicated that YouTube had become popular in offering an opportunity to connect with others by means of video-sharing. For example, two autistic and three typically developing boys, as well as one autistic girl referred to themselves as 'YouTubers', in a direct reference to the social aspect of the application.

> *I take videos of myself singing and playing the guitar and post them online. Then I wait for my followers to watch them and comment. I only had two followers when I started going to this school but now I have eleven* (AB13)

Apart from the type of social media youth engaged in, the length of time adolescents spent using it came across frequently in the interviews. It seemed that communicating with others was an activity that takes place throughout the day (NTG03: "*I'm on Messenger as soon as I wake up in the morning … Sometimes I also check it during the night, just in case, you know, someone sends me something*"). The mobile phone was by far the most common type of screen-based media used to access social media (NTB06: "*I'm not allowed to take the phone to school but after 3pm it's glued to my hands so when I need to make plans or say something to someone it's on me*"). Computers and laptops were mostly referred to as devices which were used for more multi-tasking, i.e., where social media was used in parallel with other activities, namely school-related work and using YouTube. In this way, the use of several devices was considered as allowing engagement in simultaneous screen-based activities (AB12: "*I enjoy chatting to my friends but I also like to look up stuff and play games or download music*)".

There was clear variability regarding the perceived purpose of social media for participants. Compared to young autistic people, typically developing adolescents made more use of social media and considered communication with others as central to their daily activities. The use of Facebook and instant messaging was mentioned by 87.5% (n=21) of typically developing young people during interviews, as opposed to 62.5% (n=15) of young autistic people. Nevertheless, qualitative analysis showed that the autistic girls in the study (n=7) showed a keen interest in using social media applications, similar to typically developing adolescents. Communicating with peers was a common and appealing activity in their daily lives as it offered a way to keep in touch with their friends beyond school hours (AG01*: "It's important because … for example, my parents think I'm too young to go out with friends at the weekend so I have my phone and can talk to my friends on Messenger like that"*). Another autistic girl further acknowledged that communicating via screen-based media supported her relationship with her best friend (AG03: "*We chat and send each other videos, photos. Sometime we call each other through Facebook."*

The same cannot be said for participating autistic boys, few of whom considered instant messaging as important, except for emergency purposes and to keep in touch with family. Four autistic boys mentioned having the Facebook messenger app on their phone but not being interested in using it. One adolescent, for example, talked about how he did not see the scope behind using a messaging application with peers he meets daily at school.

> *I don't like using it. I talk to my friends at school … unless it's very urgent like I forgot what homework we have, I can talk to them at school the next day. I only use my phone to call mum or grandma if something happens*. (AB02)

Two other autistic boys as well as one typically developing boy also made reference to never using social media but to using their mobile phone, which had a very limited numbers of contacts, for emergency purposes only - specifically to contact immediate or extended family members in case they needed to get in touch with them urgently.

Screen-based media supporting existing friendships

A preference for using screen-based media to maintain existing friendships was common among adolescents, with the mobile phone and laptop being the most common devices used for this purpose.

Interviews showed that social media was by far the main tool accessed by adolescents to keep in touch with their current friends, mainly after school and during weekends. Adolescents, in particular typically developing young people but also most autistic girls, spoke about how they enjoyed, and also felt the need to, message their peers in relation to a number of matters (AG06: "*Even if something happens at the weekend I would want to tell my friend about it*"). Homework and school-related activities featured regularly when young people described how they used technology with friends. Adolescents frequently got in touch with each other to remind each other of school-related work and also to help each other out in school-related difficulties (AB05: "*I can message my friend about homework or if there's something that I need help with. My parents don't always know how to help me with some subjects like Maths*"). They also used screen-based media to share links, photos or videos of common interests, especially music. Weekend and holiday plans were also commonly discussed

ideas, especially by older adolescents and more commonly in group chats. Adolescents also viewed screen-based media, in particular messaging application such as Facebook messenger and WhatsApp as a space to discuss problems of a personal nature with which they felt their friends could help them.

Online gaming, especially for typically developing boys, was a common activity in which friends engaged in together. This either took place at one of the young people's houses, who frequently mentioned having friends over to play, or remotely, by means of multi-player games. Whilst a small number of typically developing boys (n=4) expressed a preference for solo-playing, most of these adolescents engaged in multi-player games, mostly with known friends. In contrast, although online gaming was also very popular among autistic boys, the use of gaming to maintain already established relationships was not commonly mentioned and participants seemed to indicate a preference for solo-player games. Most of the autistic boys in the study did not mention enjoying the social aspects of the games (AB06: "*I prefer just playing the game alone but for example, in Roblox, you can't really disable the chat function so people can talk to you all the time*". In contrast, four autistic boys talked about their gaming partners as people they enjoyed and looked forward to interacting with regularly. One adolescent in particular talked about a gaming partner as being his best friend and another boy expressed a wish to sometime visit one of his regular gaming partners living abroad and "*meet him in real life, maybe we can become actual friends*" (AB14).

The benefits of online communication

Although online safety featured prominently in discussions with young people (see Theme 2 below), the benefits of using screen-based media for

communicating with peers also came across during interviews, albeit to a lesser extent. Young people spoke about the possibility that screen-media provide in being able to communicate with their friends beyond school hours and over holiday periods. Social media offered preferred ways of spending time as well as the reassurance that contact could be kept with friends moving abroad:

> *Yes. It's great to be able to message my best friend or my other friends whenever I want or if I need something. And now that she's going abroad [best friend] we'll be texting even more often I think. Yeah, or if I'm waiting somewhere like my mum's car and I'm bored or something then I can just text or go on Facebook you know? (*NTG05)

One typically developing boy spoke about how technology helps him with overcoming some of his shyness (NTB04: "*I'm quite reserved and … Everyone says I need to speak up more but I'm like that, shy I guess. So I like being online because I don't need to worry that I'm blushing or something"*) while an autistic young person referred to social media as being "*much quieter. I don't like it when there's lots of shouting in class, I cannot concentrate*" (AB13), indicating that perhaps that online environments helped him overcome possible sensory difficulties.

Screen-based media was seen as reinforcing the immediacy with which several activities can be carried out, such as communicating with others or looking up information. One autistic participant spoke about screen-media as allowing her to reach out to friends without having to wait until she meets them:

> *If you need to ask something, you can do it there and then and not wait until the next day, or if you need to talk to your friends about a problem, you know someone will be on Messenger and you won't feel alone* (AG06)

4.2.2 Theme 2: Online safety

Reasons for interacting with known peers

Interviews with the young people showed that screen media use was not seen by young Maltese adolescents as a way of getting to know other people and creating new connections and relationships. In their accounts of technology use, particularly in relation to communicating with others, young people made several references to being aware of various online dangers which seemed to contribute to their choice of interacting with known peers. Linked to Theme 1 above, most concerns revolved around possible risks in communicating with people unknown to them (NTG02: "*You could be talking to anyone, you won't know whether it's a man or a woman, if they're 40 or if they're 15*".

There were instances where participants referred to the fact that 'adding' friends on Facebook was reserved for friends or acquaintances adolescents already have, or people they had met at least once offline, such as friends of friends, other peers attending after-school clubs or siblings of existing friends:

> *I go out and I meet people and then I add them on Facebook and I talk to them. If I want new friends I just get to know more people I guess. If like, if I want to have more friends I would talk to more people at school or at the weekend you know? I'm not gonna go message some random person (NTG05)*

Adolescents also made reference to their parents' influence and supervision with regard to talking to other young people unknown to them. Some participating youths talked about having negotiated with their parents to access social media platforms, such as Facebook, on condition of a shared password or a shared Google account (NTG01: *My parents can go into my Facebook account anytime.*

They let me use it only because we agreed on a shared password. So they would know if I did that [communicate online with unknown peers]".

Young people's views on prolonged use of technology

Despite the high frequency of reported technology use, very few adolescents (n=6) made reference to excessive dependence as a potential risk to screen-media use, which was, in contrast, a common concern on behalf of their parents (see Chapter 4.3.1 below). Perceptions on the prolonged use of screen-based media were, however, more frequently referred to by autistic participants. For example, one autistic young person spoke about having 'non-technology time' as part of his daily schedule:

> *Dad doesn't want me on my computer or tablet all the time so after school it's non-technology time. Non-technology time means that we play board games or just talk or read books and then I can go on my tablet after I finish my homework and have dinner. Dad says we will get hacked if we use it too much or that it will hurt my eyes* (AB05)

Another autistic young girl, however, expressed her awareness about how she sometimes needs to be reminded about the length of time she spends engaging with screen-based media, since this allowed her to engage in her favourite activities (AG05: *My mum wants me to use my phone less. She says we use it too much. I guess it's easy to just keep chatting and looking at videos. I also really like watching cartoons)*

Although screen-based media appeared to be appealing for the majority of adolescent participants, one autistic boy had very strong feelings against using technology, because of its perceived addictive potential. This young person was adamant about not engaging in activities related to technology as much as

possible, instead wanting "*to just use my brain and my hands and not get addicted to technology like the rest of them. That's what they are, they're all addicts*" (AB10).

4.2.3 Theme 3: Face-to-face is always better

Interviews with young people also sought to gain a deeper understanding of the young people's attitudes towards friendship. This was done with a view to complement and contextualise their screen-media use whilst delineating any differences that exist between autistic and typically developing adolescents in Malta.

Surprisingly, there was a preference across groups for face-to-face communication, despite the importance that young people attributed to technology and to the constant connectedness with peers via screen-based devices. In fact, when asked directly about whether they preferred online or face-to-face communication during their interview, 77% (n=37) participating adolescents indicated a preference for face-face communication. The remaining 11 participants either showed a preference for online communication (n=5) or replied that they had no real communication preferences (n=6). All of the 5 participants preferring communication via screen-based media were autistic boys. Interestingly, of all 14 participating girls, only one (autistic) girl expressed not having an actual communication preference while the remaining 13 girls preferred face-to-face contact with peers.

> *For example you have this problem and you want to face someone about it, ehm, behind your phone you're like you know you can say whatever you want … but when you're face-to-face you can actually interact with them. With face to face you can know how they're really feeling (NTG05)*

For one autistic young boy, face-to-face communication facilitated interaction because verbal communication was less demanding when compared to using social media:

> *Because I can say something to the person directly, without having to type it. And sometimes you can't type all the things you need to say, there's too much of them, so talking is better. (AB05)*

Friends are my second family

When answering questions about the importance of friends, most adolescents made references to friends being their confidantes, their primary support network but also their preferred activity partners, thus implying that friendships featured in a number of domains in a young person's life. Young people described their friends as people who supported them, helped them and with whom they participated in preferred activities. One typically developing boy admitted that "*my friends are the reason why I go to school*" (NTB06).

Other adolescents described their friends as having similar interests with some indicating that their friends attended after-school activities with them, such as football training, drama and music lessons (AG05: "*We all like manga and anime' and not a lot of others like that so we have each other to talk about that*") For one typically developing boy, friends were described as his second family with whom he meets to "*play football, play games, go out … they're always there*" (NTB03). Interestingly, one autistic boy spoke about how having very few friends was not a personal preference but a result of his lack of knowledge of speaking the

Maltese language. He mentioned that he would like to widen his circle of friends, "*because I think friends make you happy*" (AB14).

The benefits of having friends included having peers who looked out for each other. One of the autistic participants spoke about how he valued the help he received from his friend and that this support lessened the anxiety he used to feel in past years:

> *He reserves a place for me on the school bus every morning and I don't, like, need to worry about where I'm going to sit like I did in primary school*. And *if I forget my lunch my friend can give me a piece of his or a fruit. He likes to help me out and so do I.*" (AB09)

Friends are also those who are aware of your possible vulnerabilities (AG07: "*Staying in the playground during break makes me sort of dizzy, I don't like that. My friends say it's ok to stay inside*"). In a similar manner, another autistic participant explained how, during break-time, he enjoyed talking to his friends inside the school's canteen since this entailed less possibility of physical contact with others (AB05: "*It's a quiet room with lots of friends and we can sit together and no one bumps into me*") and his friends seemed to understand and respect this preference.

Typically developing boys were more likely than other adolescents to be part of larger groups of friends. Autistic and typically developing girls referred more frequently to having one or two best friends and a small number of close friends. Most autistic boys also considered themselves to be part of a small group of friends, with the majority of them reporting having one or two close friends. In some instances, typically developing girls and boys talked about how they had two sets of friends, those they met at school and those they engaged with outside

of school – even though these groups merged at times, for example during weekend activities (NTB08: "*At the weekend I go to Valletta to hang out with my friends who go to another school … sometimes I meet friends from school there and we all go to McDonald's or something*". Autistic participants, however, mostly referred to friends who they met at school, with the exception on one autistic boy whose best-friend was an online gaming partner and three others who also enjoyed interacting with online peers, mentioned earlier in this chapter. Some autistic participants spoke about how they sometimes met after school (AG02: "*Sometimes I go over to my friend's house and we watch videos or play games together or just talk. I don't do this often though … maybe once a month and then a few more times in summer")*

Friendships aren't always important

Although the importance of friendship for both autistic and typically developing young people was identified in most interviews with young people, some interviews also highlighted that friendships are not considered important by all, particularly so for some autistic young people. One autistic boy clearly indicated that friendship was not important for him:

> *There are things like chores that are more important than being with the friend all the time. Chores are important and must be done, like homework and studying. Then the friend. You cannot spend all the time with friends because that would be entertainment.* (AB04)

There were also instances when young autistic people showed a preference to having some time alone. In particular, two other autistic boys reported that they did not have any specific friends at school and willingly spent most of their free

time alone or participating in organised break-time activities such as film and book clubs but that:

> *This is ok because I like books and movies better than talking to people. I mean, I do talk to others between lessons and on the bus too but I like being on my own during break. It helps me to sort of clear my head.* (AB11)

Negative experiences of friendship

Some negative experiences with peer relationships seemed to have influenced a number of young person's views of friendship. One typically developing boy spoke about how having been a victim of bullying in primary school has "*made me become really careful around who to choose as friends because once they turn on you … yeah, it was a really bad time."* (NTB14). Young people talked about incidents involving other peers they knew who were victims of cyberbullying, which was also considered as a potential risk factor to online communication.

Aspects related to friendship jealousy and conflict also featured a number of times. When asked about their relationship with friends, girls in particular, both with and without ASC made reference to a number of episodes involving arguments with other peers. Most of this conflict revolved around newer members joining established groups of friends and challenging existing roles within groups (NTG03: "*Things were going well and then this girl comes into our group and starts spreading lies. I think she just wanted to be popular and the others didn't notice that she was splitting us up*").

‘Real’ friendships

A preference for face-to-face communication seemed to stem from feeling better socially connected when interacting in person (NTB12: “*Definitely face-to-face. You can chat and send messages but you can’t have a real friendship if you don’t meet up with your friends*”) to a need to experience real reactions and feelings (AG01: “*And if, you know, you have an argument and you want to settle it, it’s … uhm, better face-to-face. Some people can argue a lot on chat but are then scared to show how they feel offline*”). One autistic boy felt that offline communication is preferable for close friends “*because we enjoy being together and talking to each other, but if it’s less close friends then I think online is still ok*” (AB05).

As discussed above, some adolescents expressed a preference for online interaction. For example, one autistic participant spoke about how he thought “*online is better because I can still do the stuff I like … Like I can watch a documentary, or a video on YouTube and also talk to somebody. If I meet people face-to-face I need to talk to them all the time*” (AB13). Another young autistic person, mentioned above, showed a clear preference for online interactions, in particular a gaming partner “*who is my best friend even though I’ve never really met him. We chat and play every day after school and all day during the weekends. He’s my best friend*.”(AB16)

4.2.4 Theme 4: Beyond communication

Even though communicating with others was one of the most reported uses of screen-based media by adolescents, participants reported using a

technology for a range of other activities, mostly related to school-related endeavours and also as a tool supporting interests and leisure activities.

Entertainment and intense interests

Whilst interview data showed that phone and laptops were the most commonly used screen-based media for communicating with others, tablet computers and the television were also frequently mentioned as devices used to pursue hobbies and leisure activities, where gaming was regularly referred to (NTB07: "*In my free time I'm usually on my Playstation. I don't have many other hobbies*"). Television was most commonly used as a display for gaming consoles but some adolescents also mentioned watching television or movies, sometimes with other family members in the evening or at the weekend (NTG01: "*My mum likes us to watch something together at the weekend. We usually watch a movie or things like The X Factor*".)

Online gaming appeared to be a very popular activity, especially with boys. Almost all typically developing boys and most autistic boys mentioned online gaming as one of their most preferred activities, with the computer and consoles such as Xbox and PlayStation being the popular platforms to engage in games. The range of games included, amongst others, Grand Theft Auto and Minecraft as well as first-person shooter and survival games such as Battle Royale. As reported above, most autistic boys preferred solo-player games as opposed to typically developing boys who frequently expressed a preference for multi-player games, especially involving existing friends:

> *Yes with my friends. The people I hang out with at school, we've got like a small club between us ... we all kind of like this sort of thing … we meet during break as well and then play together after school, at the weekend.* (NTB15)

Apart from gaming, a number of other activities related to personal hobbies and interest were mentioned by adolescent participants. These included the use of screen-based media for other leisure activities such as to download movies, series episodes, and music, with YouTube and Spotify being the most frequently mentioned applications. 'How-to' videos on YouTube were frequently mentioned by adolescents of both groups. One girl spoke about looking up 'how-to' card making and craft videos, which was one of her preferred hobbies, which she then could replicate. Older adolescents also spoke about using technology to make online purchases, with their parents' permission, which mainly revolved around clothes, costume jewellery, gifts and games.

Compared to typically developing young people, autistic adolescents made more frequent references to technology-based activities which did not necessarily involve the use of social media and communicating or interacting with others. For example, autistic adolescents reported screen-based media use to pursue intense interests, which ranged from looking up nature-related documentaries, watching particular types of animation such as anime and Disney Pixar movies, as well as more specific activities such as searching online about illnesses, different fonts and having a special interest in looking up information and videos relating to reptiles, gems and flower names, amongst others. In the case of two autistic boys, phones and tablets were used to look up YouTube videos on technological devices, such as phones and how they work. One of these boys

was also very keen on watching objects, such as phones, drop from a given height in 'Drop and Smash' test videos, which he engaged in on a regular basis (AB08: "*I know most of those videos by heart. I really like watching them but I don't try to imitate them anymore. That was when I was young. Now I just watch them*".

Support with learning

As opposed to the variety of devices used to engage in hobbies and specific interests, laptops (and personal computers) were the most frequently reported screen-based media used by adolescents to support school-related activities, for which adolescents regularly use technology. Most adolescent participants, across groups, use screen-based media to look up to access material related to school work. The range of school-work adolescents mentioned included, amongst others presentation and project-based work. Screen-based media were also considered as supporting tools in relation to homework and also a means for participants to compensate for difficulties with learning at school and information related to daily homework:

> *I often look up additional explanations for the things I don't understand online … Sometimes it's hard to understand the teacher especially during certain lessons when there are lots of distractions you know … so then I go home and look up videos on YouTube*" (NTB13)

Participants also referred to making use of technology resources located within their respective schools such as libraries and computer clubs. An 11-year old autistic adolescent regarded technology as a motivator for learning and

completing school work (AB08: "*At school my LSA (learning support assistant) allows me to play a game on her phone if I focus and finish my work on time*").

Screen-based technology was also viewed by a number of participants as directly supporting them with the acquisition of literacy skills. A number of participants reported how they were identified by their respective schools at the beginning of the year and provided with extra sessions targeting their reading and writing development, which was considered to be low when compared to other same-aged peers. Sessions took place in small groups where literacy software was used to engage and support students. Most adolescents felt this was helpful and something to look forward to (AG: "I like having my own school computer and my own profile on it. It shows you the progress you're doing and I like knowing I'm getting better"). Further educational benefits of screen-based media, in terms of providing a favourable environment within which learning can take place were also highlighted:

> *Sometime learning is harder than when I am at home on the computer because of a lot of noise everywhere. If I then go to the computer club or use my laptop at home, it's easier … I feel I can learn more like that*. (AB02)

4.2.5 Summary of results from adolescents' interviews

The identified themes from young people's interviews indicate that there was a strong presence of social media in adolescents' lives, even if there was limited variability in types of social media platforms used by adolescents in Malta, with Facebook being the most frequently mentioned. The majority of participants viewed screen-based media as supporting existing peer relationships rather than as a means to creating new ones and young people across groups expressed a preference for face-to-face contact over online interactions. Differing attitudes

towards friendships were also discussed in terms of the value adolescents placed on friendship and communicating with peers, together with references to negative friendship experiences impacting on young people's views.

Interviews highlighted knowledge of some benefits of screen-media use for communicative purposes but a common attitude regarding online risks were more prevalent. This may be reflecting, perhaps, influences from local information and educational campaigns regarding internet safety and online behaviours, which may have focused heavily on risks rather than benefits of technology use for socialisation purposes. It may also be related to the negative views most parents had of technology-use as well as the protective culture associated with families in Malta, which is discussed in Chapter 4.3.

4.3 Thematic analysis of parents' interviews

The next section presents a thematic analysis of interviews carried out with parents of typically developing and autistic adolescents. A thematic map (see Figure 9) illustrates the identified five main themes and respective subthemes.

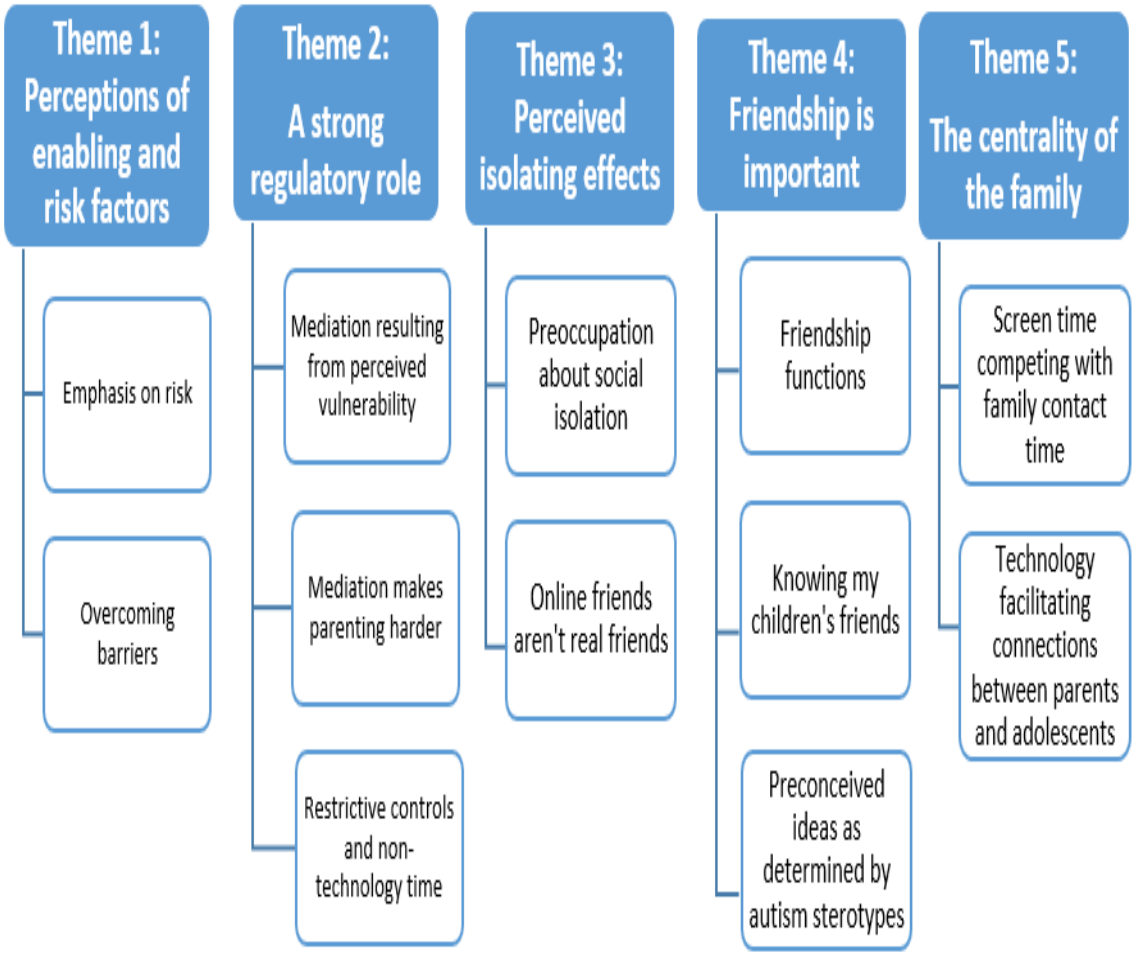

Figure 7. Thematic map (parent interviews)

4.3.1 Theme 1: Perceptions of enabling and risk factors

Emphasis on risk

A focus on the potential risks associated with screen-media use came across distinctly in interviews with both sets of parents, echoing young people's awareness of the perceived risks that screen-media may pose. Indeed, in the majority of interviews, there were frequent references made to access to inappropriate or adult content, excessive dependence, social isolation and distraction from school-related activities. Whilst acknowledging the pivotal role

of technology in today's society as well as a number of benefits that come with access to and knowledge of screen-based media (discussed in the next sub-theme), most parents expressed concerns about different aspects of technology and their perceived effect on their children.

One of the primary concerns that emerged from discussion with parents was the unlimited range of online material to which technology allowed access. Some parents thought new media technologies prompt their children to grow up at an accelerated rate. Most parents feel that social media accelerated their children's access to a range of topics which they would have preferred to discuss with their children at a later stage:

> *I would also have liked to be the one to talk to them about what's out there ... drugs, sex, you name it. As much as I try, I don't always know who's influencing my daughter nowadays and putting ideas into her head and I worry about it*. (ParentNTG06)

Exposure to inappropriate online content was also a concern among some parents. One particular parent shared her experience of how upset she had been when she found inappropriate sexual content on her autistic son's laptop, as she had not expected her son to engage in other activities, apart from those related to his main interest of online gaming:

> *I mean, I am aware that he is in his room playing games most of the time but I was shocked to find those videos. Thank God I have access to his laptop as otherwise I would have just remained in the dark. He's just 14 you know? That's not the way I want him thinking about relationships ... It's not right. We had a discussion about it afterwards, which I guess was a good thing*. (ParentAB16)

Excessive use and time spent on screen-media devices, particularly screen-based media was another common concern for parents, which contrasted with the few references young people made to prolonged use of technology:

> *All that gaming, I know it's not good for him but he can't stay away from it. If it's not the phone, it's the tablet and if those are unavailable he'll turn to our phone or get really frustrated, I don't like admitting it but he's addicted to technology*. (Parent AB12)

Prolonged time using technology was also seen by parents as a distraction from school-related activities, primarily examinations. A parent of a 15-year old typically developing boy commented on how technology usage competed with time dedicated to studying for upcoming important examinations, a concern brought up by many other parents (ParentNTB12: "*He's got his 'O' level exams coming up soon and he needs to start focusing on more important stuff now because he won't be earning a living playing games"*).

Health concerns, such as eye strain, headaches and back pain, were also mentioned as resulting from excessive dependence on screen-media use (ParentAB16: "*Can you see that he's not walking properly? He's done so much harm to his back from sitting down in front of the pc playing games. It breaks my heart … But he just won't stop*").

A common perception among parents was that the main sources of entertainment for their young people revolved stemmed mostly from technological devices and gadgets. Even in activities that do not require engagement in screen-media activities, parents felt that their children needed to have their technological devices around them:

> *Even if we're going out somewhere, she's got her phone or tablet … clicking away or with headphones in her ears watching cartoons. She's always been a bit obsessed with technology even as a young girl (ParentAG03)*

Overcoming barriers

When asked to think about the benefits of their children's use of screen-based media parents mostly referred to technology as an indispensable learning support tool, providing their children with unprecedented access to information and knowledge. In one particular instance, a young autistic person used screen-based media to overcome barriers which were previously challenging – difficulties with reading and writing – whilst also mastering the required literacy skills to communicate with an important person in his life.

> *Even when it comes to literacy – he hates writing but he made more of an effort to learn how to write to be able to use WhatsApp. He's learnt a real lot, mostly on his own, almost as much as school I would say and I'm a teacher myself. He needed to be able to write clearly and in a way that he can be understood so that he could communicate with his LSA (learning support assistant). I used to help him read her messages before. She also used to message him with "what you have you done today?" and "how was your weekend?" to get him to write, which he did with a lot of enthusiasm (ParentAB08).*

Two parents of autistic boys considered technology as potentially enabling relationships. One mother spoke about how she had created Facebook accounts for their son to help them with keeping in touch with people they knew, particularly extended family members. One other parent spoke about how, in an effort to increase her son's social contact and interaction, she had involved him in setting up a Facebook account, despite his lack of interest in making use of this social media platform.

> *I thought he would be more interested in it [Facebook] that he actually is. Sometimes he uses Messenger but adding friends and following friend is not his thing. He never adds anyone, he's only got a dozen Facebook friends*. (ParentAB16)

Most parents also looked at technology as the way forward in terms of providing the required basis for future employment opportunities. In this regard, a number of parents of autistic adolescents perceived their children's affinity towards technological devices as offering a variety of future opportunities relating to further studies, and eventually employment (ParentAB04: "*I'm hopeful that given how much he's good at this sort of thing (technology) it will help him to find a job once he finishes school*". A number of parents also referred to their own use of screen-based media and how technology has helped them keep in touch with others, locally and internationally, as well as entertainment and online shopping. Mobile phones were seen by most parents as allowing them to keep in touch with their children when they were not at home and for their children to always have the means to get in touch with them if the need arose. Technology, in particular screen-media, also offered opportunities for shared activities within the family units across participating groups (see also Theme 5, Chapter 4.3.5, below).

Screen-based technology was reported by parents as providing them with a way of acknowledging areas of strength in their children, looking beyond the possible disadvantages of screen-media use. One of the three parents who brought up this notion made specific reference to her son's use of YouTube as reinforcing his technical knowledge and expertise, enabling him to widen his knowledge of how things work. Another parent admitted that her daughter's affinity towards technology had also become useful to other family members in helping them

solve potential technological problems that they encounter with their screen-media devices:

> *No one in this family has the technical expertise that she does. I don't know where he got it from but whenever one of us is stuck with a problem with our phone or laptops, we go to her and she fixes it*. (ParentAG07)

4.3.2 Theme 2: A strong regulatory role

Mediation resulting from perceived vulnerability

Parents of autistic young people described a more pronounced role in mediating the use of screen-media with their children. A number of parents, for example, spoke about how they encouraged their adolescents to engage in screen-media activities in places around the house where they could monitor more easily, such as the living room:

> *At least if he's around me I can have an idea of what he's doing and how long he's been playing. Sometimes I also try to ask him to tell me what he's playing or watching … More often than not I'm ignored but I feel better knowing he's nearby* (ParentAB01)

Parents also spoke about how they felt they needed to interact with them whilst engaging in screen-media activities, in the hope that this interaction mitigated some of the perceived adverse effects of screen-media use:

> *Sometimes she's so engrossed in what she's watching that I feel I need to go and sit next to her or call her name just to, you know, get her back to reality and get her to say something back to me. I think this is a result of having been told, when she was still a child that I needed to talk to her when she was in front of a screen so that at least there's some interaction going on* (ParentAG05)

Another parent of an autistic boy mentioned the need to intervene in his son's use of screen-media when he felt that, in particular, online gaming was creating excess anxiety for his son:

> *Sometimes he'll be trying to go up a (game) level … he'll get really frustrated is he is unable to win and that's when I try to diffuse the situation and try to negotiate with him to change game or switch off the device* (ParentAB07).

Perceived vulnerability was also noted in terms of the young people's gender. Concerns with online safety were more evident in parents of both autistic and typically developing girls, confirming that parents felt that females are more vulnerable to risks associated with encountering strangers online and creating harmful connections, compared to male adolescents:

> *I mean, she knows about not talking to strangers and to be careful of certain online material and not to give any personal details to anyone. Some stories I've heard are just horrible. And with her being a girl, I think sometimes it's worse*" (ParentNTG07)

Another parent spoke about being a girl and being autistic made her daughter more vulnerable in terms of online safety: "*You probably wouldn't say she's got autism now but she does and it scares me to think someone online may prey on her weaknesses*." (ParentAG07)

Mediation makes parenting harder

Across groups of parents a general feeling of frustration was felt in the way parents perceive technology as having taken over their households. Both parents of typically developing and autistic young people shared their experiences of the difficulty in controlling and limiting engagement with screen-media (ParentNTB11: *It's hard to keep up with all of their devices*"). This difficulty was

more pronounced when there was more than one child in the family, which appeared to put a strain on parental mediation behaviours:

> *They've all got their own tablets and laptops and with three children it's really hard to just keep up with what everyone's doing. And then if I take away his (autistic son) tablet he'll just go and bother the others and it all just becomes too much. But yes, sometimes it's necessary because it's the only way that will get them behaving, but it's very hard*" (ParentAB01).

Having screen-free time during specific periods of the day, such as before going to bed also proved to be difficult for some parents, especially when dealing with the multiple needs of different siblings (ParentNTG06: "*No devices before bedtime. She finds it hard to accept it and it's a daily struggle especially since I'm more lenient with the older ones because they need it (technology) more for school work. She sees it as unfair").* Parental disagreements about whether or how to control their children's access to technology was also problematic in some households:

> *My husband is much more lenient than I am. He tells me 'look at us using our phones all the time, isn't this how it is for everyone nowadays?' I don't agree. I don't like it. If I think I can contribute to making them a bit better than us, I will* (ParentNTG01)

Specific to families of autistic adolescents was also the idea that screen-based media can offer parents short periods of respite, which they felt were necessary to be able to cope with more challenging periods of time. One parent admitted that:

> *It's already difficult as it is, with trying to juggle everything … and there are days when he's just … when it's tougher so in a way I want to let him play on as it's also a break for me, but I know that he'll keep on playing if I don't stop him* (ParentAB11)

Restrictive control and non-technology time

The types of control strategies used by parents of typically developing adolescents revolved mainly around having shared access to passwords and accounts, such as Facebook accounts (Parent NTG06: "*So I think she only communicates with people she knows, mostly from school I think as I recognize them. I have her Facebook password*") and setting time limits for weekday, weekend and holiday screen-media use:

> *When he was younger I used to really try to limit how much time he spent on the pc. We still do but I have to admit we're much more lenient and he hasn't really given us trouble, apart from maybe spending too much time playing. But we try to ensure that he doesn't do much more than 2-3 hours, after finishing his homework.* (ParentNTB05)

Decreased access to screen-media, especially in terms of punishing undesirable behaviour was also a popular parenting strategy, with both boys and girls (Parent NTB02: "*It's the only thing that I have left that makes a bit of a difference in terms of his behaviour. Bad school report – no Xbox, teasing his younger brother – no phone, and it goes on*"). Parents of typically-developing young people often mentioned that the buying of gifts related to screen-media technology was also a regular practice in Maltese families when it came to special occasions, such as birthdays and rewarding achievements, such as satisfactory exam grades (ParentNTG02: "*Suddenly all her friends started getting phones for their birthdays and she started asking for one too. And then she got it last year*").

Similarly, increased access to screen-media for rewarding behaviour was also frequently mentioned by parents of autistic adolescents, despite parents' concerns regarding excessive exposure to screen-media on behalf of their

children. A recurring theme amongst parent of autistic youngsters was the use of schedules in controlling screen-media use:

> *I felt a schedule helped all of us. When she was younger I used to switch off and unplug the TV or the computer when I thought she had seen enough, only to find she had plugged in everything again. She really had a way of getting round any technological restrictions we tried to impose, so then I was advised to try this (a schedule) out and it worked* (ParentAG02)

Of the 12 parents of autistic adolescents, 5 mentioned having either a written schedule indicating the time within which a young person could access screen-media or else a verbal understanding within the family that certain parts of the day were considered, 'non-technology' time. While the wish for safeguarding times during the day when young people were engaging in activities other than technology-related ones was also mentioned by parents of typically developing adolescents, parents of autistic adolescents were more ready to ensure that this took place.

4.3.3 Theme 3: Perceived isolating effects

Preoccupation with social isolation

Emerging as a possible reason why parents engage in restrictive mediation strategies was a common feeling among parents that technology "*has taken over the entire household*" (ParentNTG05) and has contributed to the social isolation of their children. This parental preoccupation was especially highlighted in responses to interview questions regarding young people's online and offline connections. (ParentNTG06: "*I know she's mostly chatting to her friends but it's not the same as meeting people face-to-face. If we're both in the living room, I half expect her to message me. It's not right, it's too much*." Some parents reminisced about with their own childhood and highlighted how it was different,

and preferable, to the technology-immersed world children and young people are growing up in nowadays:

> *It was so different when I was a teenager myself. We used to talk, actually talk on the phone for hours and laugh instead of sending smiley faces and LOLs – you know? I don't expect them [young people] to be out playing in the street, but I feel a lot of young people are missing out on life and real friendships, you know, constantly glued to their phones* (ParentNTB16).

Online friends are less real

Linked to the idea that technology can be potentially isolating was a common perception that screen-media use may hinder young people from making meaningful connections. Parent answers pointed towards a general distrust towards online peer relationships, in spite of the fact that adolescents' choice of online partners were mostly known friends:

> *I don't like the idea of creating new friendships online but I can't do much about her chatting to her school friends, I guess that's ok. I'd much rather have her interact with people she knew. You never know what's out there*. (ParentNTG05)

One parent of a typically developing boy spoke about how she thought her son was too young to use social media to connect with peers and that, in her opinion, there were various time throughout her son's day that allowed him to interact with peers face-to-face - "*there's school and football and catechism lessons for that, he doesn't need Facebook*"(ParentAB15). These perceptions were part of a general resistance to the idea of technology being used to meet new people and make friends and that friendships created online via screen-based technology were somehow less real and genuine in nature:

> *No I don't like thinking that at this age she's making friends through technology. There will be a time for that later, if she wants to. I prefer her sticking to the people she knows*. (ParentAG02)

4.3.4 Theme 4: Friends are important

Friendship functions

In talking about their children's friendships, parents expressed their own views and perceptions on the importance of peer relations. The general feeling amongst parents was that they perceived friendship to be an important and necessary part of adolescence. There was also a common acknowledgement that peer relationships in adolescence satisfy an emotional and social need to connect young people:

> *There isn't a day that goes by without her mentioning her friends, what they did, what they plan to do at the weekend. And somehow there's this need of constantly updating them with whatever she is doing, even if it doesn't seem too important* (ParentNTG04)

Parents also viewed friends as being a source of support for their adolescents, especially since the teenage years involved the young people becoming more independent from their parents, while seeking the company of peers. For example, one parent mentioned that she likes knowing her son has friends he can open up with (ParentNTB04: "*He doesn't talk to me much about important things … how he's feeling and all that, and it's good to know he has friends he can share these sort of things with").* Being included by classmates in school activities was something a parent of an autistic boy appreciated. For her son, friends were mostly those who looked out for him and helped him:

> *He'll tell me things like 'X [son's friend] gave me a sponge today' or 'Y was wearing the watch we gave her' – you know she is the only one who has ever invited him to a birthday party? But he won't talk about what activities they did together or if he played with them. I don't think he plays during break-time, he's usually just around his preferred classmates.* (ParentAB08)

Knowing my children's friends

Parents in general appeared to have a good understanding of who their young people's friends are and interviews shows a varying degree of parental involvement in adolescent peer relationships. Consistent with the strong regulatory role regarding technology use discussed above, parents felt they had a role in being involved in their children's friendships. Some parents also spoke about how they encourage their children to bring friends over to their house, "*so that I can see who she's mixing with*" (ParentNTG02). A number of parents, mostly of typically developing adolescents also mentioned getting to know some of their children's parents in their attempt to ensure that their children interacted with people their parents deemed respectable:

> *I think it helps to know where her friends are coming from. I want her to be with people who share as many of our values as possible. She is at a very tender age in her development and I don't want her mixing with the wrong sort of people if you know what I mean* (ParentNTG04)

Nevertheless, a small number of parents admitted that although they knew some of their son/daughter's friends well, it was not possible, or even necessary for them to have such detailed awareness of all their children's peers:

> *Two of his friends are often at our house so I know those two quite well, but I know there are other friends at school that I have no idea of … Just as long that I see that he's doing well, I'm not too concerned* (ParentNTB05)

Most parents of autistic adolescents made reference to their children's friends by name and were also aware of who their best friends were and the activities in which their sons and daughter engage with these peers. Two parents of autistic

boys specified that their sons' friends had similar difficulties to their children or had other special needs:

> *Not many other people will understand the way his brain works, unfortunately. But I'm happy that he's got a friend that he gets along with. I know for a fact that there are other peers at school who look out for him, mind you, but I wouldn't say they're his friends but I'm very grateful at their kindness*" (ParentAB14)

Unlike autistic boys, most friends of autistic girls were typically developing peers, indicating possible gender differences in the socialisation process of autistic girls and boys. The occurrence of past negative friendship experiences had left an impact on the way parents spoke about the peer relationships of their children. Throughout interviews, there were a number of instances where parents voiced their unhappiness about dealing with bullying at school and fear their children may go through similar experience if access to online peer relationships was encouraged:

> *I'm not surprised he wants to be on his own. Two years ago he went through a really rough time at school. Some people are really heartless. I really cannot understand how they get away with doing such things. I think that really affected him … and me. I'm afraid some bullies will find him online and make our lives miserable again*" (ParentAB09)

Pre-conceived ideas as determined by autism stereotypes

Interestingly, interview data from parents of autistic adolescents underlined some varied ways on behalf of parents of considering how autism spectrum conditions impacts their adolescents' development of peer relationships:

> *I mean, I cannot say that he has friends. He knows his classmates and mentions them but I wouldn't say they're friends, like real friends you know? Mind you, they're all very nice kids but you know, with his difficulties, you can't expect him to have friends really.* (ParentAB11)

One parent of an autistic young girl spoke about not having expected her daughter to develop peer relationships in secondary school because of her ASC diagnosis and because of her experience with limited friendships throughout primary school:

> *I was actually surprised when she started talking about her two friends when she started secondary school. I was always afraid she'll be a loner because of her autism, and secondary school can be dangerous if you don't have any friends* (ParentAG03).

Despite the social opportunities offered to adolescents via online gaming especially in relation to a growing availability of multi-player and role-playing games, activities related to gaming were not always considered as a social activity by parents of autistic adolescents. ("*No I wouldn't say he uses technology to interact except maybe for some of the gaming but then again maybe it's more about the game than the company*" ParentAB14). Another parent felt that screen-media use, even if it involved engaging in social media, was hindering her daughter's socialisation, which the parent considered as a main area of weakness in her daughter:

> *With her having autism, we really tried hard to try to get her interested in drama and girl guides, you know, to get her meeting with actual people and develop socially. But she wouldn't have any of it and she's much happier sitting on the sofa with her tablet tapping away. I mean, you can't really force her right*? (ParentAG05)

4.3.5 Theme 5: Centrality of the family

Screen time competing with family contact time

Family contact time features prominently in the daily lives of Maltese adolescents. Given the importance families place on spending time together, it was unsurprising that a number of parents viewed screen-based media activities as competing with family time. This was mainly due to the fact that parents perceived technology as offering unparalleled entertainment opportunities with which family contact time could not compete:

> *I understand that being with us [the family] can be pretty boring for her as we cannot give her what her phone and tablet and laptop do, but I hope that she'll eventually understand why family time is important.* (ParentAG07)

Similarly, since technology was one of her son's intense interests, a parent of an autistic adolescent spoke about the difficulty entailed in involving him in alternative activities that do not contain screen-based media:

> *I mean, he's autistic and absolutely fixated on technology, always has been. I guess spending time with us is not as important to him as it is to us. So we try to compromise. For example, if we want him to come with us for a walk, he can have the tablet with him in the car and it will be there waiting for him when we're done. That way, he can have his tablet but at least he'll be out of the house doing something different for a short time* (ParentAB16)

The majority of parents insisted that, as much as possible, dinner on weekdays and lunch on weekend, takes place as a family activity and that screen-media during family mealtimes is limited as much as possible. Parent spoke about their frustration at having to complete with technology during family contact time, which was prioritised by the majority of interviewed parents. When talking about the importance of finding the time to come together as a family, particularly during dinner time one mother of a typically developing girl said, "*that's family time and*

*I don't like being interrupted by constant bleeps of incoming messages" (*ParentNTG01), reflecting a common perception among parents. Family activities that did not include the use of screen-based media were not always easy to plan because of the constant desire of young people to have screen-media devices present:

> *It's a struggle to get him to pause his gaming, and when he was younger it meant a daily tantrum, but there needs to be a time during the day when he's not glued to a screen. It's part of his routine now.* (ParentAB01)

Technology facilitating connections between parents and adolescents

Parents also highlighted efforts made by themselves and other family members to connect with adolescents, particularly autistic young people, by means of screen-based media. In adjusting to the role of screen-based media use within the family, interviews with parents showed that a number of families of Maltese adolescents acknowledged how screen-based media use can also serve as a vehicle for bringing family members together. A number of families try to find the time to engage in screen-based media together, such as watching movies, some TV programmes and playing games together as a family:

> *Well, the benefits … I like that we can watch a movie together on some weekends or public holidays. My older son is usually out with friends but as long as we can still do it with him [younger son] I think it's a good way of doing something together. It's better than everyone doing their thing on their own all the time.* (ParentNTB02)

Another parent of an autistic boy spoke about how the boy's grandfather, who features regularly in their family life, had made it a point to learn how to use a tablet and had also mastered learning how to use YouTube and play some online games with his grandson:

> *It's amazing really. He would probably never have done something of the sort for us, but he [her son] is really special to him and he has really tried all sorts of things to be able to connect in some way. And so they're there in the living room playing away and discussing details of games and whatnot. It's a godsend* (ParentAB07)

Parents spoke about using screen-media, such as laptops, to help their adolescents with school-related assignments:

> *Sometimes one of us sits with her when she's on the laptop looking for things. She doesn't always like it and sometimes sees it as us interfering in 'her private life', as she calls it. But there are times when she's ok with us looking for information for some project together. It's one way of monitoring how she spends her time but also a means of spending some time together*. (ParentNTG04)

Screen-based media was also used as a means of incorporating adolescents' intense interests into family time. For example, one parent spoke about how she felt that spending time with her daughter in screen-media activities strengthened her affective bond with her. Similarly, another parent spoke about how the parents' concern with their son's excessive gaming prompted them to become involved in the gaming themselves in order to spend more time with their son:

> *He spends so much time playing that we felt we needed to learn how to play some of the games ourselves. None of us is very good at that sort of thing, you know, but at least he sort of has to talk to us about it [the game] and actually he was really keen on explaining details of how to play it. And for us it's a way of spending some time with him.* (ParentAB14).

A mother of a young autistic boy spoke fondly of how her son prepares, what he refers to as 'voice projections' for the whole family on weekend, which has become a family tradition over the past few years:

> *So he downloads the melody of a particular song, without any words and then finds the lyrics online in order to sing over the melody and create his*

> *own version of the song. It sounds very strange … but it's nice seeing him prepare this for us with so much intensity.* (ParentAB14)

Using screen-media technology, such as phones to send messages to family members was a commonly-reported way for parents to keep in touch with their children. Apart from using phones to check in on their children and being reassured that they had a way of getting in touch in case of an emergency, screen-media was also used for creating 'family' groups on WhatsApp, for example, and to share interesting online material via Facebook messenger

> *And she doesn't just use it on her own only. Sometimes I see a meme or something funny and I send it to our WhatsApp group or through Facebook chat. It's a way of keeping things light and it's nice to get something back from them too – it's like someone's thinking of you.*" (ParentNTG07)

4.3.6 Summary of results from parents' interviews

The themes identified from parent interviews showed how parents of autistic and typically developing adolescents in Malta view screen-media, both in terms of how they perceived technology as supporting the young people personally as well as what they thought of screen-media as supporting the development of their children's peer relationships. Common across interviews was a perception of mistrust towards using technology as a way of supporting friendships but more so, as a platform through which to create new connections. This was mainly due to perceived isolating effects of screen-media that encouraged a strong regulatory role, resulting in restrictive control and mediation in relation to technology use with adolescents, especially autistic youngsters and girls. While interviews with Maltese parents showed efforts made by parents and other family

members to connect with adolescents, particularly autistic young people, by means of screen-based media, they also clearly highlighted traditional, and possibly conservative, views regarding family values and family contact time.

5. Discussion

This study aimed to investigate the ways in which autistic adolescents in Malta use screen-based media compared to typically developing peers of similar age and ability, with a particular focus on the extent to which autistic adolescents use screen-based media to create and reinforce social connections and peer relationships. By adopting a multi-informant approach, this study also sought to examine the views of Maltese parents of autistic and typically developing adolescents in relation to their children's use of screen-based media and perceived peer relationships.

In this chapter, I present a summary of the main findings together with a discussion of how these results extend our understanding both of the use of screen-media by young autistic people within a particular cultural context, and of the wider research base on the use of screen-based media and peer relationships of this specific population.

5.1 Summary of main findings

Several key findings emerge from this thesis research. This sample of Maltese adolescents' use of screen-media, particularly social media, appeared to be predominantly used to reinforce existing peer relationships rather than utilised as a platform to creating new social connections, both in autistic and typically developing adolescents. Diary data underlined the popularity of social media use, especially by young typically developing adolescents, who mostly engage in online communication with known others. Although autistic adolescents used social media less, their interactions were also mostly with known peers and family

members. These findings were also reiterated in interviews with the respective young people.

Moreover, despite regular engagement in social media use, typically developing Maltese adolescents reported a strong preference for face-to-face contact over online communication. Out of 48 young participants, 77% expressed a preference for this type of communication. Interestingly, this preference was also true for 13 autistic young people participating in the study, which is in striking contrast with existing literature portraying computer-mediated communication as being preferable for autistic individuals (e.g., Mazurek & Wenstrup, 2013; van Shalkwyk et al., 2017).

Apart from different patterns of screen-based media use between autistic and typically developing adolescents, this study also highlighted differing attitudes towards friendships. Moreover, this study also underlined qualitative differences in usage patterns between girls and boys in both groups. Although subtle differences were noted between typically developing and autistic girls, a stronger discrepancy between autistic girls and autistic boys in the way screen-based media supported their peer relationships was noted through the interview data. While the small number of female participants limits the generalisability of results, this finding highlights individual differences between people on the autism spectrum that need to be acknowledged

Typically developing young people's regular engagement in screen-based media to reinforce existing friendships and their clear preference for face-to-face contact contrasted with the widely negative views expressed by parents, which mainly focused on risk and the perceived socially isolating effects of technology. Parental

attitudes encouraged mostly restrictive mediation strategies to control screen-media use by adolescents across groups. This emphasis on risk was, however, mitigated by several perceived benefits of screen-based media, which mainly revolved around the use of technology to support young people's learning and an acknowledgement on the range of possibilities related to future employment of both autistic and typically developing young people in general. Across groups, technology was also described as providing more opportunities for families to spend time together. Specific to autistic young people, parents saw technology as a way of acknowledging their children's technical expertise as a strength. Nevertheless, the majority of parents of Maltese adolescents did not see screen-based media as potentially supporting the peer relationships of their children.

These findings are discussed below in the light of existing literature as well as the underlying cultural issues, which may have informed the perspectives of both parents and adolescents participating in this research.

5.2 Screen-based media serves to reinforce existing friendships

The creation and maintenance of friendship networks is considered an important process during adolescence (Furman, Bukowski, Hartup, 1996; Manago, Taylor, & Greenfield, 2012). Within this developmental phase, engagement in social media may be seen as fulfilling young people's needs for connectedness and has been linked to positive peer affiliations (e.g., Isbister, 2013; Lansford, Dodge, Fontaine, Bates, & Pettit, 2014). In this study, the role of screen-media technologies in young people's communications with peers was a predominant theme in their accounts of screen-media use.

Young people often viewed screen-based media as supportive of their *existing* friendships (Reich, Subrahmanyam & Espinoza, 2012) and findings indicate that young Maltese people's interactions, across groups, were mostly with known others. In this way, online peers were also offline friends and online contexts were therefore used to strengthen offline peer relationships, giving communication technologies a role in assisting people's already established relationships (Reich et al., 2012). This view is one which sees the opportunities afforded by technology as enhancing relationships with others, in line with Valkenburg and Peter's (2011) stimulation hypothesis. Across groups, interaction with online-only contacts was minimal, taking place within the context of multi-player gaming. Autistic participants for whom the social aspects of communicating online were considered important, also mostly engaged in screen-based media activities with known peers. The one exception to this pattern was the autistic participant whose best friend was an online contact whom he has never met, but with whom he engages in online gaming as well as continuous screen-based communication. Another three autistic students who made reference to online gaming partners expressed a wish for more face-to-face friendships, with one autistic boy who wished to physically meet a regular gaming partner living abroad.

The 48 Maltese adolescents sampled here engaged in a limited range of social media applications. Unlike adolescents in, for example, the United States who engage in a wider range of social media and instant messaging applications (e.g., Lenhart et al., 2015), none of the Maltese adolescents in this study made any references to social media and instant messaging applications beyond Facebook, Snapchat, and WhatsApp as opposed to applications such as Twitter and Instagram which are popular with young people in other countries. It seems that

the appeal of these applications has yet to be discovered by Maltese adolescents although older teenagers and young adults who did not make part of the study sample may already be making use of these types of screen-based media.

5.3 Preference for face-to-face over online interactions

Notwithstanding the predominance of daily social media use to reinforce their existing friendships, a preference towards face-to-face interaction was a widespread and popular way of communicating with peers for Maltese adolescents, with the majority of participants (n=37) expressing a preference for meeting their friends on face-to-face basis rather than communicating online. Findings from this study appeared to contradict the extant literature suggesting that online social networking between neurotypical adolescents was associated with enhanced relationship quality and intimacy (Grieve et al. 2013; McMillan & Morrison 2006), which adolescent participants associated with face-to-face interactions. The small size of Malta, together with a culture that promotes group activities involving friends as well as immediate and extended family members, was likely to make social interactions taking place in person much more desirable and accessible. Parental attitudes toward using screen-based media for communication purposes may also have played a particular role in shaping young people's preferences. Moreover, the fact that this study added a qualitative dimension to data collection may have helped to elicit richer, and possibly more accurate, descriptions of young people's experiences of screen-media use as well as their preferred ways of communicating with peers.

More novel is the finding that most autistic young people in the study also shared this preference for face-to-face contact over online interactions, in contrast to existing research highlighting the social communication and interaction

challenges faced by autistic people (e.g., val Shalkwyk e al., 2017). Similar cultural factors which affected typically developing adolescents' communication preferences may also have impacted on autistic adolescents' communication preference. However, this finding also warrants a wider interpretation and one which supports an expansion in how sociability has traditionally been conceptualised for autistic individuals. Difficulties of a social nature faced by autistic people can often be interpreted as an inability or lack of desire for social interaction. However, a growing body of research indicates that autistic people have a desire to create social connections with others, are able to form stable friendships (e.g. Bauminger et al., 2008a; Bauminger et al., 2008b; O'Hagan & Hebron) and are satisfied with the quality of their peer relationships (Calder et al., 2013). This, coupled with strong cultural values which promote face-to-face contact in Malta may have offered an explanation for this intriguing finding.

A small number of autistic participants did, however, report a preference for online communication. This finding is in line with research supporting the idea that such communication occurs in a context that does not require attention to nonverbal cues and facial expressions (Walther, 2007), which are areas of difficulty for autistic individuals (APA, 2013), making it a preferable option for this population. In this way, online communication facilitated interactions for autistic individuals in a more controlled and predictable environment when compared to face-to-face interactions (Mazurek et al., 2012).

5.4 Diagnostic and gender influences on screen-based media use

Similar to adolescents elsewhere, the young Maltese people participating in this research, across groups, were major consumers of screen-media technologies (Montes, 2016). Findings indicate that screen-based media served

as a means for supporting their interests, leisure activities, learning and above all, their need for communication with peers. For example, typically developing adolescents expressed a clear preference towards social media use in recording their screen-media activities. Autistic adolescents did not show such a distinct preference as they seemed to engage in a range of screen-based media activities in a similar manner. This is supportive of existing literature (e.g. Durkin et al., 2010) which postulates that young autistic people give less priority to communicative aspects of technology when compared to typically developing peers.

Qualitative data were key in identifying notable differences in the way screen-based media was used by autistic and typically developing adolescents and also served to identify within-group differences in the way boys and girls engaged in different types of screen-media activities. In terms of social media activities, typically developing girls in particular made significant references to their use of social media and instant messaging with peers confirming previous research that girls are more frequent users of social media (Rideout et al., 2010) although extant research on social media use by girls is mixed with findings from some studies finding very few gender difference in the amount of social media use (e.g., Pujazon-Zazik & Park, 2010). Furthermore, qualitative data from this study provided a deeper understanding of some variations that exist between autistic males and females. Within the autistic group, female participants engaged in frequent communication with peers via social media and consider communicating with friends as a priority. Indeed, all of the autistic females spoke enthusiastically about their use of social media, as opposed to autistic boys, most of whom did not view social media as a preferred screen-media activity. Therefore, while

these findings corroborated previous research indicating that autistic adolescents use social media at a rate far below their peers (e.g., Mazurek & Wenstrup, 2013), the experiences of female autistic young people in this study underlined the variability that exists in terms of gender differences in autistic people.

Activities related to online gaming and the use of YouTube were commonly referred to by both autistic and typically developing groups. As highlighted by previous research (e.g., Kuo et al., 2015; Mazurek & Wenstrup, 2013; Orsmond & Kuo, 2011; Shane & Albert, 2008) gaming was a predominant screen-based activity, popular with typically developing and autistic boys. Girls in both groups, however, reported very few instances of online gaming which is consistent with results from other studies that showed that boys spend much more time playing video games than girls (Marshall et al., 2006). The use of YouTube highlighted differences between autistic and typically developing adolescents, with the latter using this application as a frequent means to pursue intense interests. However YouTube was also used by a small number of participants across groups, who identified as YouTubers, as a social platform by which to engage with others.

Differences between groups also emerged in relation to whether the young people in the study engaged in activities alone or with others and this difference was mostly pronounced in online gaming activities. Typically developing boys reported more instances of socially-interactive gaming than autistic boys, who showed a preference for playing alone, confirming previous research showing that autistic youngsters had a preference for gaming that does not include multiple players (Mazurek & Wenstrup, 2013).

5.5 The nature of friendships in autistic and typically developing adolescents

Adolescence is recognised as being a critical developmental period in which social interactions with friends are at their most intense and when young people become increasingly reliant on friendship groups (Furman et al., 1996). By investigating whether screen-based media helped autistic and typically developing adolescents in the creation and maintenance of their peer relationships, this study also highlighted differences that exist with regard to the nature of friendships between these two groups. Data from typically developing adolescents in the study were consistent in showing that boys and girls both viewed friendships as offering emotional connections and support and that friendships promoted a sense of belonging. Analysis of the Friendship Quality Scale (Bukowski et al., 1994) showed significant differences with regard to perceived closeness, security and conflict between typically developing and autistic adolescents which is in support of previous literature documenting similar findings (e.g., Bauminger and Kasari, 2000). The qualitative analysis also showed some key differences between genders, with autistic girls engaging with friends in similar ways to their typically developing peers. This was in line with emerging literature highlighting different socialisation patterns for autistic children and adolescence (Head et al., 2014; Sedgewick et al., 2016). However, caution needs to be exerted when interpreting these results in view of the uneven gender distribution making up the small participant sample for this study.

Within the autistic group, participants had differing views on the importance of friendships reflecting the mixed research base that exists within this area. While all girls in the study considered having friends as important, there was more

variability in boys' perception of and attitudes towards friendships, further strengthening the notion of understanding the individual differences that exist between autistic adolescents. Despite research indicating that autistic adolescents' peer relationships are rarely of a typical nature (Koning & Magill-Evans, 2001; Marks, Schrader, Longaker, & Levine, 2000) contrasting research mentioned earlier indicates that during adolescence, many autistic individuals showed increased interest in social relationships and social skills.

5.6 Parental perspectives about screen-media use as a vehicle to support peer relationships

Parents of both autistic and typically developing young people acknowledged a number of benefits that screen-media technology offers for their adolescents. Common across groups was the perception that screen-based media can be supportive of school-related work and that learning how to work with and navigate technology was a necessary prerequisite for preparing for the world of work. This perception was in support of research that technology has the potential to promote academic and career outcomes for young people with disabilities (e.g., Burgstahler, 2003), although research indicates that the disability employment gap is more evident in autistic individuals when compared to others with different conditions and disabilities (National Autistic Society, 2016). A small number of parents referred to their autistic children's technical expertise emerging as a personal strength despite the challenges encountered in raising a child with an autistic spectrum condition.

Technology also had a role in bringing families together. Family contact time was prioritised by the majority of Maltese families participating in the study and family

activity diaries showed that parents reported a range of activities they engaged in with their children, including screen-media related activities such as watching television. Instant-messaging other family members was also mentioned as one way of supporting connectedness within families. Technology was also seen by some parents as offering an opportunity to connect with their autistic adolescents by allowing them to become more involved in their intense interests such as online gaming.

Nevertheless, across both groups, parents' perceptions of screen-based media as a vehicle to support peer relationships revealed a common view that technology contributed to the social isolation of their children and hindered them from making meaningful connections, consistent with the displacement hypothesis proposed by Valkenburg and Peter (2011). Maltese parents showed a general feeling of distrust and suspicion in relation to using screen-based media for socialisation purposes, especially parents of neurotypical girls and autistic young people. Parents viewed online interactions, especially with unknown peers, as potentially more dangerous and less real than face-to-face interactions. With regard to the latter, parents across groups possessed an awareness of who their children befriended, and qualitative data showed that the close family ties that exist within Maltese families allowed parents to have a good understanding of their children's friendships. However, parental awareness of peer relationships did not seem to extend to online interactions. In fact, views of screen-based media technology as socially isolating contrasted strongly with their young people's accounts of how technology was supportive of their existing friendships. Instead, parents' perceptions focused predominantly on risk and concerns relating to excessive dependence on technology and online safety, echoing

research linking prolonged screen-time in youngsters with a host of problematic physical, behavioural and academic outcomes (e.g., Marshall, Biddle, Gorely, Cameron, & Murdey, 2004; Rideout et al., 2010). This was especially pronounced in families of autistic adolescents and typically developing girls, indicating that these perceptions on behalf of Maltese parents may also be a result of perceived vulnerability in terms of gender and disability. Findings from this study showed that there is, perhaps, a lack of awareness on behalf of parents of who their children's screen-media partners were, which is surprising in the light of strong mediation reported by the parents vis-à-vis screen-based activities. Restrictive mediation practices confirmed previous research showing that this type of mediation is more present when parents hold negative views about technology (Shin and Huh, 2011), which is the case with participating parents in the study. Parent also saw the screen-based media practices of their children as competing with family time as communicating online became a priority for adolescents and interfered with daily family activities, resonating with similar parental attitudes in existing research (e.g., Lee & Chae, 2009; Subrahmanyam & Greenfield 2008).

6. Conclusion

This study has shown that typically developing and autistic adolescents in Malta had different patterns of screen-based media use, which varied from using screen-based media for entertainment, academic as well as communication purposes. The thesis sought to understand whether screen-based media was used by autistic and typically developing young people to create and maintain peer relationships. In this regard, screen-based media activities were a means to maintain peer relationships with known peers, most of whom were school friends. Yet adolescents in Malta, including autistic young people, preferred meeting their peers in offline rather than online contexts.

It is encouraging to note that parents of both autistic and typically developing young people viewed technology as supporting learning and in some instances as reinforcing contact between family members. However, most parents, across groups, did not consider communication with peers as a benefit of screen-based media. The findings of this study may indicate that Maltese parents' emphasis over possible risks associated with the use of screen-media technology was keeping them from a realisation that their children shared similar views regarding the importance of face-to-face interactions, and that they enjoyed using technology to maintain friendships, with most of their online partners being their offline peers. These perceptions may also be contributing to a missed opportunity in harnessing screen-based technology to support and further develop autistic adolescents' social skills and for typically developing adolescents to strengthen relationship with peers.

6.1 Strengths of the study

This study is a further step, in a largely unexplored area of research, towards understanding the way young autistic people use screen-media, and whether this use is related to their development of peer relationships. Moreover, although the peer relationships of autistic children have received significant attention within the research community (Calder et al., 2013; Kasari et al., 2011) less research has been undertaken specifically looking at the friendship experiences of autistic adolescents, and this study provides further contribution to this area.

A methodological advantage of this study was the comparison of autistic youths with typically developing peers. To date, only four studies have used a comparative sample of typically developing peers to investigate screen-based media use in relation to peer relationships in autistic adolescents (see Durkin et al., 2010; Mazurek & Wenstrup, 2013; Sundberg, 2018; val Shalkwyk et al., 2017).

Existing studies have made good progress towards understanding the types of screen-based media use by autistic adolescents, in terms of type and frequency of use. Nevertheless, most of the studies were based upon web-based or phone surveys and questionnaires, which, whilst offering valuable insights, fell short of providing a rich understanding of young autistic people's notions of the function screen-based media served in forming and maintaining peer relationships in online and offline contexts. The mixed-methods and multi-informant approach adopted by this thesis gave depth to the research by being the first study, to my knowledge, that considered the qualitative experiences of young autistic adolescents, adding a valuable dimension to existing knowledge which is

primarily descriptive and quantitative in nature. The mixed-methodology also helped to ensure matched participant groups and to consider the impact of ability on the use of screen-based media to create and develop peer relationships.

Contrary to previous studies, data were collected directly from adolescents rather than solely from proxies such parents and caregivers. Apart from taking into account key stakeholders, such as the parents, this study aimed to elicit the views and experiences of the young autistic people as well as those of their typically developing counterparts. This allowed for new insights to be obtained from participating adolescents, which were quite distinct to parental views and which would have remained undiscovered had the data been obtained only from the parents.

This research also ensured that autistic adolescents had an active role in the study, thus acknowledging the importance of giving space to the voice of autistic individuals in research (e.g., Beresford, Tozer, Rabiee, & Sloper, 2007; Calder et al., 2013; Obruskinova & Cavalier, 2011; Preece & Jordan, 2002; 2010). In this way, this study supported a growing body of literature built on the involvement of, rather than about, autistic individuals (see Pellicano, Dinsmore & Charman, 2014).

6.2 Limitations and future directions

This study has a number of limitations that warrant consideration. First, the sample size and unequal gender distribution of participants limits the generalisability of the findings. However, the similarities of the findings with previous research means they contributed to a wider understanding of the role of screen-based media and autistic adolescents' peer relationships.

Second, the very nature of the methods used in this study required participants to possess a cognitive and conversational ability which is not representative of the range of communicative abilities of autistic people and which may have, in turn, impacted on the way they engagexd in screen-based activities and also on their different communication preferences. Future research could focus on the patterns of screen-based media use of autistic adolescents with different cognitive and communicative profiles. Moreover, given that existing research evidence for gender differences in social media use has been mixed, this area may require special consideration in future work about screen-based media use among young autistic people.

Third, the cognitive ability, friendship quality and autism symptomatology of the young people in the study were measured by tools which have not been standardised on the Maltese population, which may have had an effect on the validity of scores obtained by the young people. Nevertheless, these are the tools usually used by psychologists in Malta who, because of lack of availability of resources, make use of assessments mostly originating from the UK and the US. There were also instances when items on various measures had to be translated from English to Maltese to ensure understanding.

Fourth, data analysis required a substantial amount of translation from Maltese to English. Although translations were carried out as accurately as possible, some meaning may have been lost in translating the accounts of participants from one language to another.

Fifth, while diaries provided some insight into the uses of screen-media and family activities, the design of the diary limited the extent to which data could be

interpreted and compared rigorously. Although the intention was to have an open and flexible tool in order for participants not to feel restrained by too much structure, the nature and variability of responses, especially by the young people, made analysis a complex and possibly less accurate process. A small number of parents also admitted to helping their young people complete the diary, which may have included bias in the responses received. Nevertheless, the data provided by the diaries was confirmed again during the semi-structured interviews and thus provided a descriptive backdrop for the richer qualitative data obtained from the parents and young people across groups.

This research highlighted the importance of cultural influences in shaping young people's screen-media preferences and practices. Apart from strong cultural norms emphasising the prioritisation of family values, family contact time in Malta was also reinforced by the short distances between one place and another, making it easy to travel and visit extended family members regularly. Further cross cultural research could investigate the extent of cultural influences on screen-based media patterns of young people, with and without autism spectrum conditions.

6.3 Implications for educational psychology practice

Autistic children and young people are part of the wider population of youngsters supported by educational psychologists. Apart from contributing to academia, this study is also relevant to educational psychology practice. With their training and skills, and their positioning within school systems, educational psychologists have a theoretical and practical understanding of friendship development in autistic young people, including the way this is manifested across the autism spectrum. This study has highlighted differing attitudes towards

friendships by young people of which educational psychologists need to be more aware in order to further develop how best to cater for the social needs of these young people. While communicating exclusively online may offer some constraint in learning to connect with peers in other settings based on face-to-face communication, the ability to develop online interactions may have a role in encouraging young autistic people to pursue offline socialisation (Ringland, Wolf, Faucett, Dombrowski & Hayes, 2016). This may mean further exploring the benefits of screen-based media as a method of intervention aimed at supporting the social skills and awareness of autistic adolescents.

Apart from facilitating communication, screen-based media can also be considered in the light of the educational and assessment possibilities it offers to educational psychologists working with young autistic people. Technology can be harnessed to support, for example, the development of literacy skills. In the case of one autistic participant, screen-media was key in helping him consolidate literacy skills which allowed him to communicate with others. Another autistic participant spoke about screen-based media facilitating learning by allowing him to access content without the sensory distractions of a classroom environment. This indicates that screen-based media can also offer alternative environments in which learning can take place. The importance of screen-based media in young people's lives may also encourage educational psychologists to consider alternative ways of assessing young autistic people by incorporating technology into their assessment practices.

Educational psychologists have a distinct role in working systemically with service users, including young people and their families and in "unpicking the human factors that can hasten or hinder the process of desired change" (Cameron, 2006,

p.294). Specifically in the light of findings from this study, educational psychologists are well placed to support parents to challenge their belief systems surrounding the use of technology and to reconcile different perspectives which exist, in this case, between parents and young people. This can support parents to move away from a strong focus on risk and instead become more cognisant of their own children's resilience in dealing with the perceived dangers of screen-media (Livingstone, Mascheroni & Staksrud, 2018). It would also ensure that parents maximise the opportunities that screen-based media can offer in supporting meaningful connections for their adolescents and become a platform for the development of peer relationships including those of autistic young people for whom face-to-face interaction may be challenging.

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Appendix A

Leading education and social research
Institute of Education
University of London

Ethics Application Form: Student Research

All research activity conducted under the auspices of the Institute by staff, students or visitors, where the research involves human participants or the use of data collected from human participants are required to gain ethical approval before starting. *This includes preliminary and pilot studies.* Please answer all relevant questions responses in terms that can be understood by a lay person and note your form may be returned if incomplete.

For further support and guidance please see accompanying guidelines and the Ethics Review Procedures for Student Research http://www.ioe.ac.uk/studentethics/ or contact your supervisor or researchethics@ioe.ac.uk.

Before completing this form you will need to discuss your proposal fully with your Supervisor/s.
Please attach all supporting documents and letters.

For all Psychology students, this form should be completed with reference to the British Psychological Society (BPS) Code of Human Research Ethics and Code of Ethics and Conduct.

Section 1 Project details			
a.	Project title		Screen-based media and peer relationships: differences between adolescents with and without autism spectrum condition
b.	Student name and ID number (e.g. ABC12345678)		
c.	Supervisor/Personal Tutor		
d.	Department		Psychology and Human Development
e.	Course category (Tick one)	PhD/MPhil ☐	EdD ☐

		MRes ☐	DEdPsy ☒
		MTeach ☐	MA/MSc ☐
		ITE ☐	
		Diploma (state which) ☐	
		Other (state which) ☐	

f.	Course/module title	DEdPsy Thesis
g.	**If applicable,** state who the funder is and if funding has been confirmed.	N/A
h.	Intended research start date	January 2017
i.	Intended research end date	May 2018
j.	Country fieldwork will be conducted in *If research to be conducted abroad please check www.fco.gov.uk and submit a completed travel risk assessment form (see guidelines). If the FCO advice is against travel this will be **required** before ethical approval can be granted: http://ioe-net.inst.ioe.ac.uk/about/profservices/international/Pages/default.aspx*	Malta

k.	Has this project been considered by another (external) Research Ethics Committee?	
	Yes ☐	External Committee Name:
	No ☒ ⇨ *go to Section 2*	Date of Approval:

If yes:

- Submit a copy of the approval letter with this application.
- Proceed to Section 10 Attachments**.**

Note: Ensure that you check the guidelines carefully as research with some participants will require ethical approval from a different ethics committee such as the National Research Ethics Service (NRES) or Social Care Research Ethics Committee (SCREC). In addition, if your research is based in another institution then you may be required to apply to their research ethics committee.

Section 2 Project summary

Research methods (tick all that apply)

Please attach questionnaires, visual methods and schedules for interviews (even in draft form).

☒ Interviews	☐ Controlled trial/other intervention study
☐ Focus	☐ Use of personal

groups ☒ Questionnaires ☐ Action research ☐ Observation ☐ Literature review	records ☐ Systematic review ⇨ ***if only method used go to Section 5.*** ☐ Secondary data analysis ⇨ ***if secondary analysis used go to Section 6.*** ☐ Advisory/consultation/collaborative groups ☐ Other, give details:

Please provide an overview of your research. This should include some or all of the following: purpose of the research, aims, main research questions, research design, participants, sampling, your method of data collection (e.g., observations, interviews, questionnaires, etc.) and kind of questions that will be asked, reporting and dissemination (typically 300-500 words).

Aims:

The area of screen-based media usage by adolescents on the autism spectrum is still in its infancy. Despite numerous studies looking at screen-based media use amongst typically developing youths (e.g., Roberts and Foehe, 2008; Subrahnamyan, Greenfield & Tynes, 2004; Lenhart, Rainie & Lewis, 2001), investigations of the frequency, nature and extent of media use by individuals on the autism spectrum and how their usage patterns may compare to same-aged peers remains largely unexplored.

The research will investigate how adolescents with autism spectrum conditions (ASC) use screen-based media compared to their typically developing peers**.** In particular, the study will investigate whether adolescents with ASC are accessing and using online socialization through screen based media to create and reinforce peer relationships, both online and offline, in similar ways to their typically developing counterparts**.** A further aim is to examine the views of parents of adolescents with and without ASC in relation to their children's use of screen-based technology and perceived peer relationships.

Existing studies, most of which have been carried out in the United States, have been largely quantitative and reliant on parent/caregiver information. Here I adopt a mixed-methods approach, which will give additional depth to the research by adding a qualitative exploration of information obtained directly from adolescents with ASC as well as their parents – all living in Malta. This will ensure an active role on behalf of adolescents in the research which acknowledges the importance of giving voice of individuals with ASC in related research. A better understanding of this area of research can also help to equip professionals and parents with the relevant screen-based media recommendations.

Research questions:

1) How do adolescents with and without ASC in Malta use screen-based media and what are their views regarding technology use?
2) How do adolescents use screen-based media to connect with peers, online and offline? Are their experiences different to those of adolescents with ASC?
3) What are parents' perceptions of their children's screen-based media use, if any, in the development and maintenance of peer relationships?

Research design and data collection:

The current study will be using a concurrent mixed methods design (Creswell, 2003) where both quantitative and qualitative data are collected and integrated into the overall interpretation of the results.

In the current study, qualitative data will be obtained by means of in-depth face-to-face semi-structured interviews with 24 adolescents with autism spectrum conditions, 24 typically developing young people, of similar gender, age and ability, as well as their parents (n=12 from each group). These interviews will aim to investigate the views of youths in terms of screen-based media usage, with a particular focus on the development and maintenance of socialisation and peer relationships via technological means. Parental interviews will aim to examine their perceptions regarding their children's use of screen based media, any concerns they may have about this use as well as their views on how screen-based media use is related to their children's peer relationships. Both adolescent and parental interviews will last approximately 15-30 minutes.

Quantitative data will include obtaining data from all participants (autistic, typical) by administering the following standardised questionnaires:

Friendship Qualities Scale (FQS; Bukowski, Hoza, & Boivin, 1994), as an index of the strength of their best-friendship – approximately 15 minutes in length
Wechsler Abbreviated Scale of Intelligence (WASI; Psychological Corporation, 1999), as a measure of children's intellectual functioning – approximately 20 minutes in length
Social Communication Questionnaire (SCQ; Rutter, Bailey & Lord, 2003), to measure where children lie on the autism spectrum – approximately 10 minutes in length

Quantitative data will also be sought by asking adolescent participant to keep a log of screen-based media activities that they engage in over the period of one week during autumn or winter terms. This will be in the form of a paper copy which will be given to adolescents but an online copy will also be available and may be sent via email if this is preferred. Parents will also be asked to complete a family activity diary, in paper format, to record their activities over a period of one week, in order to be able to compare the activities in which families of adolescents with and without autism engage.

In summary, what will be required from parents in terms of time is approximately 30-40 minutes (interview and SCQ) as well as the completion of the family activity diary over the period of one week. With regard to adolescents, data collection will involve approximately 50-60 minutes (interview, FQS, WASI) as well as the completion of the weeklong screen-media technology log.

All information collected will be treated in the strictest confidence in line with the Data Protection Act. The consent of the all participants, including parental consent, will need to be sought. All data will be completely anonymous and confidential and stored in accordance with UCL Data Protection Policy.

Section 3 Participants

Please answer the following questions giving full details where necessary. Text boxes will expand for your responses.			
a.	Will your research involve human participants?	Yes ☒	No ☐ ⇨ *go to Section 4*
b.	Who are the participants (i.e. what sorts of people will be involved)? Tick all that apply.		
	☐ Early years/pre-school ☐ Ages 5-11 ☒ Ages 12-16 ☐ Young people aged 17-18 Participants in this study will involve cognitively able young people between the ages of 11-16 who have autism spectrum conditions and typically developing young people within the same age bracket.	☐ Unknown – specify below ☒ Adults *please specify below* ☐ Other – specify below This study will also involve 24 adult participants, 12 of whom will be parents of adolescents with autism and the remaining 12 will be parents of typically developing young people.	
	NB: Ensure that you check the **guidelines** (Section 1) carefully as research with some participants will require ethical approval from a different ethics committee such as the National Research Ethics Service (NRES).		
c.	If participants are under the responsibility of others (such as parents, teachers or medical staff) how do you intend to obtain permission to approach the participants to take part in the study? An information and consent sheet outlining the aims of the research will be sent out to the parents of possible participants together with a description of what will be required of participants, including the parents themselves (attached)		
d.	How will participants be recruited (identified and approached)? Purposive sampling will be used to recruit participants. Participants will be identified through the schools the researcher works in and via the Autism Parents Association in Malta. The two groups will be matched according to gender, age and cognitive ability.		
e.	Describe the process you will use to inform participants about what you are doing. An information and consent sheet outlining the aims of the research will be sent out to the parents of potential participants together with a description of what will be required of participants, including the parents themselves. Contact		

	details of the researcher and supervisor will also be provided in case of queries on behalf of schools, parents and participants.
f.	How will you obtain the consent of participants? Will this be written? How will it be made clear to participants that they may withdraw consent to participate at any time? Consent will be obtained in writing by means of signatures on the consent form from parents and participants. Participants will also be informed that they may withdraw participation at any time, without affecting their or their child's access to services.
g.	**Studies involving questionnaires:** Will participants be given the option of omitting questions they do not wish to answer? Yes ☒ No ☐
	If **NO** please explain why below and ensure that you cover any ethical issues arising from this in section 8.
h.	**Studies involving observation:** Confirm whether participants will be asked for their informed consent to be observed. Yes ☐ No ☐
	If **NO** read the guidelines (Ethical Issues section) and explain why below and ensure that you cover any ethical issues arising from this in section 8.
i.	Might participants experience anxiety, discomfort or embarrassment as a result of your study? Yes ☐ No ☒
	If **yes** what steps will you take to explain and minimise this? If **not**, explain how you can be sure that no discomfort or embarrassment will arise?
j.	Will your project involve deliberately misleading participants (deception) in any way? Yes ☐ No ☒
	If **YES** please provide further details below and ensure that you cover any ethical issues arising from this in section 8.
k.	Will you debrief participants at the end of their participation (i.e. give them a brief explanation of the study)? Yes ☒ No ☐

	If **NO** please explain why below and ensure that you cover any ethical issues arising from this in section 8.
l.	Will participants be given information about the findings of your study? (This could be a brief summary of your findings in general; it is not the same as an individual debriefing.) Yes ☒ No ☐
	If **no**, why not?

Section 4 Security-sensitive material
Only complete if applicable

Security sensitive research includes: commissioned by the military; commissioned under an EU security call; involves the acquisition of security clearances; concerns terrorist or extreme groups.

a.	Will your project consider or encounter security-sensitive material?	Yes ☐ *	No ☒
b.	Will you be visiting websites associated with extreme or terrorist organisations?	Yes ☐ *	No ☒
c.	Will you be storing or transmitting any materials that could be interpreted as promoting or endorsing terrorist acts?	Yes ☐ *	No ☒

* *Give further details in* ***Section 8 Ethical Issues***

Section 5 Systematic review of research
Only complete if applicable

a.	Will you be collecting any new data from participants?	Yes ☐ *	No ☐
b.	Will you be analysing any secondary data?	Yes ☐ *	No ☐

* *Give further details in* ***Section 8 Ethical Issues***

If your methods do not involve engagement with participants (e.g. systematic review, literature review) ***and*** *if you have answered* ***No*** *to both questions, please go to* ***Section 10 Attachments.***

Section 6 Secondary data analysis Complete for all secondary analysis

a.	Name of dataset/s		
b.	Owner of dataset/s		
		Yes ☐	No ☐

c.	Are the data in the public domain?		***If no,*** *do you have the owner's permission/license?* Yes ☐ No* ☐
d.	Are the data anonymised?	Yes ☐	No ☐
		Do you plan to anonymise the data?	Yes ☐ No* ☐
		Do you plan to use individual level data?	Yes* ☐ No ☐
		Will you be linking data to individuals?	Yes* ☐ No ☐
e.	Are the data sensitive (DPA 1998 definition)?		Yes* ☐ No ☐
f.	Will you be conducting analysis within the remit it was originally collected for?		Yes ☐ No* ☐
g.	**If no,** was consent gained from participants for subsequent/future analysis?		Yes ☐ No* ☐
h.	**If no,** was data collected prior to ethics approval process?		Yes ☐ No* ☐

* *Give further details in* ***Section 8 Ethical Issues***

If secondary analysis is only method used ***and*** *no answers with asterisks are ticked, go to* ***Section 9 Attachments.***

Section 7 Data Storage and Security

Please ensure that you include all hard and electronic data when completing this section.

a.	Confirm that all personal data will be stored and processed in compliance with the Data Protection Act 1998 (DPA 1998). *(See the Guidelines and the Institute's Data Protection & Records Management Policy for more detail.)*		Yes ☒
b.	Will personal data be processed or be sent outside the European Economic Area?	Yes ☐ *	No ☒

*** If yes,** please confirm that there are adequate levels of protections in compliance with the DPA 1998 and state what these arrangements are below.

c.	Who will have access to the data and personal information, including advisory/consultation groups and during transcription? My research and academic supervisors and myself

During the research

d.	Where will the data be stored? Personal laptop and USB
e.	Will mobile devices such as USB storage and laptops be used? Yes ☒ * No ☐ *** If yes,** state what mobile devices: Personal, password-protected laptop and encrypted USB *** If yes,** will they be encrypted?: Yes

After the research

f.	Where will the data be stored? Encrypted USB

g.	How long will the data and records by kept for and in what format? Data will be kept for a mi 10 years in line with UCL Data Policy.
h.	Will data be archived for use by other researchers? Yes ☐ * No ***If yes,** please provide details.

Section 8 Ethical issues

Are there particular features of the proposed work which may raise ethical concerns or add to the complexity of ethical decision making? If so, please outline how you will deal with these.

It is important that you demonstrate your awareness of potential risks or harm that may arise as a result of your research. You should then demonstrate that you have considered ways to minimise the likelihood and impact of each potential harm that you have identified. Please be as specific as possible in describing the ethical issues you will have to address. Please consider / address ALL issues that may apply.
Ethical concerns may include, but not be limited to, the following areas:

- **Methods**
- Sampling
- Recruitment
- Gatekeepers
- Informed consent
- Potentially vulnerable participants
- Safeguarding/child protection
- Sensitive topics
- International research
- Risks to participants and/or researchers
- Confidentiality/Anonymity
- Disclosures/limits to confidentiality
- Data storage and security both during and after the research (including transfer, sharing, encryption, protection)
- Reporting
- Dissemination and use of findings

Informed Consent

Participants will be provided with the appropriate information and consent forms. The information sheets will state that participants can withdraw their consent or participation at any time and participants will be reminded of this during the interviews. At the start of the interview, participants will be briefed about what will be expected of them, in terms of tasks and their respective duration, so that all participants understand what is involved. All participants will be provided with details to contact myself or my supervisor should they require further information about the study.

Potentially vulnerable participants

Potential challenges related to social communication difficulties may arise when interviewing adolescents with autism spectrum conditions. Interviews will take place in an environment where adolescents with autism feel comfortable in, such as their own home, and be worded in a way that is accessible to individuals with such difficulties. Participants will also be told that they can take a break from all the activities involved in the data collection process at any time. If participants would like

a parent/carer or staff member present for the interview they will be allowed to have someone with them.

Sensitive Topics

Some participants may be uncomfortable when talking about friendships, especially if they have negative experiences related to peer relationships. If there are obvious signs of distress, the researcher will inform the relevant family members. Participants will be provided with both the researcher's email address as well as the email address of the academic supervisor should they wish to contact us for follow up support. Talking about their children's difficulties may also prove to be a sensitive topic for parents. In case the researchers is aware of distress on behalf of parents, these will be asked whether they would still like to go ahead with the research and offer an alternative time and date for data collection to take place. Parents will also be given information on further support services available for parents/caregivers of pupils on the autism spectrum if required.

One of the aims of this study is to investigate the use of screen-media technology by young people. If the researcher becomes aware of inappropriate use of such media, for example, in case of exposure to inappropriate content, the researcher will consult with the academic supervisor. The researcher is also aware of which agencies and authorities may provide support in relation to these issues in the context of Malta.

Confidentiality/Anonymity

In order to ensure anonymity, participants will each be given a code which will then be used on questionnaires, audio recordings, assessment tools and interview transcripts. Questionnaires, assessment tools and written activities will only contain the participant's code and be kept separately from the consent forms so participants are unable to be recognised. When the research is written up participants and schools will be given codes and so will remain anonymous.

Section 9 Further information

Outline any other information you feel relevant to this submission, using a separate sheet or attachments if necessary.

Section 10 Attachments Please attach the following items to this form, or explain if not attached			
	Information sheets and other materials to be used to inform potential participants about the research, including approach letters	Yes ☒	No ☐
	Consent form	Yes ☒	No ☐
	If applicable:		
	The proposal for the project	Yes ☐	No ☒
	Approval letter from external Research Ethics Committee	Yes ☐	No ☒
	Full risk assessment	Yes ☐	No ☒

Section 11 Declaration

	Yes	**No**
I have read, understood and will abide by the following set of guidelines.	☒	☐

BPS ☒	BERA ☐	BSA ☐	Other (please state) ☐

I have discussed the ethical issues relating to my research with my supervisor.

☒ ☐

I have attended the appropriate ethics training provided by my course.

☒ ☐

I confirm that to the best of my knowledge:

The above information is correct and that this is a full description of the ethics issues that may arise in the course of this project.

Name	Alexia Zammit
Date	03/08

Please submit your completed ethics forms to your supervisor.

Notes and references

Professional code of ethics
You should read and understand relevant ethics guidelines, for example:
British Psychological Society (2009) *Code of Ethics and Conduct*, and (2014) *Code of Human Research Ethics*
or
British Educational Research Association (2011) *Ethical Guidelines*
or
British Sociological Association (2002) *Statement of Ethical Practice*
Please see the respective websites for these or later versions; direct links to the latest versions are available on the Institute of Education http://www.ioe.ac.uk/ethics/.

Disclosure and Barring Service checks
If you are planning to carry out research in regulated Education environments such as Schools, or if your research will bring you into contact with children and young people (under the age of 18), you will need to have a Disclosure and Barring Service (DBS) CHECK, before you start. The DBS was previously known as the Criminal Records Bureau (CRB)). If you do not already hold a current DBS check, and have not registered with the DBS update service, you will need to obtain one through at IOE. Further information can be found at http://www.ioe.ac.uk/studentInformation/documents/DBS_Guidance_1415.pdf

Ensure that you apply for the DBS check in plenty of time as will take around 4 weeks, though can take longer depending on the circumstances.

Further references
The www.ethicsguidebook.ac.uk website is very useful for assisting you to think through the ethical issues arising from your project.

Robson, Colin (2011). *Real world research: a resource for social scientists and practitioner researchers* (3rd edition). Oxford: Blackwell.
This text has a helpful section on ethical considerations.

Alderson, P. and Morrow, V. (2011) *The Ethics of Research with Children and Young People: A Practical Handbook.* London: Sage.
This text has useful suggestions if you are conducting research with children and young people.

Wiles, R. (2013) What are Qualitative Research Ethics? Bloomsbury.
A useful and short text covering areas including informed consent, approaches to research ethics including examples of ethical dilemmas.

Departmental use

If a project raises particularly challenging ethics issues, or a more detailed review would be appropriate, you **must** refer the application to the Research Ethics and Governance Coordinator (via researchethics@ioe.ac.uk) so that it can be submitted to the Research Ethics Committee for consideration. A Research Ethics Committee Chair, ethics department representative and the Research Ethics and Governance Coordinator can advise you, either to support your review process, or help decide whether an application should be referred to the REC.
Also see 'when to pass a student ethics review up to the Research Ethics Committee': http://www.ioe.ac.uk/about/policiesProcedures/42253.html

Student name	Alexia Zammit	
Student department	PhD	
Course	DEdPsy	
Project title	Screen-based media and peer relationships: differences between adolescents with and without autism spectrum condition	
Reviewer 1		
Supervisor/first reviewer name		
Do you foresee any ethical difficulties with this research?	No, the student has done a thorough job of considering the ethical issues.	
Supervisor/first reviewer signature		
Date		
Reviewer 2		
Second reviewer name		
Do you foresee any ethical difficulties with this research?	No, the trainee has thought a great deal about the ethical implications of the study.	
Supervisor/second reviewer signature		
Date		
Decision on behalf of reviews		
Decision	Approved	☒
	Approved subject to the following additional measures	☐
	Not approved for the reasons given below	☐

	Referred to REC for review	☐
Points to be noted by other reviewers and in report to REC		
Comments from reviewers for the applicant		
Recording – supervisors/reviewers should submit all approved ethics forms to the relevant course administrator		
Recorded in the student information system		☐

If the proposal is not authorised the applicant should seek a meeting with their supervisor or ethics reviewer.

Appendix B

Coded interview transcript with a parent of a young autistic boy

Interviewer: Thank you so much for agreeing to participate in my research. You're the very first parent that I'm interviewing for my study.	
PRAB08: Oh really? (chuckle) That's great. If I can help in any way.	
Interviewer: Thank you. Can you tell me a bit about your son? What sort of person is he and what does he enjoy doing?	
PRAB08: Very lively (chuckle)	mother's description of young person
Interviewer: (laugh) Yes he does seem like a lively boy	
PRAB08: He is a happy boy. He absolutely loves gadgets and technological stuff. I can say he's sociable, at least with adults. He does not really enjoy the company of other young people.	mother's description of young person technology as a main interest not very interested in socializing with other young people
Interviewer: OK	
PRAB08: Even though he has a good relationship with his classmates as they've been in the same class all throughout primary and now even in secondary, so they're kind of used to him and he's grown accustomed to having them around.	good relationship with classmates reasons why parent feels young person has settled well with others
Interviewer: Because he's been with them for such a long time.	
PRAB08: Exactly. He's a quiet boy. He sometimes has his bad days but he's eleven now, we've learnt to cope with them.	difficult days learning to cope with difficult days
Interviewer: You're used to what works best with him.	technology as a main interest
PRAB08: That's it. Other than that, he makes his interests very clear. Gagdets and technology.	
Interviewer: Right (overlap)	
PRAB08: He really does not enjoy writing and does not like to try out new food. He also hates very loud noises and does not enjoy being in noisy places. He hates going to parties, for example.	young person's dislikes

Interviewer: He seems to be ok here	
PRAB08: But it's an open space, it's different than being indoors in a crowd. He would start telling me to go home –he wouldn't throw any tantrums, he'll just keep saying let's go home mum, until we do	Preference for open spaces
Interviewer: OK, right	
PRAB08: It's much better now that he's older. Everything is. I mean, he used to need to carry his tablet around all the time when we're out of the house, but now that doesn't need to happen all the time. But there are days when we're out and he just wants it and he wouldn't be able to think about anything else. It can get very tiring	Learning to cope A (past) need to have tablet with him at all times Occasional need to have tablet with him all the time
Interviewer: Of course	
PRAB08: (overlap) But we've come a long way, when he was a young child it was very difficult. But it's much better now, I feel I know what works out best for him	Learning to cope Things are better now
Interviewer: You mentioned that he loves gadgets and technology. Can you tell me more about the way he uses screen-based media? When I say screen-based media I mean technology such as phones, tablets, computers, TV …	
PRAB08: Well he has this way of connecting the tablet with the tv, he gets the mouse connected and asks me to come over to see what he's done. I would have no idea how he managed to connect one thing to the other – he just does it and it works. He also likes looking at watches. He would go online on Ebay and look for watches.	Young person's understanding of technology Young person's vs parent's technical expertise
Interviewer: Right	FASCination with watches
PRAB08: And YouTube. He is always on YouTube. And then he uses the phone to call me and WhatsApp for messaging his learning support assistant. Poor thing, he is always messaging her and she really is very patient with him	Uses screen-based media to look for watched Interest in YouTube Using phone to call mother Uses WhatsApp to message LSA
Interviewer: (chuckle) Are you aware of what he watches on YouTube?	
PRAB08: Yes, he's always seeing How To videos and he also watches these smash and drop test videos comparing the strength of mobile phones and their screens where you have people throwing mobiles on the floor to check the	How to videos Smash and drop tests

strength of the glass or of the device. He loves those. He's always using either the tablet or the phone. **Interviewer**: So we can say that he uses a lot of screen-based media. **PRAB08**: Oh yes, he's always using something. If it's not the tablet it's the mobile phone, sometime it's videos, music, messaging – but there's always technology involved. He wants a smart watch now. He may get it for Christmas even though it's very difficult for him to wait for things. **Interviewer**: A smart watch? That sounds like a nice Christmas present. When did he start showing an interest in technology? **PRAB08**: He has always loved dismantling stuff and putting it back together, especially technological gadgets. Then as he grew up the phone and tablet became central to his interests **Interviewer**: Ok **PRAB08**: In fact the tablets we bought him when we was younger always ended up broken. He never actually saw them as a means of watching or looking for stuff. He used to break them and then try to fix them. Then as he grew older he seemed to start understanding that he can watch things he likes on them, and he stopped trying to break them. **Interviewer**: Because he realised that it can have other purposes. **PRAB08**: Yes and he's really learnt a lot. If you ask him about something technical, the way something works, for example, he'll tell you – I think he got a lot of that from watching videos on YouTube **Interviewer**: So you feel that technology has an educational purpose for him **PRAB08**: Definitely. Even when it comes to literacy – he hates writing but he made more of an effort to learn how to write to be able to use WhatsApp. He's learnt a real lot, mostly on his own, almost as much as school I would say and I'm a teacher myself. He needed to be able to write clearly and in a way that he can be understood so that he could communicate with his LSA (learning support assistant). I used to help him read her messages before.	Frequent use of tablet and phone Frequent use of screen-based media Technology always present Wanting a smart watch Difficulty with waiting Technology has always interested him Frequent use of phone and tablet Breaking tablet as a child in order to engage in fixing it Widened understanding of the function of screen-based media as young person grew older Learning from YouTube videos Technical expertise Screen-based media as supporting learning and literacy Technology as a supporting literacy Technology as motivating

She also used to message him with “what you have you done today?” and “how was your weekend?” to get him to write, which he did with a lot of enthusiasm.	Connecting with others via screen-based media
Interviewer: That’s great. It gave him the right motivation to learn.	Technical expertise
PRAB08: Yes exactly.	
Interviewer: How would you rate his level of expertise in using screen-based technology?	Young person’s vs parent’s technical expertise
PRAB08: Oh he’s good, he knows a lot of stuff. I know nothing compared to him. It seems like he understands the specifics, the technicalities very well. Sometime I wouldn’t have an idea about what he’s talking about because it’s too technical for me. I wouldn’t know how he fares compared to others because he doesn’t have that many friends or peers but I think he would rate very high when it comes to technical knowledge.	Doesn’t have many friends Only shows interest in communicating with LSA
Interviewer: Ok, great. You mentioned that he doesn’t have many friends. I’m interested in asking you a bit about this – in particular, about Paul’s friends and if he uses technology to make and keep in touch with them.	Parental involvement in screen-media engagements
PRAB08: YP11 only keeps in touch with Miss X, his LSA (Learning Support Assistant).	Young person’s lack of interest in using FB and Messenger Using WhatsApp
Interviewer: OK	
PRAB08: (overlap) I mean, I had helped him create a Facebook account, and even Messenger, to encourage him to contact his grandparents but he was never interested. He only uses WhatsApp.	Does not have friends Appreciative of classmates
Interviewer: He didn’t feel the need to keep that sort of contact.	Real friends Expectations of friendships for young autistic person
PRAB08: No, he’s not the type. I mean, I cannot say that he has friends. He knows his classmates and mentions them but I wouldn’t say they’re friends, like real friends you know? Mind you, they’re all very nice kids but you know, with his difficulties, you can’t expect him to have friends really.	
Interviewer: He did mention having a friend in class …	
PRAB08: Yes, a girl called Y. He likes Y. Actually he seems to get along better with girls than with boys. And it’s	Preferred female friend Gets along better with girls rather than boys Girls look out for him

always been like that, even in primary school. The girls in his class, particularly Y, really like him and look out for him. **Interviewer**: Have you ever met her? **PRAB08**: I see her and her mother when I pick him up from school, and sometimes when I drop him off. She's really sweet, she offers to carry his school bag for him every day. **Interviewer**: Does he mention them at all at home? **PRAB08**: Yes he does, especially Y. He'll tell me things like 'Y gave me a sponge today' or 'Y was wearing the watch we gave her' – you know she is the only one who has ever invited him to a birthday party? We had bought her a watch. But he won't talk about what activities they did together or if he played with them. I don't think he plays during break-time, he's usually just around his preferred classmates **Interviewer**: OK. But his preferred classmate still features in your conversations. **PRAB08**: Yes yes **Interviewer**: Does he meet any of his friends outside school? **PRAB08**: No, just at school. **Interviewer**: You talked about how he doesn't use technology for connecting with others. How do you feel about this? Would you rather he used it to keep in touch with others? **PRAB08**: With him being 11 … ehm… I think I prefer things this way. I wouldn't want him talking to strangers online, you know? **Interviewer**: Can you tell me a bit more about that? **PRAB08**: Well you know how it is. I don't really … uhm … I don't really trust technology in that way. It's one thing messaging his grandparents and it's another thing talking to random people. Interview: What about his classmates from school? PRAB08: I'm not sure. I'd much rather have him talk to them at school, you know? And anyway I don't think he's	Friend offering help Mentions friends at home What friends do for you Has only ever been invited to one birthday party Parent perception of how young person spends break-time Not interested in meeting friends outside of school Preference for not using screen-based media to communicate Stranger danger Mistrust towards technology Difference between communicating with

interested in that sort of thing anyway. So it works for both of us! (chuckle)	family members and unknown people
Interviewer: Ok. Do you make use of any strategies to control his use of screen-based media?	Parent preference for face-to-face communication
PRAB08: Mmm, YouTube can be a problem. But we've got the same google account on both our phones so that I can see what he's been looking at, I can check the browsing history.	Young person not interested in communicating using screen-based media
Interviewer: Right. And what about how long he spends using technology?	
PRAB08: He's using something everytime. He's stuck to his tablet, and when he's done with that he goes for the mobile phone to listen to music or watch more videos.	Shared password Checking browsing history
Interviewer: So can we say that when he is not at school and doing school-related work, he is mostly making use of technology?	Difficulty controlling time spent on technology
PRAB08: Yes definitely. Sometime he gets the tablet with him and doesn't use it, but that doesn't happen regularly. I'd rather get it with me in case he really wants it.	
Interviewer: Are there any things that you don't allow him to do? That he knows he shouldn't do when using screen-based media?	The need to have technology around
PRAB08: I don't let him watch so many drop tests anymore because he used to want to experiment with our phones and devices at home (laughs) – so I'm trying to encourage him to play more and see less of these videos. But then again I need to be careful with him playing games because he has a tendency of wanting to win, win, win and then gets frustrated when he loses. So when I see that he's getting very frustrated, I take the tablet or phone away and tell him that what the game is doing to him is harmful. He can understand that and he is usually quite obedient.	Controlling video content Does not want young person replicating what he sees Encourages young person to engage in online gaming more Awareness of what upsets young person Removing technology when parent sees young person is upset
Interviewer: Ok, that's good. One last question: what would you say are some of the benefits and risks of using screen-based media for adolescents like Paul?	
PRAB08: I think there are many good things at least when it comes to my son. Literacy and practical hands-on things mostly as I told you. I'd say a disadvantage is that he can easily get hooked on it and sometime it's a struggle to find	Benefits of technology Technology supporting learning Easily hooked on it Difficult to get away from

things that are just as interesting for him in order to get him away from the technology. **Interviewer**: You're right. We've come to the end of our interview. Thank you so much for your time and participation, it really is appreciate	Difficult to find things that can interest him as much

Coded interview transcript with young typically developing girl

Interviewer: So first of all thank you for accepting to take part in my research. I'd like us to talk about what you like doing in your free time and then I'd also like to ask you a bit about your friends and how you use technology.	
NTG05: Yes of course	
Interviewer: Ok, so let's start by talking about what you like doing. Em, what are your interests? What you do in your free time?	
NTG05: *Mmm,* in my free time I either do some sort of activity, workout or go for a jog or something or *em* watch some series, it depends on my mood really.	Free time Physical activity Watching series episode
Interviewer: That's nice. Do you do anything else in your free time? Are you part of any club or after school group?	
NTG05: I try as much as I can to do physical activities if not studying that's all (chuckle). I'm not part of any group, no. When I was younger I used to go to the youth centre but I don't really have time for that now, because of exams, you know and studying and I meet my friends elsewhere like on Saturdays.	Preference for physical activities Studying Part of a group when younger Preparing for exams is time consuming
Interviewer: OK and are weekends any different in the way that you spend your time rather than weekdays?	Meeting friends at the weekend
NTG05: I go out with friends on Saturday.	Meeting friends at the weekend
Interviewer: Yes.	
NTG05: *Em* normally Saturday is my going out day because I do school work and then I go out in the evening and then I do more homework and studying on Sundays.	Weekend plans Finishing school work Meeting friends More school work on Sunday
Interviewer: OK thank you for that. You mentioned that you meet your friends at the weekend and I'm interested in knowing a bit about our friendships. E*m* are you, are you the type to be part of a large group of friends or do you have a few close friends, maybe one best friend? What's it like?	
NTG05: *Em* I have a, I prefer small groups of friends. I have a group here at school, a group there but then I have also a best friend.	Preference for small groups Group of friends at school
Interviewer: OK.	
NTG05: And then also I like some alone time but it's always like...	Group of friends outside school Best friends
Interviewer: Pardon?	
NTG05: Like *em* being alone and stuff like that.	Like having some alone time

Interviewer: Yes. **NTG05:** It's always nice you know, not always being with people. **Interviewer:** Yes, you enjoy having some time to yourself. **NTG05:** But yes, it's a mostly like at school, I prefer a small group of friends. **Interviewer:** OK. **NTG05:** We're about 5 in all. **Interviewer:** And you mentioned a best friend? **NTG05:** Yes I met her at the end of Form 1, so … **Interviewer:** So you've been friends for quite a while **NTG05:** Yes, almost four years now **Interviewer:** OK so you met her at school. What sort of things do you do together? **NTG05:** *Em* we go out, shopping, talk about everything, *mm* study, do homework together as well even, everything. **Interviewer:** Would you say that you've got a good relationship with this person? **NTG05:** Yes. **Interviewer:** Can you tell me a bit more about that? **NTG05:** We get along very well together. When we were younger we used to have some fights but we grew out of th*em* and like now it's, we're like sisters. **Interviewer:** She seems to be quite important to you **NTG05:** Yes very much so. **Interviewer:** Why is it so? **NTG05:** *Em* I don't know, she's a quite important part of my life. I tell her everything and we're there for each other. Like she really knows me. Next year she's moving abroad so it's going to be tough not to have her around. **Interviewer:** Ok. **NTG05:** It's really going to be difficult (chuckle). **Interviewer:** It must be.	It's nice to have some time to self Preference for small group of friends Small group of friends Known best friend for 4 years Activities engaged in with best friend Doing everything together Used to have fights when younger We're like sisters Best friend as very important Best friend as important Best friend as confidante Best friend as supportive Moving abroad Young person will miss best friend It's going to be difficult without best friend Texting to keep in touch Texting non-stop

NTG05: Yes because as I've told you she's quite a big part of my life. Oh well, we'll be texting each other non-stop I guess (chuckle)	
Interviewer: That's really interesting because I'm also interested in knowing a bit how you use technology in your everyday life.	Technology is really important
NTG05: That's really important for me.	
Interviewer: Is it? What sort of technology do you use?	Use of mobile phone and laptop
NTG05: *Em* mobile phone and the laptop, either for, I don't know, watching movies and stuff like that, rather than a T.V. you know if I watch a movie I watch it on my laptop, for research for school and stuff like that. And then music and so on.	Laptop to watch movies Laptop preferred over TV Laptop for school work Screen-based media for music
Interviewer: Yes? Can you tell me a bit more?	
NTG05: I use either YouTube or Spotify to watch and stream music. And of course texting. All the time! (chuckle) That comes before watching movies and listening to music because it's like all day (chuckle)	YouTube Spotify Texting all the time Texting as most frequent activity
Interviewer: So you use your phone mainly to text?	
NTG05: Yeah to keep in contact with friends.	Texting all the time Keeping in touch with friends
Interviewer: OK.	
NTG05: Mainly. *Em* usually most of the time it's Facebook Messenger and here and there maybe WhatsApp but that's quite rare and sometime I make calls, to mum or friends. I think that's basically how I use my phone. Oh and music. Lots of music actually! (chuckle) I listen to music nearly all the time	Facebook messenger Infrequent use of WhatsApp Calling mum or friends Using phone to listen to music Music as a preferred activity
Interviewer: Have you got a tablet?	
NTG05: No I don't have any use for that. I just use my phone and laptop for whatever I need.	Does not have a tablet Does not see need for tablet Phone and laptop as preferred devices
Interviewer: Right. Are there any other screen-media that you make use of?	
NTG05: Maybe T.V? As in sometime sitting in front of the T.V. on the sofa and just watching whatever there is. Sometimes on a Sunday evening with the rest of my family, you know? But it doesn't happen very often	Watching some TV Watching TV as part of family time Watching TV doesn't happen often
Interviewer: OK.	
NTG05: If I watch something like Discovery Science, Animal Planet or else like something more in my you	TV channels young person watches Watching series episodes

know comfort zone in a way *em* like a series, like Grey's Anatomy, something like that. **Interviewer:** OK, alright so from what I understand you use technology particularly your mobile phone to kind of keep in touch with your friends and for entertainment purposes like music and watching movies and series. **NTG05:** Yes exactly	
Inteviewer: Are all your online contacts people you know? **NTG05:** Yes of course, I don't even add people I don't know. Every person I text or like chat to is someone I know in real life.	Adding only people young person knows All online contacts are known people
Interviewer: OK so there aren't any people maybe who share common interests with you that you chat but you've never met? **NTG05:** No, never. It's not very safe I guess **Interviewer:** Communicating with someone you have never met? **NTG05:** Exactly. I only talk to people I know. I add contacts and friends once I meet them.	Never made contact with unknown people Online safety Adding people/contacts young person knows
Interviewer: OK so it's like you use technology to keep in touch with the ones you already know. **NTG05:** Yes that's right.	
Interviewer: So you wouldn't have made new friends through the use of technology? **NTG05:** Not really no. It would usually be like I go out and I meet people and then I add them on Facebook and I talk to them. If I want new friends I just get to know more people I guess. If like, if I want to have more friends I would talk to more people at school or at the weekend you know? I'm not gonna go message some random person.	Screen-media not used to make new friends First meet people then add them on FB New friends are made by talking to more people Young person will not just message any random person
Interviewer: OK so it's like a means to keep in touch rather to make new **NTG05:** (Overlap) Exactly **Interviewer**: New acquaintances.	
NTG05: Yes. It's great to be able to message my best friend or my other friends whenever I want or if I need something. And now that she's going abroad we'll be	Screen-media is good to get in touch with friends

texting even more often I think. Yeah, or if I'm waiting somewhere like my mum's car and I'm bored or something then I can just text or go on Facebook you know?	Screen-media to communicate needs Stay in contact with best friend Using screen-media as a way to while away boredom
Interviewer: And in keeping in touch with friends, do you prefer *em* face to face contact or *em*...	
NTG05: Face to face definitely.	Preference for face-to-face interactions
Interviewer: Face to face rather than via technology.	Face to face is always better
NTG05: Yes it's always better.	
Interviewer: Why is that?	
NTG05: *Em* I say for example you have this proble*m* and you want to face someone about it *em* behind your phone you're like you know you can say whatever you want like you're not afraid of how they're going to react but when you're face to face you can actually interact with the*m* and even for the*m* if they want to say something maybe they feel more comfortable saying it on the chat rather than face to face. With face to face you can know how they're really feeling.	Hiding behind your phone In face-to-face you can interact better Face to face shows you how people are really feeling
Interviewer: Yes	Real life vs online communication
NTG05: And if they want to say something and they change their mind on the chat they can't really do that in real life because they're right there in front of you and kind of like they have to face reality	Face-to-face communication makes you face reality
Interviewer: Ok, yes. I think we've come to the end of our interview. Is there something else that you'd like to add or tell me about how you use screen-based media?	
NTG05: No not really (chuckle)	
Interviewer: Thank you so much, you've been really helpful	

Coded interview transcript with a young autistic boy

Interviewer: OK so first of all thank you very much for accepting to participate in this interview. It will be very useful for my studies. First I'd like to ask bit about your interests, what you like doing, how you spend your free time?	
AB06: *Em* normally I really like drawing so in my free time I try to draw and I have, I always have Art lesson on *em* Tuesday and Friday Judo but now since they have a tournament I'm going on Tuesdays only.	Likes drawing and Art Likes Judo
Interviewer: OK so this takes place after school?	
AB06: *Em* usually yes.	
Interviewer: OK great so you enjoy drawing. What else do you do in your free time?	
AB06: I play with my sister quite a lot, non-technology games usually. Dad wants us to play with things without using technology when we come home from school. Then I help dad with cooking and cleaning at home.	Playing with sister Non-technology time Father controls technology time Helps dad with cooking and cleaning
Interviewer: That's wonderful	
AB06: Yes I feel good when I'm helping others. It's nice to help. Because when we help others, then they help us too.	Feels good when helping others It's good to help others
Interviewer: Of course. You mentioned non-technology games a while ago. Can you tell me a bit more about that?	
AB06: Dad doesn't want me on my computer or tablet all the time so after school it's non-technology time. Non-technology time means that we play board games or just talk or read books and then I can go on my tablet after I finish my homework and have dinner.	Father doesn't want screen-time after school Non-technology time Screen-time is for evenings Screen-time after homework
Interviewer: Ok, and how do you feel about non-technology time?	Father's wish for non-technology time
AB06: I feel ok. Dad becomes angry if I use my tablet after school. He says we will get hacked if we use it too much or that it will hurt my eyes	Fear of getting hacked Perception of physical repercussions of too much screen time
Interviewer: Ok that's really interesting, thank you. Can you tell me a bit about how you spend your weekends?	

AB06: Yes at the weekend we do outside activities like we go to either a beach or *em*, a space that no one can annoy us or bump into me. I don't like being bumped into. And then we can play for example football or basketball there and we have so much fun that we almost forget what time it is, we sometimes go late at home. Sometime there's grandma with us but not always.	Outside activities at the weekend Quiet place Less physical contact with people Playing games with family Having fun Sometimes grandma joins family activity
Interviewer: That sounds like you have lots of fun with your family. I also want to talk to you a bit about how you use technology. In particular I'm interested in what we call screen based media like mobiles, tablets, laptops, computers and television.	
AB06: I know what screen-media is. It means devices that have a screen. I only use two technologies in one or two hours – one hour on weekdays and two hours on weekends. Sometime a bit more if I'm good.	Knowledge of meaning of screen-media Uses two devices One hour daily Two hours on weekends Use of screen-media as reward
Interviewer: OK and what would those technologies be?	
AB06: *Em* either a computer, a tablet or a television. And the mobile phone for emergencies.	Makes use of PC, tablet Makes use of TV Mobile phone for emergencies
Interviewer: OK so you only use it to call in an emergency?	
AB06: Yes. But I have not had an emergency yet.	Has not had emergency
Interviewer: OK and what about the tablet? How do you use it?	
AB06: *Em* I search on things that I got, that I have lots of interests in and sometimes I get bored and play on my games.	Uses tablet to look for things young person like Uses tablet to while away boredom Uses tablet for online games
Interviewer: OK, *em* what sort of things do you look for, that you search for?	
AB06: I look for different gems and flowers and sickness that can happen to people.	Looks for info on gems, flowers, illnesses
Interviewer: You seem to have quite a variety of interests. Can you tell me a bit more about how you use the tablet?	
AB06: I have a lot of interests but I prefer looking for information and pictures about gems. I have a collection at home. I like looking at flowers too, I like trying to remember their real names.	Looking for info and pictures as preferred activity Has a collection of gems at home Likes to remember flower names

Interviewer: The flowers?	
AB06: Yes it's usually in Latin. Sometimes I look for videos on YouTube too about the things I like.	Using YouTube to watch videos
Interviewer: Of course.	Interested in videos about illnesses
AB06: Like videos about sickness. I'm interested in knowing what can go wrong in the human body, all the sickness that can happen to us. That way if something happens to me I would know about it.	Likes to know what might go wrong with the human body
Interviewer: Oh ok, and what about games? What sort of games do you play?	Online games Roblox Bad Piggies Pokemon
AB06: I have Roblox, Bad Piggies, *em* Pokémon and there's lots more but I can't remember all of them.	
Interviewer: That's alright. Do you play these games with others or are they solo player?	Most games are solo player
AB06: All of them except one are one player.	
Interviewer: So from what I gather, you prefer games in which you can be the only player?	Online gaming partners Preference to play on his own Cannot disable chat function in Roblox
AB06: Yes but there are other people playing in like Roblox and Bad Piggies. I prefer just playing the game alone but for example, in Roblox, you can't really disable the chat function so people can talk to you all the time.	Faces of other gaming partners
Interviewer: Ah ok	Answering back friends from school
AB06: The other players have their faces on the player account.	
Interviewer: Right.	
AB06: And they have like a speech bubble that they can write on and they can talk to you so I talk to them back if it's my friends from school.	Only talks to known friends
Interviewer: OK so you enjoy chatting with the other players?	There are lots of other players Cannot message them because they are unknown to young person
AB06: I only talk to LB and MB	
Interviewer: Are these your friends?	It's not ok to talk to people you don't know
AB06: Yes I answer them if they message me because I know them.	

Interviewer: Do you message any other players?	
AB06: There are lots and lots of them but I cannot message them because I don't know them. It's not ok to talk to people you don't know because they're strangers.	Uses computer to play games Computer and tablet have similar functions
Interviewer: OK. You also mentioned using the computer. What do you use it for?	Infrequent use of TV Uses TV when other screen-media are out of battery Uses TV when bored
AB06: I use it to play games, almost the same thing as a tablet.	
Interviewer: OK so there isn't much difference in the way you use them?	Watches Cartoon Network Plays with PlayStation 2
AB06: Not really. But then the television I barely *em* I barely use it. I only use it when I get very bored and all of my screen things are *em* out of batteries.	
Interviewer: OK, right. And what do you watch on TV?	
AB06: *Em* I just watch Cartoon Network. I have a PlayStation 2 so I sometimes play with that too.	
Interviewer: Earlier on you mentioned some friends from school that you sometimes communicate with. I'd like to know a bit about your friendships. Can you tell me something about your friends?	
AB06: *Em* I think that friendship is very good because the friends that you make they can help you and understand what you tell them and they can help you on *em* things that make you nervous and then you feel much better afterwards.	Friendship is very good Friends help you Friends understand you Friends can be comforting
Interviewer: That's right	
AB06: And lots of people help me at school	People help young person at school
Interviewer: That's great. So who are your friends? Have you got a best friends?	
AB06: My friends are in my class and my best friend's name is X.	Classmates as friends Has a best friend
Interviewer: Have you been friends for long with X?	
AB06: *Em* we met when we were in Year 3 and he hurt his leg then I helped him, I had a small *em* bandage then I gave it to him so then I rubbed his	Friends since Year 3

leg and then he was OK. Then we started being best friends. **Interviewer:** Great, and you've been friends since? **AB06:** Yes, it's been five years. **Interviewer:** Right, OK and what sort of things do you do together? **AB06:** *Em* we usually play sometimes but in Form 1, it's very rare for me to get out because I'm better off in the canteen because I can eat without being bumped or anything else. It's a quiet room with lots of friends and we can sit together and no one bumps into me. **Interviewer:** It seems that you prefer spending time in the canteen rather than out in the playground. **AB06:** I was always getting bumped in the playground in primary school and that makes me nervous. **Interviewer:** OK so tell me again what sort of things you do together? **AB06:** We play and we talk with each other sometimes. I tell X about different gems. **Interviewer:** And do you meet after school? **AB06:** *Em* sometime he comes to our village feast in summer but we don't usually meet each other in any other places. **Interviewer:** OK and would you say that *em* this person is important to you? **AB06:** *Em* yes because he helps me and I help him. **Interviewer:** OK, that's good. **AB06:** And we try to do everything to help each other and never fight. **Interviewer:** That's really nice. What sort of things do you help each other with? **AB06s:** Homework and projects. And if he has a problem I try to help him. I also like helping Ms Y. I'm quite good at helping and it's good to help. **Interviewer:** Is that your LSA (learning support assistant)?	Became friends after young person helped another boy who had hurt his leg Playing together Does not enjoy going out in playground Sitting together in canteen Dislikes being bumped into Prefers staying in the canteen Being bumped into makes young person nervous Playing and talking together Shares info on personal interests with friends Meet friend once a year outside school Only meets friend at school Friends as helpers Helping each other Helping each other Rare arguments with friend

AB06: Yes she is. She helps me a lot and I try to help here when she needs help, like with cutting up pieces of paper or helping her clear up after activities.	Support each other with school-related work Also enjoys helping LSA
Interviewer: Right, ok. Can you tell me about how you keep in touch with your friends after school?	LSA helps young person
AB06: *Em* we meet at the canteen or during free lessons.	Young person helps her with cutting paper and cleaning up
Interviewer: OK and after school, how do you keep in touch?	
AB06: *Em* I write a letter and I post it. I don't know a lot of their addresses so I can't really send them an envelope.	
Interviewer: So you write letters to your friends?	Writing letters to keep in touch
AB06: Yes the ones I know their addresses.	
Interviewer: Do you do this often?	
AB06: I did in 3 times last year and once this year. I write to them about gems with pictures. Sometime I also write about flowers.	Sends letters to friends with known addresses
Interviewer: I see, that's great. And do you get a letter back from your friends?	Wrote letters 4 times in 2 years Writes about personal interests
AB06: MB wrote back once	
Interviewer: And apart from letters, do you use any other means to keep in touch? Do you use any of the screen-media devices we talked about earlier?	
AB06: Not really because my father is afraid that I would get hacked or something so I only use it for my games and to look up stuff about the things I like.	
Interviewer: OK so you don't use for example Messenger or Viber or WhatsApp to communicate with your friends?	One reply from friend
AB06: Nothing.	Does not use screen-based media to keep in touch with friends
Interviewer: OK.	Father's fear of getting hacked
AB06: The only thing that I use is just an SMS on my mobile.	Only uses screen-based media for games and info searching
Interviewer: OK.	

AB06: And the only contacts I have is, there are two, my father or Ms. Y **Interviewer:** Right **AB06:** Because I usually use the SMS for her to remind me and what her dog did. **Interviewer:** (chuckle) Right **AB06:** (Overlap) Because he's very funny and a little crazy too. **Interviewer:** So do you prefer talking to people on a face to face basis or do you prefer using technology? **AB06:** Normally face to face because it's less *em*, you don't get burning eyes and I can talk much clearer. **Interviewer**: What do you mean when you say you can talk clearer? **AB06**: Because I can say something to the person directly, without having to type it. And sometimes you can't type all the things you need to say, there's too much of them, so talking is better. **Interviewer:** Would you say that technology has helped you make any new friends? **AB06:** Not really. Once I tried and they got lost and forgot **Interviewer:** What do you mean when you say they got lost? **AB06:** Once I sent a message to someone and they forgot about me and then left for two hours then they came back and they forget me. So like that they're not real friends so I won't talk to them. **Interviewer:** Oh I see, I see, alright. **AB06:** I don't really care because I barely know them. They're just players. They're fighting you to win the game. My friends are the ones at school and technology, that's for playing games and doing things that you like. **Interviewer:** Ok that's great. You've been really helpful, you've told me such a lot of interesting things. Thank you very much.	No use of instant messaging applications Only uses SMS to communicate with his father and LSA Send SMS to LSA for reminders Sends SMS to LSA to ask about her dog Face-to-face is better Face-to-face doesn't give you burning eyes I can talk clearer in face-to-face Talking is better than typing You cannot type all the things you need to say Talking is better Technology has not helped young person make friends Young person's attempt at making contact with others Felt forgotten Online gamers are not real friends

AB06: You're welcome. I like helping people.	Online gamers are just players Fighting to win over you Friends are at school Technology is for playing games Technology is for doing what you like

Appendix C

Interview transcript in Maltese with a young typically developing boy

Interviewer: Mela l-ewwel nies grazzi talli *em* ħa tipparteċipa f'din l-intervista miegħi *em* l-ewwel mistoqsija tiegħi għalik hija dwar l-interessi tiegħek, inti xi tħobb tagħmel, x'ma tħobbx tagħmel, kif tqatta' l-ħin liberu tiegħek?

NTB05: Jiena nħobb inkanta u ma nħobbx nisfen.

Interviewer: OK.

NTB05: Il-ħin liberu tiegħi inqattgħu inkanta, nilgħab bil-PlayStation.

Interviewer: Tajjeb, *em* jiġifieri inti qieghed f'xi għaqda wara l-iskola tal-kant?

NTB05: Iva.

Interviewer: Ok, tmur spiss?

NTB05: Darba fil-ġimgħa.

Interviewer: Tmur darba fil-ġimgħa, jiġifieri l-ħin tiegħek liberu nistgħu ngħidu li huwa maqsum bejn il-kant u l-logho bil-PlayStation hux hekk?

NTB05: Eħe. U xi naqra studju imma mhux hafna

Interviewer: (Laugh) X'taghmel iktar fil-hin liberu tieghek?

NTB05: Ġieli mmur niekol mal-familja, ġieli mmur picnic ... hekk hu.

Interviewer: OK *em* apparti l-interessi tiegħek xtaqt insaqsik ftit dwar il-ħbiberiji tiegħek. Inti persuna li tagħmel parti minn grupp kbir ta' nies? Li għandek forsi xi ħabib jew tnejn tal-qalb? X'tip ta' ħbiberiji għandek?

NTB05: Jiena għandi ħbieb imma hemm ħafna min jagħmillek il-ħażin.

Interviewer: OK. Tghidli ftit iktar?

NTB05: *Em* l-aktar li għandi ħbieb xi għaxra imma l-aktar viċin tiegħi huma tnejn.

Interviewer: Ok igifieri ghandek grupp kbir li minnu tnejn minnhom huma l-aktar viċin tieghek.

NTB05: Iva, inħossni komdu ħafna maghhom

Interviewer: Jiġifieri tista' tgħid li huma forsi l-*best friends* tiegħek?

NTB05: Eħe hekk jiġu mela

Interviewer: U kif iltqajt magħhom dawn il-ħbieb?

NTB05: L-iskola.

Interviewer: L-iskola, sekondarja jew ġew miegħek minn meta kontu iżgħar?

NTB05: Wieħed hawn hekk u l-oħra minn qabel.

Interviewer: Minn qabel, sewwa u x'tagħmlu flimkien?

NTB05: Nilgħabu PlayStation l-istess, *em* ġieli noħorġu hekk hux noqgħodu nitkellmu, video call.

Interviewer: OK *em* importanti għalik dawn in-nies?

NTB05: Eħe.

Interviewer: Għalfejn?

NTB05: Għax hekk hu tħossok *safe* magħhom, tħossok li tista' titkellem magħhom. Jekk ikollna bżonn lil xulxin nistghu nghinu lil xulxin u naqsmu l-problemi maghhom. U jghogbuna l-istess affarijiet bhal PlayStation.

Interviewer: U għandek relazzjoni tajba magħhom mhux tiġġieled?

NTB05: Ijja ħafna, ma tantx.

Interviewer: OK *em* semmejtli l-użu tal-PlayStation u semmejt ukoll xi *video calling* allura t-tielet mistoqsija tiegħi hija dwar kif tuża inti t-teknoloġija fil-ħajja tiegħek?

NTB05: Ifhem il-PlayStation nużaha ħafna. Dejjem fuqha tista tghig ghax inhobb nilghab hafna.

Interviewer: OK.

NTB05: Wara li nlesti l-*homework* u nlesti x-xogħol kollhu li jkolli bżonn nagħmel noqgħod nilgħab PlayStation jew nuża naqra per eżempju nibgħat lil sħabi, dawk it-tnejn.

Interviewer: X'tuża biex tibgħat lil sħabek?

NTB05: *Messenger.*

Interviewer: Il-*Facebook Messenger.*

NTB05: Eħe. Nibghatu lil xulxin messaġġi u hekk.

Interviewer: Ta spiss?

NTB05: Iva hux wara l-iskola l-*mobile* ikun fuqi ghax l-iskola ma nistghux nohduh. Allura, ehm, kif tghid qisu wara l-iskola l-hin kollu fuqi biex nibghat u hekk.

Interviewer: Semmejtli li tilghab bil-Playstation. Ma shabek stess tilghab? Jew wahdek?

NTB05: Mhux dejjem l-istess hux skond il-logħoba li tilgħab hux. Hafna drabi nilghab ma xi hadd minn shabi

Interviewer: OK u ġieli tilgħab ma' nies li ma tafhomx?

NTB05: Nies li ma nafhomx ma noqgħodx inparla magħhom. Dawk ma tkunx taf min huma. Jista jkun xi hadd li jghamillek il-hsara.

Interviewer: OK.

NTB05: Jew *nedjahom*.

Interviewer: OK.

NTB05: Qisu ma jimpurtanix minnhom just ikunu team mates u daqshekk.

Interviewer: OK jiġifieri l-kuntatt tieghek maghhom ikun ghal loghob biss.

NTB05: Eħe u li nafhom nibqa nitkellem magħhom, nidħlu group nitkellmu flimkien.

Interviewer: OK jiġifieri dawk li tkun diġà tafhom li tibqa *tiċċetja* magħhom?

NTB05: Eħe iva.

Interviewer: Tuzah ghal affarijiet ohra l-mobile?

NTB05: Iva - biex jekk jinqalali xi ħaġa nkun dejjem nista' nċempel lil *mummy* jew lil familjari.

Interviewer: Sewwa.

NTB05: U ġieli nużah biex nilgħab xi logħob hekk qabel ma norqod jew hekk.

Interviewer: OK.

NTB05: Imma mhux xi daqshekk ghax suppost qabel norqod bil-mobile nitfi.

Interviewer: U tilgħab logħob tiegħek jew logħob ma' oħrajn?

NTB05: Tiegħi.

Interviewer: Logħob inti waħdek speċi?

NTB05: Iva.

Interviewer: U semmejtli li qabel torqod mhux suppot tużah? X'jigifieri?

NTB05: Ehe ghax ommi ma tkunx trid li norqdu bil-*mobile* f'idejna ghax tghid li jaghmel il-hsara li jkollok id-dawl f'wiccek. Ma nafx jien ... Gieli ndahhlu mieghi u ma jiġri xejn imma jekk tkun hdejja fil-kamra ma nkunx nista nuzah.

Interviewer: Fhimtek. Allura apparti l-PlayStation u l-*mobile*, tuża xi haġa ohra? Jien interessata f'dik it-teknologija li tinvolvi *screens.*

NTB05: Xi kultant nuza t-*tablet* ukoll

Interviewer: U għalxiex tużah it-*tablet*?

NTB05: Meta jkolli l-mobile mitfi.

Interviewer: OK jiġifieri għall-istess affarijiet?

NTB05: Eħe.

Interviewer: OK u apparti t-*tablet* tuża xi haġa ohra? Bhal-*laptop* forsi?

NTB05: *Mħm*.

Interviewer: U x'tagħmel bih?

NTB05: Aktar għal xogħol tal-iskola peress li għandi Computer Studies.

Interviewer: OK.

NTB05: Qisni nużah għal dawk l-affarijiet.

Interviewer: Sewwa *em* tużah għal affarijiet oħra apparti affarijiet tal-iskola l-laptop?

NTB05: Għal kant, dak kollox.

Interviewer: Kif tużah għal kant?

NTB05: Għax aħna jtuna l-mużika u rridu nagħmluhom fuq il-laptop.

Interviewer: Fhimtek

NTB05: U nuża lilu.

Interviewer: Orrajt. Semmejtli lil shabek ftit ilu. Semmejtli li tibgahtilhom fuq Facebook Messenger. Kif iktar tikkomunika maghhom

NTB05: Nibgħatilhom fuq Facebook l-iktar. Hekk. Ifhem jien u l-ħabiba tiegħi noqgħodu daqsxejn il-bogħod minn xulxin allura aktar nibgħatu lil xulxin jew inċemplu lil xulxin.

Interviewer: U lil dawn shabek li tibghatilohm, tippreferi li tikkomunika magħhom *face-to-face* jew permezz tat-teknoloġija ?

NTB05: *Face-to-face* ahjar ta.

Interviewer: Tippreferi *face to face*, il-għala?

NTB05: Għax l-emozzjonijiet tal-persuna tkun tista' tarahom, tkun tista' tara jekk il-persuna hix qed tigdiblek jew hekk mhux just recording jew wisq inqas *just chat* ma tkunx taf jekk il-persuna hux qed tigdeb jew qed tagħmel xi ħaġa ħażina lilek.

Interviewer: OK, orrajt fhimtek *em* u għandek sħabek; naħseb diġà għedtli li ma tantx *em* nies li tiltaqa magħhom online imma qatt ma ltqajt magħhom *face to face*?

NTB05: Iva.

Interviewer: Hemm, għandek nies inti li huma qishom *online friends* imma li qatt ma ltqajt magħhom?

NTB05: Le qas qatt ma nagħti affarijiet personali jew hekk.

Interviewer: Dawk li titkellem maghhom *online* tqishom bhala hbieb?

NTB05: Le żgur li le. Il-hbieb dawk li tiltaqa maghhom ta veru.

Interviewer: Le, just nies li tiltaqa magħhom għal logħob?

NTB05: Eħe.

Interviewer: Orrajt, taħseb li t-teknoloġija tista' tgħinek tiltaqa ma nies ġodda?

NTB05: Xi kultant iva u xi kultant le hux.

Interviewer: Per eżempju?

NTB05: Skond jekk il-profile tal-persuna hux tajjeb jew hux ħażin, skond hux.

Interviewer: Għax qed tgħidli inti forsi jkun hemm xi ħadd li jqarrak bik jew...

NTB05: Eħe umbagħad bla teknoloġija ma tantx tkun tista' tikkomunika sew ma' persuna oħra.

Interviewer: Eżatt jiġifieri forsi inti qed ngħidu li t-teknoloġija tgħinek biex iżżomm kuntatt ma' nies li taf.

NTB05: Iva, iva.

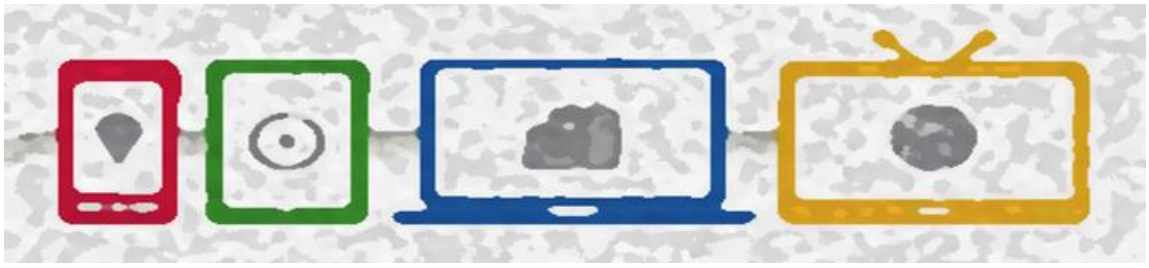
Interviewer: Grazzi hafna tat-twegibiet tieghek. Kont ta ghajnuna kbira.

NTB05: M'hemmx imniex!

Appendix D

Institute of Education

UCL



Dear College Principal,

I am a final year student reading for a doctorate in educational, child and adolescent psychology (DEdPsy) at University College London. In the coming months, I will be recruiting participants for my thesis research which will look at the use of screen-based media in adolescents with and without autism spectrum conditions with a particular focus on whether this technology has a role in the development of their peer relationships. Participants may be recruited from school within your college because they are between 11 and 16 years of age. Some participants may also be recruited because they have a diagnosis of autism spectrum condition.

What is the purpose of this study?

Technology, in particular the internet and social media, has become very prominent for young people especially with regards to their social lives. Young people on the autism spectrum often experience difficulties with social interactions, which may lead to difficulties with peer relationships.

Research also indicates that young autistic people are particularly drawn to screen-based media. Yet there is little knowledge about how they are using screen-based media, whether role technology has with regard to their peers and how this compares to typically developing adolescents.

What will happen if students and parents decide to participate in the research?

Once parents give their consent for their children to participate, adolescents will be asked to:

1. Participate in a short interview of about 15 minutes about their use of screen-based media.
2. Participate in a short cognitive assessment
3. Answer questions pertaining to the Friendship Qualities Scale
4. Keep a week-long log of screen-based technology use

What happens to the results of the research?

The results will contribute to a doctoral thesis required as part of the Doctorate in Educational Child and Adolescent Psychology (DEdPsy) at UCL Institute of Education. The results may also eventually be published in an academic or practitioner journal. Should the research be published in a journal that requires making the data available, the data would be provided only in a form that preserved the anonymity of all of the participants. Participation is anonymous and it is the responsibility of the researchers to ensure that any information provided by participants remains confidential. All information will be securely stored at the UCL Institute of Education on password protected computers.

This study has been approved by the Research Ethics Committee at the UCL Institute of Education, University College London as well as the Research and Development Department within the Ministry for Education and Employment in Malta.

Appendix E

Family Activity Diary Week starting: 04/12/17			
Day of the Week	**Activity** **Please provide a brief description of the activity**	**Location** **Where did this activity take place?**	**With Whom?** **Who was involved in this activity?**
Monday	Pick up from school	School	X (son) and I
	Dental appointment | Dinner	Dental Clinic X	X (son) and I
		At home	All of us
Tuesday	Pick up X (son) from school	School	X (son) and I
	Shopping at the supermarket	Supermarket X	X (son) and I
	Help with homework	At home	X (son) and I
	Dinner	At home	All of us
	Walk	Promenade in X	All of us

Appendix F

Frequency analysis of screen-media activities

	ASC Group		TD Group*	
Screen-media category	**Total counts**	**% of total count**	**Total counts**	**% of total count**
Phone Calls	15	2.04	51	5.39
Social media and instant messaging (Facebook, FB messenger, Chatting/Texting/Messaging, Snapchat, WhatsApp, SMS, Viber)	153	20.9	301	31.82
YouTube and videos (Pranks, Sports, Music, Drop/Smash Test, Repairs, How-Tos, Crafts, Comedies, uploading videos of self, Food competitions, Musicals, documentaries)	177	24.18	125	13.21
Music streaming and downloads (Spotify, Music downloads, soundtrack downloads)	20	2.73	130	13.74
Gaming (Phone games, racing/vehicle simulation, first-person shooter, sports, role playing, strategy, Nintendo, Minecraft, Roblox)	167	22.81	184	19.45
Web searching (e.g., school projects, homework, 2nd explanations, sports, fonts, flower names, word pronunciations, illnesses and diseases, gems, reptiles, song lyrics, girls names, t-shirts with pictures, fashion, celebrities)	91	12.43	86	9.09
Cartoons (Pixar, Anime, unspecified), TV Programmes (Discovery Science, Local TV series, E! Entertainment, TLC, Animal Planet, Cartoon Network, Nickelodeon, Unspecified) Movies, Series Episodes	104	14.21	64	6.77
Shopping	1	0.14	5	0.53
Voice recording	4	0.55	0	0
Total number of counts across all activities	**732**	**100%**	**946**	**100%**

*TD= Typically Developing