

The Prevalence of Anxiety in Children with ASD Compared to Typically Developing Children.

**Julie Forte
Stranmillis University**



The Prevalence of Anxiety in Children with ASD Compared to Typically Developing Children.

Julie Forte - Stranmillis University

Abstract

Recently, children's mental health has been a global concern prompting the development of many new initiatives by bodies including, the World Health Organisation (WHO) and the British Psychiatry Society (BPS). Presently, the Covid-19 pandemic has further exasperated this problem, through increasing stress, uncertainty and anxiety for children and their families. The aim of this study was to determine whether children with autism spectrum disorder (ASD) are more likely to experience anxiety disorders than typically developing children. A mixed method approach was employed to collect data from parents, children and early years professionals (EYP). The responses indicated that children with ASD have a greater risk of experiencing anxiety disorders than typically developing children. Additionally, this study highlighted that the current COVID-19 pandemic has negatively impacted children's mental health and the rate of anxiety in children is increasing in frequency and complexity. This is particularly unsettling, considering that the number of young children in Northern Ireland experiencing mental health difficulties is already 25% greater than in other areas of the United Kingdom.

The Prevalence of Anxiety in Children with ASD Compared to Typically Developing Children.

Julie Forte - Stranmillis University

Literature Review

The Pioneers of Autism:

The concept of 'autism', according to Chown (2012), was first conceived in 1911 by Eugen Bleuler while observing abnormalities in individuals' social relationships and interactions. However, it was more than three decades later when two Austrian doctors, Leo Kanner, in 1943, and Hans Asperger, in 1944, announced their detection of the condition known as autism (Chown and Hughes, 2016; Lyons and Fitzgerald, 2007). Our understanding of autism has transformed dramatically since Kanner and Asperger's findings, these perceptions will now be explored.

What is ASD?:

According to Aggernæs (2018), the perception of autism has evolved through time to the more contemporary concept characterising it as a pervasive developmental disorder. Blacher and Christensen (2011) highlight that research in autism spectrum disorder (ASD) is still in its early stages. Richards (2016) indicates that there are various forms of autism, hence, the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V, 2013) coined the umbrella term 'autism spectrum disorder' (ASD) to cover all of the individual conditions.

ASD is a permanent, neurodevelopmental disorder that affects individuals' social interactions, communication, sensory processing, interests and how they relate to the world they live in (American Psychological Association (APA), 2013a; Autism N.I.,2020; Geier, Kern and Geier, 2013). Additionally, Van Wijngaarden- Cremers, van Eeten, Groen, Van Deurzen, Oosterling and Van der Gaag (2014) propose that the central triad of impairments displayed by individuals with ASD are difficulties in social interactions, diminished verbal and non-verbal communication skills and limited or repetitive patterns of behaviour and interests.

ASD, according to the Department of Communities (2020), is a spectrum condition, signifying that although individuals with ASD experience certain shared difficulties, their distinct condition or symptoms will impact them differently. Rodgers and McCluney (2020) reiterate this when indicating that although some individuals with ASD may go on to live self-sufficient lives, others will depend on specialist support throughout their lifetime.

Rodgers and McCluney (2020) indicate that, here in Northern Ireland, there has been an upsurge in the number of assessments and subsequent positive diagnosis, and reveal that data obtained from the 2019/20 NI Schools Census indicates that 4.2% of children have a positive diagnosis.

Factor, Ryan, Farley, Ollendick and Scarpa (2017) report that children with ASD are more likely to encounter internalising and externalising difficulties than typically developing children. In agreement, Gara, Chhetri, Alrjoob, Abbasi and Rutkofsky (2020) stress that there is extensive evidence that individuals with ASD are at a greater risk of suffering from anxiety disorders. Having considered the relationship between ASD and anxiety, common childhood anxiety disorders will now be discussed.

Anxiety:

Individuals with ASD, according to landolo, López-Florit, Venuti, Neoh, Bornstein and Esposito (2020), typically encounter, at least, one mental health condition, with anxiety being the most prevalent. Anxiety is the natural sensation of panic that is triggered when individuals encounter stressful situations, it is, fundamentally, the body's innate 'fight or flight' response to anticipated danger (Mental Health Foundation, 2016; Young Minds, 2020). The National Health Service (NHS) (2020a) states that occasionally these feelings of anxiety can be never-ending, overpowering or excessive in comparison to the circumstance which negatively impacts the individual's everyday life. Johnco, Lewin, Salloum, Murphy, Crawford, Dane, McBride and Storch (2016) believe that separation anxiety, social anxiety and specific phobias are the most prevalent anxiety disorders experienced in childhood.

The Prevalence of Anxiety in Children with ASD Compared to Typically Developing Children.

Julie Forte - Stranmillis University

Separation anxiety disorder, according to Orenes, Méndez and García-Fernández (2017), is one of the most predominant anxiety disorders in young children and is characterised by the APA (2013b) as an extreme, and somewhat, inappropriate anxiety experienced by individuals when separated, or anticipating separation, from their home environment, their parents or other attachment figures. Social anxiety, according to the NHS (2020b), is an overpowering and long-lasting phobia of social situations which affects individuals' self-confidence, daily activities, interpersonal relationships and work or school life. Another common childhood anxiety disorder is a specific phobia. Fritscher (2020) describes a phobia as an immediate, powerful, persistent and irrational fear triggered by a specific object or situation. Elmore and Crouch (2020) report that childhood anxiety is increasing in frequency and severity. Having explored anxiety and its most common forms in early childhood, this study will now consider ASD and co-occurring anxiety.

Previous Research:

Kaat, Gadow, and Lecavalier (2013) stress that the presence of psychiatric conditions within the ASD medical phenotype has been a matter of debate for numerous years. Corbett, Muscatello and Blain (2016) argue that social interactions are extremely demanding for children with ASD and, subsequently, they present elevated avoidance behaviours. Furthermore, Corbett et al. (2016) note that developing research highlights the connection between sensory sensitivities, which is a key symptom of ASD and anxiety disorders. Therefore, one question needs to be asked, do children with ASD have a higher incidence of co-occurring anxiety or is it purely another symptom of their condition?

Having established that there is a possibility of misdiagnosis, Factor et al. (2017) states that a study identified that numerous symptoms extend across both ASD and anxiety. Additionally, very few studies focusing on anxiety have been adapted for the participation of children with ASD, they have been predominantly developed for typically developing children (van Steensel, Bögels and Perrin, 2011; Vasa, Mazurek, Mahajan, Bennett, Bernal, Nozzolillo, Arnold and Coury, 2016) This evidence illustrates a gap in previous studies with regards to using children with ASD as participants when researching the occurrence of anxiety. Having established the need for further research in the area of co-occurring anxiety in children with ASD, another current issue which needs to be explored is the impact of COVID-19 on children's mental health.

The Impact of the COVID-19 Pandemic:

The British Psychological Society (BPS) (2020c) reveals that the existing COVID-19 pandemic is the greatest public health global emergency for over a century. Knopf (2020) stresses that children may experience high rates of anxiety due to loneliness and isolation caused by the lockdown and school closures. According to the BPS (2020a), individuals are living in uncertain times, not knowing what the future will look like and having to find novel ways to cope.

Small (2020) reports that 41% of children identified that they are lonelier now than before lockdown, and 52% of parents consider their children's mental wellbeing as one of their greatest concerns. In contrast, the BPS (2020d) highlights that the lockdown enabled some children to spend more time with their families and those children who went into school benefitted from smaller class sizes with enhanced pastoral care.

Summary:

To summarise, the above evidence indicates that children with ASD have a greater risk of suffering from mental health disorders, with anxiety being the most dominant. Having established that the number of children being diagnosed with ASD, here in Northern Ireland, is increasing, additionally it appears that the number of children suffering with anxiety is also rising in frequency and complexity and the COVID-19 pandemic has impacted children's mental health.

The Prevalence of Anxiety in Children with ASD Compared to Typically Developing Children.

Julie Forte - Stranmillis University

Methodology

Introduction:

This section will outline and justify the choice of design, participants, materials and procedures employed to conduct the study, and specify the ethical considerations maintained throughout.

Design:

To address this study, a mixed method approach involving qualitative interviews with early years professionals (EYP) and quantitative online surveys for parents and children were selected to establish more thorough and reliable outcomes.

Turnbull, Chugh and Luck (2020) propose that a quantitative approach enables researchers to access a higher number of participants strengthening the validity of the results. Furthermore, Cohen, Manion and Morrison (2018) highlight that questionnaires or surveys can be time consuming to develop and the data gathered in responses can be limited. To resolve this issue, within the survey for parents there were opportunities for a number of qualitative style questions.

The researcher used EYP semi-structured interviews, which, according to Newby (2014) enables the researcher to investigate the subject further.

Participants:

The participants within this study were a convenience sample, consisting of special educational needs (SEN) teachers, a special educational needs co-ordinator (SENCO), SEN assistants, teachers, parents of Primary one to Primary four children and Primary three and four children. The participants were all connected to the researcher's work setting, which was an urban mainstream, co-education primary school, therefore, the study focused on children with high functioning autism.

One hundred and eighteen Primary one to four parents were contacted via their child's class Dojo App. Blaskova, Le Courtois, Baker, Gibson, Ramchandani, O'Farrelly and Fink (2020) highlight the importance of incorporating children's views and thoughts into research, therefore, there was an opportunity for Primary three and Primary four children, if they wished to participate, to complete a child friendly, online survey with their parents' consent.

The participants of the semi-structured interview included seven females aged between twenty-three and sixty-five, with between two- and thirty-years' experience of working in a school setting. Halliday, Kern, Garrett and Turnbull (2019) stress that involving directly affected participants, integrates the benefits of professional experts and individuals with personal experiences, enhancing the validity and reliability.

Materials:

Parents and Primary three and four pupils were given a link to the online SmartSurvey through their class Dojo App and seven EYP were asked to answer questions in a semi-structured interview via email. The researcher developed the questions using research gathered within the study's literature review. Artino, La Rochelle, Dezee and Gehlbach (2014) note that when developing questions or creating a questionnaire, it is beneficial to use the information gathered from the literature review.

The parent's survey contained fourteen questions, including a combination of Likert scale, multiple-choice and dichotomous questions, with a number of qualitative style questions.

The survey developed for the children had eleven questions, the first two were intended for the children's parents and the following nine were for the children to answer. Question 1 was mandatory and dichotomous, and directed to the parent, asking for permission for their child to

The Prevalence of Anxiety in Children with ASD Compared to Typically Developing Children.

Julie Forte - Stranmillis University

partake in the survey. The children were asked to rate how they felt in certain situations, using a self-rating scale with three possible answers.

Due to the current pandemic, the researcher could not conduct face-to-face interviews, therefore, a cover letter along with the semi-structured interview questions was emailed to the EYP. The first four questions were a mixture of open-ended, multiple-choice and dichotomous questions, and were developed to gather personal information about the participants. The following five questions were open-ended questions, produced to acquire information from the participants regarding their own professional experiences and perspectives.

Procedure:

After the ethics form was signed and receiving permission from the gatekeeper and the dissertation supervisor, the researcher asked the four teachers to send out the cover-letters including links to the online surveys to the children's parents via their class Dojo App.

The researcher emailed the cover-letter and semi-structured interview questions to the EYP who were asked to email their responses back to the researcher.

The findings from both online surveys and EYP interviews remained on the researcher's password protected laptop and were destroyed when the researcher's dissertation supervisor advised to do so. The results were compiled and analysed, and will be discussed later.

Ethics:

Research concerning people, according to Bergmark (2020), is controlled by ethical codes of conduct, for example, informed consent, anonymity, confidentiality and avoiding harm. The researcher followed guidance outlined by European Early Childhood Education Research Association (EECERA) (2015) within the Ethical Code for Early Childhood Researchers and the British Educational Research Association (BERA) (2018), to ensure ethical research throughout the study.

All participants were provided with impartial information about the content, objective and procedure. As the interviews and surveys were voluntary, completing and submitting the feedback was perceived as consent. The researcher ensured that the children knew that they were not obliged to participate in the study, along with acquiring parental consent. Confidentiality and anonymity were safeguarded throughout by using codes for the EYP, asking participants not to reveal their or their child's name on the survey and all data was stored on a password protected laptop.

The Prevalence of Anxiety in Children with ASD Compared to Typically Developing Children.

Julie Forte - Stranmillis University

Results, Analysis and Discussion

Introduction:

The primary aim of this study was to explore whether children with ASD have a higher occurrence of anxiety disorders compared to typically developing children. The key themes that emerged were, that children with ASD have a higher prevalence of anxiety, the rate of anxiety in young children is rising in number and complexity and the impact of COVID-19 on children's mental health. These three key themes were evident throughout and predominantly concur with previous literature. The participants' direct quotes will appear in bold in the following section and the four children with ASD are identified by the pseudonym Child 1,2,3 or 4.

Prevalence of Anxiety in Children with ASD:

The results indicate that children with ASD are more inclined to suffer from an anxiety disorder than typically developing children. 75% (n=3) of parents of children with ASD responded that their child regularly experiences anxiety compared to 11% (n=6) of typically developing children. This finding validates the ideology of Gara et al. (2020) who highlight, that children with ASD have a greater risk of experiencing anxiety than typically developing children. Child 3's parent responded that they neither agreed nor disagreed that he regularly experiences anxiety, however in the qualitative response the parent states that he **"has issues with food"**. Therefore, it could be argued that Child 3 has a food related anxiety, which EYP 6 revealed is a form of anxiety.

Another interesting view was highlighted by the parent of Child 1 when stating that her son **"has never had a play date"** and that he **"would avoid social situations generally"**. This is supported by Corbett et al. (2016) who believe that as children with ASD develop, they become more aware of their social limitations and begin to avoid social interactions with peers. Due to this social avoidance, Factor et al. (2017) highlight additional challenges such as, fewer friends, peer rejection, self-harming behaviours and depression. This was verified through the parent of Child 3 when revealing that regularly at night **"he will slip into a depression"** and say things like **"I have no friends"** and **"maybe it's better if I wasn't here"**.

Two children with a diagnosis of ASD completed the children's online survey, one responded that they were nervous or slightly nervous in all of the situations except when they are in a crowded or busy environment. The other child indicated that they only feel nervous when they hear people speak about the COVID-19 pandemic.

The responses from the EYP semi-structured interviews also indicate that children with a diagnosis of ASD are more likely to present with some form of anxiety. 86% (n=6) agreed that children with ASD were more likely to have an anxiety disorder whereas, the remaining 14% (n=1) were undecided. EYP 7 specified that **"all children with ASD present with some form of anxiety"**. This is in line with Lever and Geurts (2016) who propose that at least 69% of children with ASD suffer from anxiety disorders.

Children's Anxiety is Rising in Frequency and Complexity:

A second key theme that evolved from the qualitative responses in the parents' survey and the EYP interviews was that it appears that the level of childhood anxiety is rising in frequency and complexity. This was evident in the responses from the EYP interviews, with 100% (n=7) of the participants being in agreement. EYP 7 states that **"As an experienced SENCO, I am noticing higher numbers of children presenting with anxiety"**. In agreement, the parent of Child 3 indicates that he displays **"abnormally high levels of anxiety at times when it doesn't make sense"**. This concurs with Elmore and Crouch (2020) who indicate that the incidence of anxiety in young children is increasing, and due to early onset, these conditions frequently become deep-rooted and continuous. EYP 2 feels that it is a **"social wide issue"**. In agreement, the WHO (2017a) indicates that the number of individuals with mental ill-health globally is increasing along with the level of severity.

The Prevalence of Anxiety in Children with ASD Compared to Typically Developing Children.

Julie Forte - Stranmillis University

The Impact of COVID-19 on Children's Mental Health

The final key theme that was identified throughout this research project was the impact of the COVID-19 pandemic on children's mental health. The participants in the children's survey indicated that it was responsible for highest rate of anxiety, with 56% (n=15) feeling nervous or a little nervous when they hear others speak about COVID-19. The results from the parents' survey also support this view with 36% (n=21) of participants agreeing that their child's mental health has been impacted by the pandemic. The EYP interviews revealed that 71% (n=5) believe that it has impacted children's mental health. One parent stated that their child **"has trouble sleeping"** and worries about things that she **"would have previously been excited about"**. This was previously outlined by Knopf (2020) who stressed that rates of anxiety, and other mental illnesses, are likely to increase in young children due the current pandemic.

Another interesting view that emerged from the responses in relation to COVID-19 is the frequency of children feeling lonely and isolated, which concurs with Small (2020) who proposed that two in five children say that they are lonelier now than before the pandemic began.

Another issue that emerged from this study was that due to the pandemic some children are more knowledgeable and anxious about illness and death. EYP 7 stated that children have **"an increased awareness of disease and mortality"**. Another parent noted that their son understands that health care professionals are considered high risk and he confided in his grandmother that he was frightened that his parents would die as they are both hospital doctors. This underpins the ideology proposed by the BPS (2020c) who suggest that the COVID-19 pandemic has established anxiety in children with regard to worries about family members or themselves contracting the virus and mortality.

Alternatively, the parent of Child 1 believed that **"the pandemic provided the perfect scenario"** for their child, he was very happy not leaving home. Another parent reported that **"schools are more aware of wellbeing and mental health issues"**. This concurs with the BPS (2020b) who revealed that the pandemic has given children the opportunity to spend further time with their family, along with an increased awareness and attention to mental health and pastoral care issues in schools.

The Prevalence of Anxiety in Children with ASD Compared to Typically Developing Children.

Julie Forte - Stranmillis University

Conclusions and Recommendations

Conclusions:

As previously outlined this small-scale study was carried out to investigate whether children with ASD have a higher incidence of anxiety disorders than typically developing children. Through the analysis of the results from the participants, it is evident that children with ASD are more likely to suffer from anxiety disorders compared to typically developing children. Additionally, the participants identified that the rate of anxiety in children is increasing in number and complexity and that the pandemic has had an adverse impact on children's mental health.

Limitations

As this was a small-scale study, the research was conducted in one school, limiting the sample diversity and size. Participation from a more extensive selection of schools, particularly schools with special needs units, would increase the number of participants with children with ASD, enhancing the validity and reliability of the results. Due to COVID-19 the researcher was unable to conduct face-to-face interviews, eliminating the opportunity to explore the participants' responses further.

Recommendations for Future Study

Through analysis of the results from this study, it is evident that children in Northern Ireland, with and without ASD, are experiencing more complex mental health issues and in greater numbers from a very young age. Therefore, it may be advantageous to conduct research to identify any common root causes and potential interventions for prevention in mental health issues. This could facilitate the implementation of a more cohesive and responsive mental health service at a community level. Additionally, from the responses within the findings, the adverse impact of COVID-19 on children's anxiety levels was highlighted. It therefore may be valuable to conduct further in-depth research to increase awareness and knowledge of interventions and strategies, for both parents and EYP, to reinforce children's resilience, enabling them to manage any future difficulties that may arise.

The Prevalence of Anxiety in Children with ASD Compared to Typically Developing Children.

Julie Forte - Stranmillis University

References

- Aggernæs, B. (2018) 'Autism: a transdiagnostic, dimensional, construct of reasoning?', *European Journal of Neuroscience*, 47(6), pp. 515-533.
- Artino, A.R., La Rochelle, J.S., Dezee, K.J. and Gehlbach, H. (2014) 'Developing questionnaires for educational research: AMEE guide no.87', *Medical Teacher*, 36(6), pp. 463-474.
- American Psychological Association (APA) (2013) *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-V)*, available at <https://depts.washington.edu/dbpeds/Screening%20Tools/DSM-5%28ASD.Guidelines%29Feb2013.pdf> (accessed 13-07-2020).
- Autism NI (2020) *What is Autism?*, available at <https://www.autismni.org/statistics-1> (accessed 14-07-2020).
- Bergmark, U. (2020) 'Rethinking researcher-teacher roles and relationships in educational action research through the use of Nel Noddings' ethics of care', *Educational Action Research*, 28(3): pp. 331-344.
- Blacher, J. and Christensen, L. (2011) 'Sowing the seeds of the Autism field: Leo Kanner (1943)', *Intellectual and Developmental Disabilities*, 49(3), pp. 179-191.
- Blaskova, L.J., Le Courtois, S., Baker, S.T., Gibson, J.L., Ramchandani, P.G., O'Farrelly, C. and Fink, E. (2020) 'Participant engagement with play research – examples and lessons learned from the Centre of Play in Education, Development and Learning', *International Journal of Play*, 9(4), pp. 365-381.
- British Educational Research Association (BERA) (2018) available at, https://www.bera.ac.uk/wp-content/uploads/2018/06/BERA-Ethical-Guidelines-for-Educational-Research_4thEdn_2018.pdf?noredirect=1 (accessed 22-01-2021).
- British Psychological Society (BPS) (2020a) *A Resilience and Coping Framework for Supporting Transitions Back to School (Guidance)*, available at <https://www.bps.org.uk/news-and-policy/resilience-and-coping-framework-supporting-children-going-back-school> (accessed 03-07-2020).
- British Psychological Society (BPS) (2020b) *Covid-19 Research Priorities for Psychological Science: A Qualitative Analysis*, available at <https://www.bps.org.uk/news-and-policy/covid-19-research-priorities-psychological-science> (accessed 03-07-2020).
- British Psychological Society (BPS) (2020c) *Life Beyond Covid: The Long-Term Implications of the Pandemic for Our Economy and Our Society- Call for Evidence*, available at <https://www.bps.org.uk/sites/www.bps.org.uk/files/Policy/Policy%20-%20Files/BPS%20Response%20-%20Long-term%20implications%20of%20the%20Covid-19%20pandemic.pdf> (accessed 07-08-2020).
- Cohen, L., Manion, L. and Morrison, K. (2018) *Research Methods in Education* (8th edn.), Oxon: Routledge.

The Prevalence of Anxiety in Children with ASD Compared to Typically Developing Children.

Julie Forte - Stranmillis University

Corbett, B.A., Muscatello, R.A. and Blain, S.D. (2016) 'Impact of sensory sensitivity on physiological stress response and novel peer interactions in children with and without autism spectrum disorder', *Frontiers in Neuroscience*, 10(278), pp. 1-9.

Chown, N. (2012) 'History and first descriptions of Autism: a response to Michael Fitzgerald', *Journal of Autism and Developmental Disorders*, 42(10), pp. 2263-2265.

Chown, N. and Hughes, L. (2016) 'History and first description of Autism: Asperger versus Kanner revisited', *Journal of Autism and Developmental Disorders*, 46(6), pp. 2270-2272.

Department for Communities (2020) *Autism Awareness Guidance*, available at <https://www.communities-ni.gov.uk/articles/autism-awareness-guidance> (accessed 26-07-2020).

Elmore, A.L. and Crouch, E. (2020) 'The association of adverse childhood experiences with anxiety and depression for children and youth, 8 to 17 years of age', *Academic Pediatrics*, 20(5), pp. 600-608.

European Early Childhood Education Research Association (EECERA) (2015) *Ethical Code for Early Childhood Researchers* (revised version) <https://www.eecera.org/wp-content/uploads/2016/07/EECERA-Ethical-Code.pdf> (accessed 22-01-2021).

Factor, R.S., Ryan, S.M., Farley, J.P., Ollendick, T.H. and Scarpa, A. (2017) 'Does the presence of anxiety and ADHD symptoms add to special impairment in children with Autistic Spectrum Disorder?', *Journal of Autism and Developmental Disorders*, 47(4), pp. 1122-1134.

Fritscher, L. (2020) *DSM-5 Diagnostic Criteria for a Specific Phobia*, available at <https://www.verywellmind.com/diagnosing-a-specific-phobia-2671981> (accessed 15-08-2020).

Gara, S.K., Chhetri, A.G., Alrjoob, M., Abbasi, S.A.A. and Rutkofsky, I.H. (2020) 'The sensory abnormalities and neuropsychopathology of autism and anxiety', *Cureus*, 12(5), pp. 1-11.

Geier, D.A., Kern, J.K. and Geier, M.R. (2013) 'A comparison of the Autism Treatment Evaluation Checklist (ATEC) and the Childhood Autism Rating Scale (CARS) for quantitative evaluation of autism', *Journal of Mental Health Research in Intellectual Disabilities*, 6(4), pp. 255-267.

Halliday, A.J., Kern, M.L., Garrett, D.K. and Turnbull, D.A. (2019) 'The student voice in well-being: a case study of participatory action research in positive education', *Education Action Research*, 27(2): pp. 173-196.

Iandolo, G., López-Florit, L., Venuti, P., Neoh, M.J.Y., Bornstein and Esposito, G. (2020) 'Story contents and intensity of the anxious symptomatology in children and adolescents with Autism Spectrum Disorder', *International Journal of Adolescents and Youth*, 25(1), pp. 725-740.

Johnco, C., Lewin, A.B., Salloum, A., Murphy, T.K., Crawford, E.A., Dane, B.F., McBride, N.M. and Storch, E.A. (2016) 'Adverse parental, perinatal and neonatal experiences in children with anxiety disorders', *Child Psychiatry and Human Development*, 47(2), pp. 317-325.

Kaat, A.J., Gadow, K.D. and Lecavalier, L. (2013) 'Psychiatric symptom impairment in children with Autism Spectrum Disorders', *Journal of Abnormal Child Psychology*, 41(6), pp. 959-969.

The Prevalence of Anxiety in Children with ASD Compared to Typically Developing Children.

Julie Forte - Stranmillis University

Knopf, A. (2020) 'During and after Covid-19, anxiety and depression will increase: study', *Brown University Child and Adolescent Behaviour Letter*, 36(9), pp. 6-7.

Lever, A.G. and Geurts, H.M. (2016) 'Psychiatric co-occurring symptoms and disorders in young, middle-aged, and older adults with autism spectrum disorder', *Journal of Autism and Developmental Disorders*, 46(6), pp. 1916-1930.

Lyons, V. and Fitzgerald, M. (2007) 'Asperger (1906-1980) and Kanner (1894-1981), the two pioneers of Autism', *Journal of Autism and Developmental Disorders*, 37(10), pp. 2022-2023.

Mental Health Foundation (2016) *Mental Health in Northern Ireland: Fundamental Facts*, available at <https://www.mentalhealth.org.uk/sites/default/files/FF16%20Northern%20ireland.pdf> (accessed 15-08-2020).

MindWise (2020) *Mental Health Conditions- Anxiety Disorders*, available at <https://www.mindwisenv.org/mental-health-conditions/anxiety-disorders/> (accessed 14-07-2020).

National Health Service (NHS) (2020a) *Every Mind Matters, Feeling Anxious?*, available at <https://www.nhs.uk/oneyou/every-mind-matters/anxiety/> (accessed 08-09-2020).

National Health Service (NHS) (2020b) *Social Anxiety (Social Phobia)*, available at <https://www.nhs.uk/conditions/social-anxiety/> (accessed 15-08-2020).

Newby, P. (2014) *Research Methods for Education* (2nd edn.), Oxon: Routledge.

Oreans, A., Méndez, X. and García-Fernández, J.M. (2017) 'Spanish validation of the separation anxiety assessment scale', in *Child Psychiatry and Human Development*, 48(3), pp. 468-477.

Richards, M. (2016) "You've got autism because you like order and you do not look into my eyes': some reflections on understanding the label of 'autism spectrum disorder' from a dishuman perspective', *Disability and Society*, 31(9), pp. 1301-1305.

Rodgers, H. and McCluney, J. (2020) *Prevalence of Autism (including Asperger Syndrome) in School Age Children in Northern Ireland (Annual Report 2020)*, available at <https://www.health-ni.gov.uk/sites/default/files/publications/health/asd-children-ni-2020.pdf> (accessed 13-7-2020).

Small, J. (2020) *PHE launches UK's First Mental Health Campaign Targeting Children and Young People*, available at <https://www.campaignlive.co.uk/article/phe-launches-uks-first-mental-health-campaign-targeting-children-young-people/1693813> (accessed 08-09-2020).

Thomas, G. (2017) *How to Do Your Research Project- A Guide for Students*, London: SAGE Publications Ltd.

Turnbull, D., Chugh, R. and Luck, J. (2020) 'Learning management systems: a review of the research methodology literature in Australia and China', *International Journal of Research and Method in Education*, DOI: 10.1080/1743727X.2020.1737002.

Van Steensel, F.J.A., Bögels, S.M., Perrin, S. (2011) 'Anxiety disorders in children and adolescents with Autistic Spectrum Disorders: a meta-analysis', *Clinical Child and Family Psychology Review*, 14(3), pp. 302-317.

The Prevalence of Anxiety in Children with ASD Compared to Typically Developing Children.

Julie Forte - Stranmillis University

Van Wijngaarden-Cremers, P.J.M., van Eeten, E., Groen, W.B., Van Deurzen, P.A., Oosterling, I.J. and Van der Gaag, R.J. (2014) 'Gender and age differences in the core Triad of Impairments in Autism Spectrum Disorder: a systematic review and meta-analysis', *Journal of Autism and Developmental Disorders*, 44(3), pp. 627-635.

Vasa, R.A., Mazurek, M.O., Mahajan, R. Bennett, A.E., Bernal, M.P. Nozzolillo, A.A., Arnold L.E. and Coury, D.L. (2016) 'Assessment and treatment of anxiety in youth with autism spectrum disorders', *Pediatrics*, 137(S2): pp. S115-S123.

World Health Organisation (WHO) (2017) *Depression and Other Common Mental Disorders- Global Health Estimates*, available at <https://apps.who.int/iris/bitstream/handle/10665/254610/WHO-MSD-MER-2017.2-eng.pdf> (accessed 14-07-2020).

Young Minds (2020) *Anxiety*, available at 2020) <https://youngminds.org.uk/find-help/conditions/anxiety/> (accessed 14-07-2020).