Autistic Tendencies at University:
An Exploration of Distress, Coping Behaviours, and Comorbidities

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Abstract

In recent years, there has been an increase in the number of autistic students attempting tertiary education. However, data show that only about a third of autistic students who enrol in university complete their qualification. The literature suggests that this is usually not due to their intellectual abilities. The current study aims to shed light on factors that might contribute to this low completion rate through gathering data on distress, wellbeing, and coping strategies in autistic students. Due to the heterogeneous nature of autistic traits, and the prevalence of autistic tendencies in the general population, this study employs the use of correlational data to explore possible links.

Eight tertiary institutions across New Zealand were contacted and 430 respondents completed a self-report questionnaire. Students with higher autistic tendencies scored higher on nearly all forms of psychological distress (*Anxiety, Depression,* and *Stress* from the DASS-21; *Self-Criticism,* and *Generalisation of Failure* from the ATS; *Mental Health Component* from the SF-8). Higher autistic tendencies were correlated with scoring lower on most aspects of psychological wellbeing (*Overall Wellbeing, Environmental Mastery, Personal Growth, Positive Relations with Others, Purpose in Life, and Self- Acceptance, as measured by the Ryff Scales of Psychological Wellbeing*). Results showed an association between higher AQ scores (Autism Quotient; measuring autistic tendencies) and engaging in maladaptive coping strategies (*Expression of Negative Feelings, Behavioural Disengagement, and Avoidance; as is measured on the Brief COPE)*. Finally, students with higher autistic tendencies were more likely to report diagnoses of psychiatric disorders in addition to their autism diagnosis.

Students who reported a diagnosis of autism (3.7%), were compared to students who reported clinically significant levels of autistic traits but had no formal diagnosis (5.1%; indicated by a score of 32 or above on the AQ measure). No significant differences were found between these two subgroups for any of the psychological wellbeing or distress variables measured, nor physical and mental health components, or coping behaviours. The only significant difference

between the two groups was that the diagnosed group had nearly double the rates of *diagnosed* depression than the clinically significant group. This is argued to be a result of contact with mental health professionals, and does not appear to reflect a difference in the experienced rates of depression between the two groups.

These findings have strong clinical implications for future interventions at university level and highlight the need for universities to screen for autistic traits in order to adequately support vulnerable students. The best way to implement lasting changes will be to provide tailored programmes or services to address specific areas causing student distress. No significant differences were found between the diagnosed students and the students displaying clinically significant levels of autistic tendencies. Therefore, there is a need to support all students displaying clinically significant autistic traits, and not make services contingent upon a student having an official diagnosis.

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Chapter 1: Introduction and Literature Review

In recent years, there has been an increase in the number of autistic students attending university (White et al., 2011). Alarmingly, only a small portion of these students completes their tertiary qualification (Newman et al., 2011). This is despite the majority of these students being intellectually capable enough to succeed at their academic work (Anderson & Butt, 2017). Of even more concern is the disproportionately high rates of psychiatric and medical challenges these students face (Croen et al., 2015).

Despite these challenges, most research on autism has a tendency to focus on children. When the research does focus on adults, this is often limited to factors such as depression and anxiety, which does not create a sufficiently thorough image of the distress experienced by these students in a tertiary environment. It is for this reason that the current study will focus on a broader range of factors that contribute to psychological distress and how students cope with distress in order for future research and interventions to have more data to draw from.

Autism Spectrum Disorder

History

Autism was first described as a separate disorder in 1943 by Leo Kanner, who conducted 11 case studies on children aged 2-11 who were observed from a range of different clinics or homes. The condition was observed in eight boys and three girls and marked by an overarching theme of extreme aloneness.

Through observation, interviews and parent reports, Kanner (1943) identified some common characteristics in the children. The children were identified as self-sufficient, not seeking out social contact with others, and did not relate to their caregivers in a normal manner. They were reported to appear obsessively absorbed in their own worlds and became severely distressed if their environment were changed or intruded upon. The main aspects of the disorder

were noted as the children's inability to relate to others, autistic aloneness, excellent rote memory that lacked social communicative value, literalness in their use of language, an inability to generalise situations or objects, and anxious obsession with sameness, limitations in spontaneous behaviours, and good cognitive potentialities (Kanner, 1943).

Kanner (1943) further argues that without the distinction of an autism disorder, affected children were often incorrectly diagnosed as being intellectually disabled, or as displaying signs of childhood schizophrenia. However, due to characteristics such as excellent rote memory and an appearance of intelligence in their behaviours, autism was distinguished as separate from an intellectual disability. While it is true that a dual diagnosis of autism and intellectual disability can be made (Croen et al., 2015), intellectual disability is not part of the diagnostic criteria for autism, and is found in only a portion of autistic individuals (19% according to Croen et al., 2015).

Furthermore, Kanner goes on to describe a key difference between autism and childhood schizophrenia; children with childhood schizophrenia appear to develop normally until the onset of schizophrenia, at which time they retreat into a world of their own. With autism, the child is born with an innate lack of social interest and extreme aloneness (Kanner, 1943) - they are in their own world from the start.

A year after Kanner identified autism disorder, Hans Asperger identified children that he described as having fundamental disturbances in their behaviour that resulted in severe and characteristic challenges regarding social integration (Asperger, 1991). Asperger presented case studies on three young boys that were referred by their schools for behavioural problems and one that appeared to have autism as a result of brain injury. Throughout the cases, he noted problems in relation to relating to others, mechanical learning, and a lack of emotional affect. Destructive and aggressive behaviours were noted, along with an appearance of sadistic or malicious intent and impaired motor skills were present in all the cases. Despite these problems, Asperger noted that the children had exceptional verbal ability and while this was often not expressed in

a socially meaningful way, the linguistic structure and level of expression was comparable to that of adults.

Children were reported to have a distinct lack of expression, both facial and through bodily movements, and often appeared to be gazing into a “void”. He reported that the children spoke without looking at other people, and instead appeared to announce statements or answers to no one or nothing in particular.

Despite the children having been referred for problem behaviours at school, they all appeared to have exceptional rote memory, and possessed great knowledge when it came to their special interests. He stated the need for exceptional methods of teaching for exceptional human beings, and their specific challenges. While recognising individual differences in learning, he did comment that teachers should try to use an emotionless tone of voice, and give statements that were either general or objective law. Furthermore, it was suggested that teachers should mimic the somewhat abnormal way of talking that these students used. He noted that while incredibly egocentric and focused on their own wants and desires, autistic children were surprisingly suggestable.

He made the argument that while affected children with low intellect often have poor life outcomes, those with average or higher intellectual ability can often have very successful careers, and fulfil their social roles. He placed emphasis on their “autistic intelligence” which was characterised with unique abstract thinking and experiences. Indeed, their personal experiences and views seemed to be the main way these children were able to learn, as they did not respond positively to teaching methods that relied on mechanical learning or sharing adult knowledge.

What was interesting to note was that Asperger identified autism as a personality characteristic instead of a disorder. Although comparing it to both schizophrenia and brain damage, he noted that autism was distinct as it did not progressively get worse (as psychosis in schizophrenia) and occurred in both intellectual able and severely disabled children.

While there was clearly many similarities between observations made by Kanner and observations made by Asperger, the latter reasoned that all issues for the autistic person stemmed from their challenges to adapt to their social

environments. He observed that while both desirable and undesirable features of autism were present in a child, the socially undesired often outweighed the desired features. A key difference in Asperger's work was that he looked into genetic factors for the cause of autism and while he was unable to research specific genes he noted that in all 200 cases he had seen, during his life at that the time of his article, autistic features were present in at least one of the children's parents. While he did observe children with severe intellectual disability, he mainly focused on children with higher intelligence and his name became synonymous with high functioning autistic children, who were later diagnosed as having Asperger syndrome (Barahona-Corrêa & Filipe, 2016; Wing, 1994).

While both these studies provide great insight into the disorder, they appear to be describing the same underlying condition regardless of intellectual functioning. It was as such that the most recent version of the DSM (the DSM-5; American Psychiatric Association, 2013), simplified the diagnostic process by amalgamating Asperger Syndrome (AS) and Autism Disorder into the broader Autism Spectrum Disorder (ASD) phenotype. Diagnoses made based on a larger range of symptoms relating to social/communicative impairments, and repetitive motor movements or interests that can be seen in both Kanner and Asperger's accounts of the condition.

The treatment of Autism

As autism became recognised as a separate disorder, the way society viewed those affected shifted and so did the treatments they received. In the mid to late 1900's the belief existed that autistic individuals were incapable of improving and that autism came about as the result of cold and distant parenting (termed "refrigerator parenting"; The Lovaas Center, n.d.). Children were removed from their parental homes and placed in institutions. It wasn't until Ole Ivar Lovaas (1927 – 2010) started applying behavioural principles (ABA) to help reduce, sometimes fatal, self-injurious behaviours in autistic patients (for an overview of his work see Smith & Eikeseth, 2011) that observable changes in behaviour and quality of life were observed. This was a breakthrough in treatment and

provided hope for families of affected children. Punishment was used to reduce unwanted or harmful behaviours while patients were taught socially appropriate and self-care skills in what was considered an intensive regime that often covered 30- 40 hours a week (Smith & Eikeseth, 2011).

Criticism was raised about the ethical implications of teaching socially relevant behaviours as this is viewed as unwanted attempts to "cure" autism and reduce the idiosyncrasies of the affected individuals (Kapp, Gillespie-Lynch, Sherman, & Hutman, 2013). Indeed, recent years have seen a significant backlash from the autistic community regarding the ethical implications of "curing" autism (for example, Dachez & Ndobo, 2017; Kapp, 2013; Lynch, 2019), both through trying to find a cause for autism and through trying to reduce the behavioural tendencies associated with the disorder.

In response to controversy in the way ABA interventions were impacting autistic children, the Neurodiversity Movement (NM) was created, arguing that autism in of itself is not a disability; instead, it is the environment that disables the individual (Kapp, 2013). In addition, it was argued that many of the "problem" behaviours ABA were eliminating were in fact normal expressions of human functioning (Jaarsma & Welin, 2012). The NM asks that more efforts should be made to provide support and treatment to autistic individuals instead of trying to find a cure (Kapp et al., 2013).

With respect to the efforts of the NM, in this thesis, the term "autistic individual" will be used in preference of "individual with autism". This is due to the argument that autism is not just an addition to the person but a collection of traits that can come about due to natural variation in human functioning (Jaarsma & Welin, 2012), and as such influences their entire character. To break this down, the NM argues that autism should be considered as a type of personality instead of a disorder; instead of saying an individual is a person with curiosity (or autism), it should be considered that the individual is curious (or autistic).

While the literature has revealed a strong hereditary link (Muhle, Trentacoste, & Rapin, 2004; U.S. National Library of Medicine, n.d.), the exact genetic or environmental factors that cause autism continue to elude our

knowledge. Increasing research has focused on different genes but as noted by Frazier and McDougle (2014), the literature has suggested that hundreds of genes could contribute to causing autism (Talkowski, Minikel & Gusella, 2014). As such, it may take a significant amount of time before a cause for autism is found, if one can be found.

Furthermore, concern was raised that by finding a specific cause for autism, society might try to eliminate it from the genepool, as has been happening with Down Syndrome (Will, 2018; Camarata, 2018), thus destroying the neurodiversity that autism brings (Jaarsma & Welin, 2012).

Our current understanding of autism is that it is a lifelong neurodevelopmental disorder, characterised with impairments in social and communication skills, and repetitive interests or motor movements (American Psychiatric Association, 2013; APA). While a diagnosis of autism was rare 50 years ago, more accurate diagnosis, and a broader diagnostic criteria has led to significant increases in reported prevalence rates (Hansen, Schendel, & Parner, 2015; World Health Organization (WHO), n.d.; Centers for Disease Control and Prevention (CDC), n.d.). Currently, prevalence is estimated to be roughly one in 59 people. Although this has been shown to vary greatly between countries and even the different studies in the same country (CDC, 2016), previous studies on the topic have concluded that this variation is unlikely to be due to actual incidence rates, and might instead represent a changing diagnostic criteria (Hansen et al., 2015). Currently, there have been no prevalence studies done for autism in New Zealand. However, due to fairly stable prevalence rates across countries it can be expected that these rates (one in 59 with males being four times more likely to be diagnosed with autism than females) will be appropriate estimates for a New Zealand population.

A change in the most recent version of the DSM allows comorbid genetic or psychiatric disorders to be diagnosed alongside Autism Spectrum Disorders (ASD). This permits for a more accurate diagnosis, enabling health practitioners to get a holistic picture of a patient's psychiatric state. Indeed, many autistic individuals present with comorbid psychiatric disorders (Croen et al., 2015), and restricting the number of diagnoses an individual with autism can receive

undermines their chances of receiving treatments that will cater to their unique psychological makeup.

Due to the heterogeneous functioning of autistic individuals, and their different skill levels, autism was defined as a spectrum disorder (National Institute of Mental Health, n.d.). This means that while two people might both be autistic, one could present less severe challenges and be classified as "high-functioning". By placing autism on a spectrum, it is acknowledged that autistic traits are present in the general population, and can be displayed despite the absence of an autism disorder.

Ho, Todd, and Constantino (2005), set out to discover whether twins were more likely to display autistic traits than non-twins were. They did this by comparing results from one twin for 802 twins-pairs to data from 255 non-twins. Questionnaires were sent out to the parents of the children and results showed that autistic traits were found in the general population. More specifically, it was found that male twins had higher rates of autistic tendencies than non-twins, and that twin pairs in which both twins were male had higher autistic tendencies than if one of the twins were female. Males had higher reported rates of autistic tendencies than females but overall both genders displayed some level of autistic tendencies. This is important to note as it supports the notion that autistic traits can represent natural variations of human characteristics (Kapp et al., 2013).

Despite an increase of early-intervention programmes that target functional skills, many young autistic adults still fail to complete higher education (Newman et al., 2011). A possible reason for this is the large discrepancies between services provided to autistic children, and services provided to autistic individuals after the completion of high school (Remnick, 2019; Roux, 2015). While some services do exists to support autistic individuals into adulthood, these tend to vary depending on location and are significantly less intensive than those provided in schools (Anderson & Butt, 2017).

Autism at university

The following section provides a review of the current literature regarding autistic university students, their challenges, and which interventions and treatments have been shown to be effective. The last two articles explore the need for transition programs to help these students adjust to a new environment and provides an overview of one program that aims to do so.

What we know so far

Recent years have seen an increase in the number of autistic students moving on to enrol in post-secondary education (White et al., 2011). Newman et al. (2011) used data from the U.S. Department of Education's National Longitudinal Transition Survey (NLTS-2) and found that nearly 44% of transition age autistic individuals pursue postsecondary education. Of these, only 39% are likely to graduate; compared to the 53% of NT students and 41% of students with specific learning disabilities (Newman et al., 2011).

The large rate of incompletion reported by Newman et al. (2011) is not necessarily a new phenomenon; research has previously shown that autistic students often perform below what would be expected for their IQ levels (Kim, Bal, & Lord, 2018). A thematic analysis of several recent studies (Accardo, Kuder, & Woodruff, 2018; Anderson & Butt, 2017; Anderson et al., 2018; Bolourian, Zeedyk, & Blacker, 2018; Elias & White, 2018; Jackson, Hart, Brown, & Volkmar, 2018; White et al., 2011; White et al., 2017; Zeedyk, Bolourian & Blacker, 2018) revealed five key themes that contributed to autistic students meeting unfavourable tertiary outcomes.

A focus on academic skills

The first theme that emerged stemmed back as far as high school preparation. Anderson and Butt (2017) collected qualitative data in the U.S. from 18 families with regard to their autistic child attending tertiary education. Interviews lasted 60-90 minutes with 11 interviews being parent only, and the remaining seven including both the parent and student. Both parents and students noted that high schools often focused on the ASD students' academic achievement and

extrapolated that achievement to university achievement. It is argued that by placing emphasis on academic achievement, high schools fail to address students' challenges in areas such as social- communication, executive functioning, mental health concerns, and a lack of life skills (Anderson & Butt, 2017). Downplaying non-academic challenges often leads to serious consequences when the students enter a university environment in which their previous supports are no longer available (Anderson & Butt, 2017).

Lack of knowledge or acceptance about autism at university

Zeedyk et al. (2018) set out to explore the experiences of autistic students at university, and test faculty knowledge of autism. In their first study, they utilised semi-structured interviews to gather data from 13 ASD students and 18 faculty members. Their second surveyed 132 faculty members and aimed to add data to the information gathered in their first study. Through their two studies, the second theme to emerge is that ASD students often meet resistance at university from their peers, professors, and the disability service itself in regards to their unique challenges (Zeedyk et al., 2018). Autism has frequently been identified as a "hidden" disability in that it can be hard to identify which students have autism without them disclosing their diagnosis (Zeedyk et al., 2018); concern has been raised that this sometimes causes faculty members to refuse signing accommodation letters as the student does not visually appear disabled (Zeedyk et al., 2018). Students have reported feeling that many of their lecturers failed to appreciate how their unique challenges affected academic functioning (Bolourian et al., 2018).

However, one promising finding was that the majority of faculty members in Zeedyk et al. (2018)'s study were willing to learn more about autism to better support their students. Indeed, a number of their participants conducted independent research when they discovered they had an autistic student in their class; however, due to the sheer amount of information online they often felt overwhelmed and discouraged (Zeedyk et al., 2018).

Lack of appropriate services and accommodations

The third theme to arise is the lack of appropriate services and accommodations. University disability centres often have limited variety in the services they are

able to provide, and often focus on services better suited for students with physical impairments or a specific learning disability (Zeedyk et al., 2018). These services, while useful for some students, fail to provide adequate support for the unique challenges faced by autistic students (Anderson & Butt, 2017; Zeedyk et al., 2018).

Due to the lack of understanding of autism, some students have reported being reluctant to utilize services for fear that their disability's validity will be questioned (Zeedyk et al., 2018). Others have commented that they wanted to prove themselves, prove that they can succeed despite their impairments (Bolourian et al. 2018).

Elias and White (2018) highlighted the fact that often ASD students may not have the necessary skills to self-advocate or utilise the services provided to them. This makes it difficult for the disability centre to support these students as they are unable to provide assistance until the students approach them or disclose their disability (Elias & White, 2018). It was their recommendation that successful supports will need to be initiated *before* university starts so that parents can still be involved and act as mediators between their children and services providers.

Lack of motivation and reliance on others

The fourth theme that emerged was that ASD students often lacked the motivation to fully engage with the university experience. Parents highlighted frustration with their inability to motivate their children to approach university services and take advantage of the help they offer (Anderson & Butt, 2017). Some parents had to go above and beyond to support and motivate their children by calling or physically coming onto campus to make sure they get ready for class on time (Anderson & Butt, 2017). For example, it was noted that one of the students was unable to receive their accommodations as they never went back to the disability centre to pick up the forms that they needed to give to their lecturers (Anderson & Butt, 2017).

Loneliness and negative peer interactions

The final theme that will be discussed is students' experience of loneliness and negative peer interactions. It is well known that autistic individuals struggle with

forming lasting friendships due to social and communicational challenges, and a lack of understanding when it comes to appropriate behaviours. These challenges accompany students to university and there they often do not have the support they received prior to university (Anderson & Butt, 2017). Jackson et al. (2018) found that 75% of autistic students in their sample reported feeling left out, isolated, and lacking companionship some of the time or often. This finding was supported by Bolourian et al. (2018), who found ASD students often felt lonely and that those with average or higher cognitive ability were often aware of their challenges but did not necessarily have the skills to manage them in a university environment. In Anderson et al.'s (2018) study 61% of their 48 respondents reported that loneliness was a big or moderate concern for them.

However, no significant difference in the desire for more social relationships or friends have been reported between ASD and NT students (White et al., 2011). This might just mean that while there is no difference in desire for friendships, those with autism are less successful in making and maintaining friendships at a university level (White et al., 2011). Due to social and communicative skills being a strong challenge for most autistic students this seems likely. Accardo et al. (2018) found that many ASD students preferred building relationships with graduate students or faculty members over their peers.

Taken together, these themes highlight issues that need to be addressed in order to support autistic students to complete their university journey. Not only does failing at university lead to reduced self-esteem and an increase of suicidal ideation (Anderson & Butt, 2017), in most cases, these students are intellectually capable enough to succeed academically. Often it is the social side of university that causes autistic students to stumble and fall (White et al., 2011; Anderson & Butt, 2017).

Promoting knowledge of autism at a university level and establishing positive interactions while reducing negative ones might be one of the key elements to helping autistic students succeed at university (Zeedyk et al., 2018). Increasing the supports available and tailoring them to meet the heterogeneous

needs of an autistic population is necessary if we are to see these students succeed.

Treatments and Interventions

As noted above, while universities commonly have support and accommodations in place for students with disabilities, these rarely cater to the unique needs of the autistic community (Barnhill, 2016). The literature shows that to be successful, services should provide support for the needs of a given individual as opposed to a blanket treatment based on the autistic diagnostic criteria (Barnhill, 2016; Anderson & Butt, 2017).

Accardo et al. (2018) conducted a 2-year longitudinal study in which they asked 23 autistic college students in the U.S. about the accommodations and support services that they preferred; they included both academic and non-academic services. Their findings showed that the students appreciated, and desired both academic and non-academic support systems but might not always recognise which supports they need. They found that among the most frequently used supports were receiving copies of lecture notes, priority registration, and using technology in the classroom. Students valued one on one academic supports such as academic coaching, tutoring, and the use of a writing centre. Counselling, faculty mentoring, and housing accommodations were preferred supports with 91% prioritising academic coaching as their preferred accommodation and 70% preferred a university transitioning program. It was found that quality of life outcomes were strongly associated with daily living supports at the start of transitioning to college, weekly supports (i.e. coaching and counselling) and mentoring (either by faculty members or graduate students).

Hillier et al., (2018) implemented a support group for 52 autistic students in the U.S. designed to address common challenges they faced. The program spanned seven weeks with each week having a separate topic: *Introductions, Academic skills, Interpersonal communication and relationships*, *Working in groups, Future plans*, *Time and stress management*, and *Bringing it all together.*

Students met for one hour a week in groups of four to seven. Each session followed the same structure with 5 minutes free chat, 10 minutes to assess goal progress, 30 minutes for that week's topic, 10 minutes for questions, and 5 minutes to review, discuss plans for the week, and set goals.

The intervention was rated as worthwhile, and participants reported higher rates of self-esteem, reduced levels of loneliness and lower levels of anxiety upon completion. No significant differences were found for rates of social anxiety, academic distress, and depression. It should also be noted that no comparison group was used and as such differences might be due to becoming familiarised with the university environment as opposed to the programme itself.

The authors reaffirmed that services should be person centred and that even a relatively easy to implement programme can have significant benefits for students. It was also noted that students were open to support groups as long as it was not advertised as social skills groups (also see Barnhill, 2016). A qualitative analysis of feedback revealed that students felt more comfortable with implementing strategies to reduce stress and anxiety, increased their executive functioning skills (time management, and setting and meeting goals), and improved their understanding (both of social interactions and of how to access resources). However, results were limited by participants' willingness to respond. Only half of their respondents (26 out of 50) participated in the focus group and only 25 or 26 respondents filled in their pre- and post – questionnaires.

Overall this study, while limited by their participants' response rates, lack of follow-up information, and a lack of a control group, showed a promising service that could be relatively cheap to implement (as securing funding can often be a challenge for service providers; Barnhill, 2016).

Siew, Mazzucchelli, Rooney, and Girdler (2015) evaluated a pilot year for the Curtin Specialist Mentoring Program (CSMP) in Western Australia. The primary purpose of the study was to see if the program was able to improve the wellbeing, academic performance, and retention rates of 10 autistic students. The CSMP aims to provide flexible one on one support for students targeting their individual needs through the use of a personal mentor. The program relies

on postgraduate students (neurodiversity not specified) who provide support to ASD students in areas relating to managing the demands of university life, encouraging skill development, and learning the skills to manage demands independently in the future. Mentors meet with their ASD students once a week for an hour to discuss current challenges and demands. Participants and mentors are also encouraged to participate in 90-minute weekly Curtin Social Groups (CSG). All mentors received specialist training before commencing their role and had weekly group supervision meetings with the program facilitators.

To judge the effectiveness of the program, a battery of tests on wellbeing and communication were given to participants prior to participation, and again five months after the completion of the program. Measures of academic success and retention were also collected five months after completing the program along with semi-structured interviews on participant experiences. Results shows that participant felt more supported after the program, and had reduced ratings of apprehension towards general communication.

Students reported high satisfaction with the program, and qualitative analysis from the semi-structured interviews revealed that students appreciated the constant and stable support of the program and that it was delivered in a flexible and individualised fashion by someone who was their peer. The students felt that the program helped them transition to university, manage their academic work, communicate their needs, manage their emotions, and socialise with others.

While this program appears promising, it should be noted that no significant differences were found in participants' overall anxiety scores, state communication apprehension (anxiety experience only around certain people or events), and perceived communication competence. As such, challenges might arise when the program has finished and the mentor no longer wishes to be in contact with the student. To make this program more viable in a university context it might benefit from a more active approach to teaching missing skills instead of predominantly providing social support in the form of friendship and counselling.

The next two studies both focus on transitioning programs. The first study by Nuske et al. (2019) conducted a meta-analysis, reviewing 27 articles in order to describe difficulties both team members of ASD children and the children themselves may face during major transition periods (predominantly transitioning to a new school). Student ages' had to be below 18 and of the 27 articles, 10 were focused on primary school aged children while the remaining 17 focused on secondary school. They explored what strategies to support better transitions are currently available and while their focus is on school-aged children, the results are still important to consider for young adults transitioning into university.

Students were found to experience significant challenges in regard to managing anxiety, communicating with peers, and adapting to new routines. Concern was raised about adapting to a new environment and challenges with disorientation and social pressure noted. It was suggested that impairments in adaptive functioning, executive functioning, processing speed, sensory sensitivities, emotional regulation, attention, and repetitive behaviours could account for why autistic students are more likely to become overwhelmed by a transition than their NT counterparts.

It was suggested that students be prepared for transition ahead of time. Key methods for doing this was to take the child to the new school and show them around, creating predictability by providing the student with visual supports, setting up a peer to act as social support at the time of transition, and teaching coping strategies throughout the transition period.

Due to the significant difficulty that arises from transitioning during school, and the fact that transitioning to university is arguably an even bigger change, there is a need for ASD students to be supported as they transition into the university environment.

White et al. (2017) developed such a transitional program. The Stepped Transition in Education Program for Students with ASD (STEPS) was developed to help students improve their self-regulation and self-determination. It was hypothesised that self-regulation (SR) and self-determination (SD) are key for positive outcomes at university such as adjustment, academic performance, and

independent living. The program uses a cognitive-behavioural approach to develop SR and SD skills and usually takes 12-16 weeks to complete. It focuses on the individual themselves and their goals or skill deficits.

STEPS aims to improve self-determination by building self-knowledge, teaching self-advocacy skills, and encouraging goal directed behaviours. To improve self-regulation this program aims to teach effective stress management techniques, increasing skills associated with problem-solving and goal-setting, and practicing skills related to the students' goals. The program comprises of two separate levels, *Step 1* and *Step 2*.

Step 1 is aimed at students currently still in school that might aim to transition to university later in life. It involves collaboration among all stakeholders throughout the program and involves six counselling sessions over the course of the program. Students and their parents are taken on campus tours to the university the student is considering and after the first tour students are supported to meet with the university disability services, attend a class, and eat lunch at the university. Counsellors coach the students on skills relating to behavioural and emotional regulation, and self-advocacy.

Step 2 focuses on students already enrolled at university or who have already completed high school and is about to transition to university. Students receive 12-13 counselling sessions, community based outings to practice their skills, and online content. The counsellor keep frequent contact outside of the sessions to support students' progress of individualised goals. SR and SD is targeting by focusing on the students' social interactions on campus and encourages social involvement.

Satisfaction ratings were measured after the program on a 5-point scale. Both STEP programs received positive preliminary feedback, with students and parents both stating high satisfaction (4.3, 4.4 -respectively), and a willingness to recommend the program to others (4.4, 4.8 -respectively). The programme clearly utilises a range of suggested approaches (i.e. focusing on skill deficits, individualised, using the students natural networks etc.) however, it appears to be quite resource intensive and might be limited by funding or the time availability of a potential counsellor.

Overall, there is evidence from the literature to support transitional programs. However, to date, there is a lack of longitudinal evidence to support their success on graduation rates and permanent acquisition of skills; more research needs to be done to fully understand they role in supporting autistic students.

While it is clear that universities often fail to adequately meet the needs of ASD students, and high schools often fail to prepare students for the non-academic challenges of university, transitional programs offer a way to compensate for both these failings. However, to date, the programs available often only have significant results in two or three areas of functioning and fail to cater to a wider range of challenges experienced by ASD students. Ideally, essential non-academic skills should be taught to students prior to the completion of high school and appropriate services set up at university to support students with unique challenges. As a whole, there is still a large need for improvement and more research is needed to fully understand which services would be most effective while still realistic to implement.

Psychological Distress in Autistic individuals

It is well recognised that autistic individuals experience high rates of psychological distress. While there is an established link between autism and an increased risk for anxiety and depression (Croen et al., 2015), suicide ideation or self-harm (Maddox, et al., 2017), and substance use (Aldao, Nolen – Hoeksema, and Schweizer, 2010), there is still much we don't know. The following section will take a look at our current knowledge of distress and wellbeing in an autistic population. Data will also be provided on comorbidity rates and how these compare between studies.

Autism and Distress

Jackson et al. (2018) conducted a survey with 56 ASD adults enrolled in post-secondary education in the U.S. Participants were recruited via distributing

online surveys to college students with ASD. In this study, participants on average, reported *Extremely Severe* rates of depression and anxiety (as is measured on the DASS) and *Severe* levels of stress. They found that autistic tendencies (as is measured on the AQ) were significant predictors of emotional distress and that 74.6% of their sample had experienced some form of suicidal ideation or behaviours during their lifetime. Just over half (53.6%) of their sample reported having thought about suicide in the past year, and 17.9% stated that they were likely or very likely to attempt suicide someday. They found that suicidal behaviour was significantly associated with variables such as total AQ score, number of friends, levels of loneliness, academic comfort, depression, anxiety, and stress. They provided a comparison of their data to that of Beither et al. (2015) who looked at depression, anxiety, and stress in 374 undergraduate university students.

Beither et al. (2015) surveyed 374 students from an Ohio university and found that 11% of their sample reported *Severe* or *Extremely Severe* rates of depression (compared to 55.4% in Jackson et al. 2018) and 11% for stress (compared to 58.9%) while 15% reported *Severe* or *Extremely Severe* rates of anxiety (compared to 60.7%). They found that academic performance, pressure to succeed, post-graduation plans, financial concerns, quality of sleep, relationship with friends, relationship with family, overall health, body image, and self-esteem where all significantly correlated with levels of depression, anxiety and stress.

In a more recent study, Liu, Stevens, Wong, Yashui and Chen (2018) assessed 67,308 undergraduate students across 108 institutions in the U.S. They found that 9.3% of their sample had made suicide attempts, 24.3% had engaged in suicidal ideation, while 19.8% had intentionally engaged in self-injurious behaviours. They found that experiencing a stressful event that was considered traumatic or very difficult to handle was associated with nearly double the chances of engaging in suicidal ideation. Over 75% of their sample reported having had experienced one or two such events.

Maddox et al. (2017) found that almost 75% of their female ASD sample had a history of non-suicidal self-injury (NSSI), and 33% of their male ASD

sample. When comparing these two studies it can be seen that NSSI rates are noticeably higher in an ASD population. Maddox et al. (2017) explored the reasons why participants engaged in NSSI, and found significant differences in relation to self-harming with the intention of *shocking or hurting someone* (23.8% for ASD, 7.1% NT), because their *friend was doing it* (9.5% ASD, 4.8% NT), and to *avoid committing suicide* (42.9% ASD, 11.9% NT). This comparison between NT and ASD groups with regard to why they engage in NSSI is useful when trying to understand underlying reasons for this destructive behaviour. The authors found that difficulties with emotion regulation was significantly related to the NSSI function of *Sensation Seeking.* Interestingly, depression ratings between the ASD group that endorsed NSSI behaviours and the ASD group that did not did not differ significantly. This might suggest that NSSI behaviours are learnt ways of coping with distress and that in the absence of adaptive coping behaviours, maladaptive coping strategies form (Aldao, et al., 2010).

The link between anxiety and autism is not a new one. A meta-analysis by van Steensel and Heeman (2017) that included over 80 studies found clear evidence that children with ASD experiences higher levels of anxiety than typically developing children, and while the effect size was small, ASD children had significantly higher levels of anxiety than clinically referred children in general. In Anderson et al. (2018)'s study they found that 90% of their sample reported that anxiety was a big or moderate concern of theirs while 70% reported the same for depression. White et al. (2011) reported a significant correlation between autistic tendencies and social anxiety, depression, and aggression. They found that those with higher autistic tendencies tended to report greater college and life dissatisfaction regardless of their grades.

Overall, the literature clearly shows a link between autistic tendencies and psychological distress. Significant evidence suggests that those with ASD might be born with a predisposition towards anxiety (van Steensel & Heeman, 2017) and in a university population where psychological distress is already elevated (Liu et al., 2018), these students might be especially prone to experiencing psychological distress.

South, Dana, White, and Crowley (2011) explored the effects of anxiety and cognitive ability on risk-taking in children and adolescents with ASD. They conducted a computer experiment in which participants received points for pumping up balloons. The number of pumps a balloon could receive before bursting varied randomly from one to 128 pumps, if the balloon burst then no points were given for that balloon. They found that both high anxiety and IQ scores were correlated with an increase in risk-taking behaviours and with longer decision times. This was not the case for the NT group whose risk-taking behaviour was not associated with anxiety, and was reduced by higher IQ scores. The authors suggested that high anxiety in ASD could lead to an increase in motivation due to a fear of failure. Indeed, their results supported this notion as findings suggested that while the NT group was motivated by reinforcement (or a positive consequence), the ASD group was motivated by the fear of receiving a punisher (negative consequence). This was said to be due to the anxiety experienced by the ASD participants, rather than by autism itself.

Greenaway and Howlin (2010) further explored anxious and depressive symptoms in ASD boys. They were interested in the relationship between these two constructs and dysfunctional attitudes and perfectionism. They compared 42 NT participants with 41 ASD participants. As is commonly found in studies on the topic, the ASD group scored higher for anxiety and depression. They found that children who reported higher rates of obsessive compulsive behaviours had higher rates of dysfunctional attitudes, and a significant correlation between perseveration and perfectionism was found. What was interesting was that the ASD participants reported high rates of socially-prescribed perfectionism despite both groups reporting similar rates of self-orientated perfectionism. They speculated that cognitive inflexibility might lead autistic individuals to take social comments of achievement (i.e. “always give 110%”, or “keep that smile on your face”) in a literal fashion or rigidly follow rules. They suggest that it is possible that ASD individuals overestimate others’ expectations. However, the authors also noted that it is possible that higher expectations are actually placed on high functioning ASD students who are commonly encouraged to “act normal” or “fit in” despite their challenges. On top of this, due to special interests and well

developed verbal abilities, teacher and parents might pressure these students to achieve higher levels academic success.

When taken together with the study from South et al. (2011), one can see that if students overestimate the expectations of others and have a fear of failure, this could create a high stress environment that may cause high levels of distress.

Comorbidities and Autism

Comorbidities are commonly reported in individuals with autism and have been associated with additional impairment (Rosen, Mazefsky, Vasa, and Lerner,2018). The following section will look at diagnostic rates of both psychiatric and physical comorbidities.

Croen et al., (2015) compared the comorbidities of a control group (*N*= 15,070) to data from 1507 autistic adults of all ages and with varying degrees of intellectual ability that were recruited from Kaiser Permanente Northern California. After being controlled for sex, age, and race/ethnicity significant differences were found for both medical and psychiatric conditions, with the ASD group having an increased risk of being diagnosed with all major psychiatric disorders. In their sample, 54% of ASD adults had been diagnosed with a psychiatric disorder (29% with anxiety, 11% bipolar disorder, 26% depression, 8% OCD, and 8% with schizophrenia), with the ASD adults being five times more likely to have attempted suicide. This was a concerning finding as only 14 of the 27 participants who had attempted suicide had been diagnosed with depression, showing that signs of depression and suicidality could be overlooked in this population. Jackson et al. (2018) reported similarly high rates for depression (35.7%), anxiety (33.9% GAD, 26.8% social anxiety disorder), bi-polar disorder (5.4%), and OCD (7.1%) in their sample.

ASD adults were also found to be significantly more likely to have chronic medical conditions such as: *autoimmune conditions* (13.9% vs 10.8%), *allergies* (36.3% vs 28.7%), *GI disorders* (34.7% vs 27.5%), *sleeping disorders* (17.6% vs 9.6%), *seizures* (11.9% vs 0.73%), *dyslipidaemia* (22.8% vs 15.1%), *hypertension* (25.6% vs 15.6%), *diabetes* (7.6% vs 4.3%), *obesity* (33.9% vs 27.0%), and *thyroid*

disease (7% vs 3.1%; Croen et al., 2015) . Rare and genetic disorders were found to be significantly more common in the ASD group (Croen et al., 2015).

Recently, Rosen et al., (2018) conducted a review on the literature surrounding co-occurring psychiatric conditions in ASD. They found that 70 – 72% of youth with ASD have at least one comorbid disorder, with anxiety disorders, mood disorders, OCD, ADHD, and ODD being the most common. They reported on research that showed comorbid anxiety disorders having significant impacts on daily functioning and wellbeing for both high and low functioning ASD youth while also having prevalence rates well above the norm. Similarly, depressive symptoms were found to be higher in an ASD population, and linked to poor quality of life, suicidal ideation, inpatient hospitalisation, and elevated rates of medical illness. Bipolar was discussed as a mood disorder, and higher lifetime prevalence rates were noted as only marginally significant (25% vs 13%). Overall, the study stressed the fact that many ASD individuals experience one or more co-occurring psychiatric condition. They argued that due to the overlap in symptomology and difficulties with expressing emotion, ASD individuals might need specialised treatment and regular screening.

In conclusion, it should be noted that overlapping symptomology could complicate research on co-morbidities in an ASD population (Rosen et al., 2018). When considering interventions or services for ASD students at university, it is important to focus on a wider variety of challenges than just those presented by a diagnosis of autism. Due to the common occurrence of comorbidities in this population, the need for individualised treatment is especially important.

However, official diagnoses do not always provide sufficient information to understand what the students experience and dysfunctional attitudes they might hold. More research is needed in this area.

Psychological Wellbeing

In early literature, psychological well-being has been hard to define and measure (Ryff, 1989). Many measures of psychological wellbeing were developed based on “common knowledge” and either lacked empirical evidence, or did not provide credible assessment procedures. (Ryff, 1989). Based on the research

available, Ryff (1989) identified six key domains of psychological wellbeing and operationalised them for future use.

The first domain or factor identified was *Self- Acceptance*, or a participant's attitude towards themselves. High scorers were defined as having a positive attitude towards themselves and accepting both their good and bad qualities. Low scorers are defined as feeling dissatisfied with themselves and troubled by certain aspects of their personality, wishing they could be someone else.

The second domain, *Positive relations with others*, is characterised by intimate connects with others and the experience of love and empathy. High scorers are defined as having warm, trusting relationships with others while low scorers is isolated and frustrated with interpersonal relationships.

The third domain, *Autonomy*, identifies characteristics relating to self-determination, self-regulation, and independence. High scorers are self-determined, resistant to social pressure, and evaluate themselves by their own standards. Low scorers on the other hand evaluate themselves by the standards of others, and conform to social pressure.

The fourth domain, *Environmental mastery*, observes the individual's ability to choose or create environments that suit their own needs. High scorers are able to manipulate their environment to fit their needs and handle complex situations whereas low scorers often struggle with daily tasks and experience a feeling of lack of control.

The fifth domain is *Purpose in life*, it measures a feeling of purpose and direction of one's life. It is characterised by direction and, productivity, and goal orientated behaviours. High scorers experience a sense of direction and have specific aims for their life. Low scorers on the other hand experience a sense of directionlessness, have few goals or aims, and do not hold beliefs that give their life meaning.

The final domain, *Personal growth*, characterises an individual's desire and willingness to pursue new experiences, and develop themselves to their full potential. High scorers experience feelings of continual development and sees

improvement in themselves over time. Low scorers instead experience feelings of stagnation, boredom, and lacks interest in life.

While no studies have utilised this measure of psychological wellbeing in an ASD university population, some studies have found results that indicate low sores in some of these domains (for example see Arias et al., 2017; Cai, Richdale, Dissanayake, and Uljarević, 2018; Anderson & Butt, 2017; White et al., 2011; Elias & White., 2018).

As positive and negative affect are measured as two distinct factors (Ryff, 1989) it is necessary to include measures of both psychological distress, and psychological wellbeing to establish a fuller picture ASD students' experiences.

Coping

Coping has been defined as cognitive, emotional and/or behavioural efforts to address a troubled person – environment relationship (Folkman and Lazarus, 1985). Emotional regulation has been found to be key in developing coping behaviours which have typically been dichotomised into either adaptive or maladaptive strategies (Aldao et al., 2010).

In a study focusing on the experience of homosexual males acting as the primary caregiver for a partner dying of AIDS, Folkman and Moskowitz (2000) set out to study how people experience positive emotions despite undergoing severe stress. They identified three classes of coping behaviours that contributed to the experience of positive emotions. The first class was *Positive Reappraisal* that was defined as focusing on the good in a given situation (i.e. opportunities for-, and examples of- personal growth). This class was associated with positive emotions both during the period of caregiving and after the partner had died.

The second class was *Problem Focused Coping*, defined as thoughts and instrumental behaviours that either manage or solve the underlying causes for distress. While it was used more in situations where the person had some form of control over the scenario, people still employed this class of behaviours to try and gain control over small variables in their environment. Examples the authors

provided were “to-do” lists in which the caregiver was able to note things like picking up and administering medication. It was suggested that by being able to fulfil these small tasks the person is able to gain a sense of purpose and feel effective. It was noted that this class of behaviours is associated with an increase in positive moods (as opposed to a decrease in distress).

Finally, the authors identified *Creation of Positive Events*. This class of behaviours included taking note of, or remembering positive experiences in order to achieve a brief “time-out” from their distress. It was found that humour helped to generate positive emotions, both by building bonds with others and helping the individual remember their loved one in a positive manner. It was noted that it might be the frequency of positive experiences, not the intensity or duration of them that provides benefits.

Aldao et al. (2010) conducted a meta-analysis of 144 articles spanning from 1985 to 2008 in order to research the effect of six emotion-regulation strategies, and their relation to psychopathology. The strategies were divided into protective and risk factors, and studied in relation to anxiety, depression, eating disorders, and substance use.

Rumination had a large effect size on psychopathology, whereas *Avoidance, Suppression,* and *Problem-solving* all had a medium to large effect size. *Reappraisal* had a small to medium effect, and *Acceptance* showed no significant effect on psychopathology.

They found that of the three protective factors, *Problem-solving* was negatively associated with anxiety, depression, and anxiety; Reappraisal was negatively associated with anxiety, and depression; and while *Acceptance* did have a negative association, it failed to be significant for any of the factors.

Of the risk factors, *Avoidance* (experiential and behavioural), *Suppression* (expression and thoughts), and *Rumination* were all positively associated with anxiety, depression, and eating disorders. Additionally, *Rumination* was also associated with substance use.

These findings provide strong evidence that maladaptive strategies have a stronger effect on psychopathology than adaptive strategies; the authors, however, note that *Problem-solving* might prove to be a possible exception to

this as maladaptive coping strategies could come about as a result of the absence of sufficient problem solving skills (Aldao et al., 2010).

Freire, Ferradás, Valle, Núñez, and Vallejo (2016) explored the association between psychological wellbeing and the coping strategies students choose to employ. Using the six-factor model proposed by Ryff (1989), the authors collected data from 1,072 students in Northern Spain with regard to their employment of *Positive reappraisal*, *Support-seeking*, and *Planning* as coping behaviours strategies. When controlling for age, major, and gender, a significant relationship was found between the students' level of psychological wellbeing (very high, high, normal, low), and the frequency of adaptive strategies they used. Students who employed higher rates of adaptive coping strategies reported higher levels of psychological wellbeing. This ties into results from Aldao et al. (2010) and emphasises the need to teach adaptive coping strategies to students in an attempt to reduce the rates of maladaptive strategies they employ.

It was found that gender significantly influenced the type of coping strategy an individual employed. Males in Freire et al.'s (2016) sample were more likely to use *Positive reappraisal* and *Planning*, whereas females were more likely to use *Support-seeking* strategies – all of which were positive strategies. Despite the gender difference, psychological wellbeing was associated with the employment of these adaptive strategies for both genders. Age and major did not have any significant effect on the coping strategies measured.

While it would have been interesting to see more data in relation to other coping strategies (for example humour, substance use, rumination etc.), this study provided a noteworthy association between psychological wellbeing and the implementation of *Positive reappraisal*, *Planning*, and *Support-seeking* strategies amongst university students. It fails to test for causation, but the authors do call for more services that could help promote psychological well-being for students. This would suggest that they believe psychological well-being to be a precursor for adaptive coping strategies, however it seems more likely that adaptive coping strategies could lead to greater psychological wellbeing.

Indeed, as discussed in Folkman and Moskowitz (2000), adaptive strategies help to create positive experiences in a time of stress.

The final article conducted interviews with 31 adults diagnosed with high-functioning autism in France. Dachez and Ndobo (2017) aimed to identify the coping strategies used in this population and found eight distinct coping strategies emerging. This was the first article to focus on the coping experiences of high-functioning autistic individuals with no form of intellectual disability and as such is key to providing qualitative data for this population. The coping strategies identified are more accurately described as behaviours and were classified into specific coping strategies by the original authors.

The first theme identified was *Special Interests*. The authors provided evidence for their use as both avoidance coping and problem-solving, depending on the subject of interest. Some participants in their study used their interests to escape from a demanding world and calm themselves down, while others took interest in the social aspects of human nature or related fields in an effort to understand why they experience specific challenges.

The second theme identified was *Militancy*. This was based on the participants' desire to advocate for themselves and their disorder. Participants argued that autism is not a disability and instead should be celebrated for its strengths. The authors categorised this theme into problem-solving, and a search for meaning.

The third theme, *Diagnosis* dealt with respondents' search for acceptance and the relief an official diagnosis came with. They felt like a diagnosis helped them cope with feelings of aloneness and not-belonging as it provided evidence that there were more people like them in the world. The authors classified this theme into emotion management, search for meaning, and problem solving.

The fourth theme was identified as *Seeking support from atypical friends*. It comprised of respondents being able to talk to others who could be identified as removed from the norm.

The fifth theme, *Seeking support from animals* included participants forming bonds with, and being able to express themselves to animals. The authors did not provide further classification for theme four and five. This is

likely due to the themes' relation to a seeking-support coping strategy being largely self-evident.

Theme six, *Normalisation*, included participants trying to behave "normal" and "fit-in" with their peers. Participants raised the theme of having to wear a social mask or act out a character. The authors suggested that this theme might be classified as problem-solving.

Theme seven was identified as *Intellectualisation*. This included thinking about challenges or sources of distress and trying to provide reason for their existence. The authors classified this theme as managing emotions.

The final theme identified was *Humour*. Participants commented on their ability to brush off potentially painful comments with humour or to cope by making light of their challenges. The authors classified this theme as cognitive restructuring.

Overall a large range of themes emerge and the study provides excellent qualitative accounts of personal experiences of distress in high functioning autistic participants. To incorporate this study into information from qualitative studies that focused on coping behaviours, it is useful to reclassify some of the items. In doing that, the predominant coping strategies in this study are *Avoidance* (Special interests, and Normalisation), *Problem – solving* (Special interests, Militancy, and Normalisation), *Seeking support* (From both atypical friends and animals), and *Cognitive reappraisal* (Militancy, Intellectualisation, and Humour). It should be noted that the reclassification did not include the *Diagnosis* theme as it appears to be closer to an event than a coping strategy.

Based on the literature it can be concluded that coping strategies are generally categorised into either adaptive or maladaptive behaviours (Aldao et al., 2010), that coping strategies and psychological wellbeing are associated with each other (Freire et al., 2016; Folkman & Moskowitz, 2000), and that while the specific behaviours might differ, autistic individuals employ the same types of coping strategies as non-autistic populations (Dachez & Ndobo, 2017). However, the current literature does not provide information on the frequency with which autistic students employ different coping behaviours, or which coping strategies are the most common in this population.

This study

This study aimed to add to the emerging literature relating to autism at university, and to help create a picture of the challenges faced by these students. One of the key aims of this study was to gather data on the experiences of the subjective distress of respondents, and how they cope with their distress.

In order to account for experiences of students who might not have received a formal diagnosis, and to create a more holistic picture of the relationship between autistic tendencies along a spectrum, a general sample of university students were surveyed.

It was hypothesised that the number of autistic traits will negatively correlate with psychological wellbeing while positively correlating with psychological distress.

The second hypothesis of this study was that autistic traits would be positively correlated with the employment of negative coping behaviours such as substance use, avoidance and behavioural disengagement, while negatively correlated with positive coping behaviours such as active and positive planning, and seeking support.

The third hypothesis was that autistic traits would be positively correlated with the number of psychological disorders respondents have been diagnosed with.

The fourth hypothesis was that autistic tendencies would be correlated with experiencing higher rates of physical health problems.

The final hypothesis was that there would be no significant differences regarding the psychological wellbeing, distress, comorbidities and coping behaviours of diagnosed autistic respondents and respondents that report clinically significant levels of autistic traits but have not had a formal diagnosis.

By understanding the experiences of tertiary students' distress, and how this distress relates to autism, future interventions and services may be better equipped to support struggling autistic students. Either by finding ways to reduce psychological distress and promote wellbeing, or by equipping students with more adaptive strategies to cope with challenges as they arise.

Chapter 2: Method

This section provides an overview of participant demographics and recruitment. It introduces the measures used in the study, along with the study procedure and steps taken to analyse the data.

Participants

Overall, 509 responses were recorded however, some did not meet the inclusion criteria. Fifteen responses were removed due to not giving consent for their data to be used, 62 responses were removed for failing to complete a minimum of 35% of the survey (the demographics section and the AQ scale), and two were removed for failing to confirm that they were university students. This left 430 available responses for analysis.

Demographics

Of the 430 participants remaining, 331 identified themselves as female (77.0%), 91 as male (21.2%), six (1.4%) as non-binary, and two participants (0.5%) declined to answer.

Participant age ranged from 17 to 59 (*M*=23.7, *SD*=8.36). The most common age reported was 18 (N=83; 19%), with 19 (N=78; 18%) being the next most common. Thirty participants (7%) chose not to answer this question.

Table 1 shows the recorded frequency of different ethnicities in this sample. The total adds up to more than 100% (114.1%) as participants were able to select as many options as they thought appropriately represented their ethnic identity.

The majority of participants (73%) identified as European. The ethnicities offered for selection were taken from the options on the 2013 NZ census. A complete report on participant ethnicity can be found in Table 1.

Table 1

Participant self-reported ethnicity

Ethnicity	Frequency	Percent
European	314	73.0%
Maori	80	18.6%
Asian	62	14.4%
Pacific Peoples	22	5.1%
Middle Eastern/Latin American/ African	13	3.0%

The majority of participants (*N* = 320) were recruited from the University of Waikato (see Table 2 for a complete breakdown of affiliation). One hundred and sixty participants were recruited from other tertiary institutes. Most students were currently enrolled in a Bachelor's degree (see Table 3).

Table 2

Participant affiliation

Tertiary institute	Frequency	Percent
University of Waikato	320	74.4%
Canterbury University	79	18.4%
Massey University	14	3.3%
University of Auckland	9	2.1%
Other (ARA and Wintec)	2	0.5%
University of Otago	1	0.2%
Victoria University	1	0.2%

Across the 430 participants, there were 88 different subject majors. Of these, Psychology was the most common, with 145 (33.7%) participants coming from this field (for a full list of participant majors, see Appendix C.1).
Table 4 presents an overview of participant residency status in New Zealand. The majority of participants were born in New Zealand (69.3%), 128 participants

(29.8%) were born in other countries. Four participants (0.9%) chose not to reveal their status.

Table 3

Qualification in which the participants were enrolled

Qualification	Frequency	Percent
Bachelors	313	72.8%
Bachelors with Honours	48	11.2%
Masters	27	6.3%
PhD	18	4.2%
Postgraduate or Graduate Diploma	16	3.7%
Certificate	3	0.7%
Other	2	0.5%

Table 4

Participant residency status

Residency Status	Frequency	Percent
NZ citizen born in NZ	298	69.3%
NZ citizen born in a different country	68	15.8%
Permanent Resident	33	7.7%
International Student	27	6.3%

Participants rated how comfortable they were in their English ability on a 6-point Likert scale. Only four participants reported feeling either slightly or very uncomfortable with their English ability, compared to 96.5% (N=415) reporting feeling either comfortable or extremely comfortable. Nine participants (2.1%) reported feeling neither comfortable nor uncomfortable and two participants did not answer. This was important to note as a large portion (29.8%) of respondents were not born in New Zealand and 121 (27.9%) participants reported being able to speak at least one language other than English. As English is unlikely to be the first language of all respondents checking that respondents'

English ability is at an acceptable level helps to evaluate the validity of their responses.

The most common language identified was Te Reo Māori (N=18), followed by Chinese (N=16). See Appendix D.2 for a full list of reported languages.

Recruitment

Participants were recruited using a range of methods. Flyers were posted around the University of Waikato Hamilton Campus (See Appendix A.1). These contained a brief description of the study, a link to access it and a QR code that could be used for mobile device access. An electronic version of the same flyer was distributed on Facebook where it was sent to university groups and student associations related to the tertiary institutions of New Zealand (see Appendix A.3 the summary of students from each university). Each individual group or page granted permission, and in most cases the flyer was forwarded to the administrators of the groups and associations so that they could decide if they wanted to share it with their members. Bulk emails with the flyer were sent out to the Computing, Management and Psychology student associations at the University of Waikato to forward to their club members.

Additionally, the researcher gave a short introduction (2-5 minutes) to the study in some first year papers (see Appendix A.2 for a full list of first year papers contacted) at the University of Waikato. Staff assisted in distributing the recruitment information (flyer and more detailed information) through the classes' Moodle pages (online course management website).

Finally, first year University of Waikato psychology students were recruited through the university's Practical Research Experience in Psychology (PREP) system (a participant pool program that is restricted to students enrolled in, and forms a compulsory part of, first year psychology papers). This system requires first year psychology students to complete a certain amount of credits via either participating in research, or summarising journal articles.

Table 5

Recruitment avenues

Avenue	Frequency	Percent
PREP	128	29.8%
Facebook	85	19.8%
Email	58	13.5%
Word of Mouth	31	7.2%
Class Moodle Page	30	7.0%
Poster	2	0.5%

The most successful avenue of recruitment was through the university PREP system (see Table 5). The least effective recruitment avenue was putting up physical posters or flyers. However, 96 (22.3%) of participants did not report on how they came to hear of the survey and as such it was not possible to determine the recruitment avenue for nearly one quarter of the participants.

Measures

Demographics

The researcher developed questions on the demographic background of participants. The 11 questions covered participants' age, gender, ethnicity, residency status, study status (four questions), living arrangements, residency status and language ability (two questions). For a full copy of the initial demographic questions, see Appendix B.1. The demographics section described above was presented to participants before the five official measurements. After completing all the measures, two more questions were presented asking participants about their diagnostic history and how they were recruited (For a full copy of the final demographic questions see Appendix B.1b).

Autism Quotient Scale (AQ)

Baron-Cohen, Wheelwright, Skinner, Martin, and Clubley (2001) designed the AQ scale to measure the degree of autistic traits within the general population for individuals within the normal range of intelligence. Influenced by the triad of impairments and cognitive diversities found in ASD (see Appendix B.2; American Psychiatric Association, 2013), this 50-question self-report measure focuses on an individual's preferences and behaviours. Examples of these include "*I prefer to do things with others rather than on my own"* or "*I tend to notice small sounds when others do not".* Questions are answered on a 4-point Likert Scale (1 - Definitely agree, 4 – Definitely disagree) and each question is assigned a score of either 1 or 0 depending on whether the participant agrees or disagrees with the statement, with some questions reverse coded (for the full measure and scoring instructions see Appendix B.2b).

Results can be interpreted using either the total score out of 50, or by looking at the 5 subscales (*Social Skill, Attention Switching, Attention to Detail, Communication* and *Imagination*). Baron-Cohen and colleagues (2001) found the mean score for their control group (comprised of both university students and participants from the general population) as 16.4 (*SD* = 6.5) out of 50.

Furthermore, 80% of people diagnosed with ASD or a related disorder scored 32 or above, compared to 2% of NT participants. As such, the suggested cut-off score for clinically significant levels of autistic traits is set at 32 (Baron-Cohen et al., 2001).

Moderate to high Cronbach's alpha coefficients have been demonstrated for each subscale of the AQ Scale - Social Skill (0.77), Attention Switching (0.67), Attention to Detail (0.63), Communication (0.65), and Imagination (0.65; Baron-Cohen et al., 2001).

Depression, Anxiety and Stress Scales (DASS-21)

The DASS-21 self-report measure created by Lovibond and Lovibond (1995) is a shortened version of the DASS-42. It was used in this study to measure psychological distress stemming from negative emotional states. It consists of 21 questions rated on a 4-point Likert Scale ranging from *0 – Did not apply to me at all* to *3 – Applied to me very much, or most of the time*. It measures three dimensions related to negative emotional states - Depression, Anxiety and Stress. Higher scores indicate more severe distress.

Participants were asked how frequently each statement within a dimension applied to them within the last week (i.e. "*I found it difficult to work up the initiative to do things*"). Each dimension comprises seven questions and scores are calculated by adding together the responses for each domain and multiplying them by two (in order to line up with the DASS-42 scores). For the full measure and scoring instructions, see Appendix B.3.

An overall score of general distress can be calculated by adding the scores from the three subscales together but was not used in this study, as the focus is on correlations with the total AQ score and differences on the individual subscales. Results for the domains can be categorised by severity between normal, mild, moderate, severe and extremely severe. Severity scores for each category as recommended by Lovibond and Lovibond (1995) are shown on *Figure 1*. The DASS was developed in Australia, and has been extensively used in Australasia. As such, the norms used are more relevant for a New Zealand sample than many of the other available measures of psychological distress.

Scores for each category			
Categories	Depression	Anxiety	Stress
Normal	0 - 9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14 -20	10-14	19-25
Severe	21 -27	15-19	26-33
Extremely Severe	28+	20+	34+

Figure 1. DASS subscale score ranges for each severity category (Lovibond & Lovibond, 1995)

Nah, Brewer, Young and Flower (2017) investigated the DASS-21's reliability by re-calculating the Cronbach's alphas for each DASS-21 dimension and the total scale. They found a score of 0.89 for the Depression scale, 0.83 for the Anxiety scale, 0.86 for the Stress scale (compared to 0.91, 0.84, and 0.90 respectively from Lovibond & Lovibond, 1995) and 0.93 for the Total score scale.

Brief COPE

The Brief COPE (Carver, 1997) was used to assess coping strategies students employed in relation to distress while attending university. It is a shortened version of the Coping Orientation to Problems Experienced inventory (COPE) and consists of 28 questions rated on a four-point Likert-scale (i.e. 1 – "*I haven't been doing this at all"* to 4 "*I've been doing this a lot*"). For the full measure and scoring instructions, see Appendix B.4. The Brief COPE measures 14 2-question subscales that Kapsou, Panayiotou, Kokkinos and Demetriou (2010) organised into eight factors: *active/positive coping* (comprised of the planning, positive reframing, active coping and acceptance scales; eight items in total), *behavioural disengagement, substance use, seeking support* (comprised of the instrumental and emotional support scales; four items in total)*, avoidance* (comprised of the self-distraction and denial scales; four items in total) *religion, humour, and expression of negative feelings* (comprised of the venting and self-blame scales;

four items in total). Their study found that all the factors had construct validity scores of over 0.55 showing sound construct validity for the model.

Attitudes Toward Self (ATS)

The Attitudes Toward Self scale (Carver & Ganellen, 1983) is a 10-question measure rated on a 5-point Likert Scale (e.g. 1 – "I agree a lot"; 5- "I disagree a lot"). Due to its brief administration time it is ideal to use in a battery of tests, as is the case in this study.

The ATS scale measures three constructs of psychological distress associated with individuals' perception of themselves. *Generalisation* measures the tendency to generalise failures to one's broader sense of self-worth ("*A single failure can change me from feeling OK to seeing only the bad in myself*"). The other two scales, *high standards* ("*Compared to other people, I expect a lot from myself*") and s*elf-criticism* ("*I get angry with myself if my efforts don't lead to the results I wanted*") measure tendencies to hold overly high standards and to be self-critical at failures to perform. Scores are used in this study as a reflection of psychological distress in regard to attitudes towards oneself, with higher scores indicating a greater tendency to engage in the associated negative thought patterns (for the full measure and scoring instructions see Appendix B.5). Acceptable alpha coefficients have been shown for each of the subscales measured (0.80 for High Standards, 0.65 for Self Criticism, and 0.82 for Generalisation; (Carver & Ganellen, 1983).

Ryff Scales of Psychological Wellbeing

The Ryff Scales of Psychological Wellbeing (Ryff, 1989) was designed in America and measures 48 items of psychological wellbeing on a 6-point Likert-scale (1 - Strongly disagree, 2-disagree somewhat, 3 – disagree slightly, 4 – agree slightly, 5-agree somewhat, 6- strongly agree).

For this study, the shortened - 42-question - scale was used. This includes seven questions for each dimension (Autonomy, Environmental Mastery, Personal Growth, Positive Relations with Others, Purpose in Life, and Self –

Acceptance). Internal consistency (coefficient alpha), and correlation with the full parent scale were reported respectively by the original author (Ryff, 2014) for each subscale: Autonomy (α =.83; r =.97), Environmental Mastery (α =.86; r =.98), Personal Growth (α =.85; r =.97), Positive Relations with Others (α =. 88; r =.98), Purpose in Life (α =.88; r =.98), and Self – Acceptance (α =.91; r =.99).

Scale questions focus on self-reflection on one's behaviours and values (e.g "*I am not afraid to voice my opinions, even when they are in the opposition to the opinions of most people*"). For the full measure and scoring instructions, see Appendix B.6. Higher scores on each dimension represent better psychological wellbeing in that dimension. Scores can be used for each individual subscale, or combined to use as an overall psychological well-being score.

Health Survey (SF-8)

The SF-8 Health Survey is an eight-item, self-report questionnaire that measures health-related quality of life (HRQL), it was designed to replicate the SF-36 but only has one question for each domain measured. The SF-8 was used in this study because of its brief administration time. For the user manual of the parent SF-36 scale, see Ware, Kosinski, & Keller, 1993. The scales were developed by QualityMetric, Incorporated (QMI), and measures eight ordinal items - *general health, physical functioning, role physical, bodily pain, vitality, social functioning, mental health* and *emotional roles.* Participants indicate how much they agree with each statement concerning their health over the last four-weeks. Results on question items 1-4 are added together to form an overall Physical Component Score (PCS) while results on questions 5-8 are added together to form an overall Mental Component Score (MCS).

An example question is: "*Overall, how would you rate your health during the past 4 weeks?*" to which the participant would select one of the following: "*Excellent, Very Good, Good, Fair, Poor,* or *Very Poor"*. For a full copy of the SF-8 measure and its scoring instructions, see Appendix B.7.

Procedure

Participants accessed the survey via either an anonymised link or a QR code. From there they were taken to Qualtrics (an independently hosted surveying website), presented with an overview of the study, and asked to provide consent for their data to be used (see Appendix A.4). After the initial demographic section (Appendix B.1) participants were presented with questions from five different measures (Appendix B.2-B.6) before being asked about any previous diagnoses and how they came to hear about the survey (Appendix B.1b). Completing the survey took approximately 20-30 minutes.

Statistical Analysis

Responses were exported from Qualtrics to SPSS Statistics version 25 (IBM Corp, 2017).

All missing or invalid responses were removed along with any responses that had not reached the minimum of 35% completion rate. A minimum of 35% was chosen as this includes the initial demographic section and the AQ measure. Without results from the AQ measure, no correlations could be tested and the response would be of no statistical use in this study. String responses that fell within the 'other' categories were recoded into appropriate fields.

In some cases, such as previous diagnoses, some 'other' responses occurred commonly enough to be added as a category (Post Traumatic Stress Disorder, and Borderline Personality Disorder).

Demographic items regarding the students' studying situation were dichotomised to give a new variable stating whether the student was working part time or full time. The same question was used to create a variable that stated whether the student was receiving a student allowance, working more than 20 hours a week, or if they were working less than 20 hours a week. The demographic question associated with living arrangements was grouped into three conditions stating whether the student was renting or flatting, living with family or boarding, or if they were living independently. The categories for majors and other languages, which were string input, had their format edited so

that all equivalent responses appeared with the same format for statistical purposes. The total number of disclosed diagnoses for each participant were added together (with the exception of autism) to create a new 'Number of diagnoses' variable.

The AQ scale was recoded into its appropriate scoring format to allow the total score and subscale scores to be attained. Similarly, the DASS-21 was recoded into its appropriate scoring format and subscale scores were presented for each participant. For this study, the overall DASS score was not needed. A new 'Severity' variable was created for subscale scores to compare the level of psychological distress ranging from normal to extremely severe. The Brief COPE was recoded into 14 subscale scores, which were then processed into eight factors. The ATS measure was recoded into its three subscales and scores derived for each; no overall score was used in this study. For psychological wellbeing, the Ryff scales were recoded into six subscales; both subscale scores and the overall score were used for analysis. Finally, the SF-8 was recoded and broken in two components, PHQ and MHQ scores that were used to gauge participants' physical and mental health.

Descriptive analyses were used to test scale normality and determine the range, mean and standard deviation of responses. Bivariate correlations with the total AQ score were determined for the different subscales using the Pearson correlation coefficient for normally distributed subscales, and the Spearman correlational coefficient for the three subscales that were not normally distributed (Brief COPE's Behavioural Disengagement, Substance Use, and Religion.)

Participants in this study were divided into three groups based on both their overall AQ score and whether or not a diagnosis of autism was disclosed. The first group, *lowAQ* (N=391) had AQ scores of 31 and below (M=19.22, SD=5.95) with no autistic diagnosis reported. The second group, *highAQ* (N=22), had AQ scores of 32 and above (M = 35.61, SD = 3.64) with no autistic diagnosis. The third and final group, *asdDX* (N=16), consisted of all participants who disclosed an autism diagnosis, regardless of their AQ scores (M= 32.81, SD= 7.84). Therefore, group 1 (*lowAQ*) were individuals with no diagnosis of autism

and a score below clinical significance on the AQ scale. Group 2 (*highAQ*) were individuals with no diagnosis of autism who displayed clinically significant levels of autistic traits and Group 3 (*asdDX*) were all participants who disclosed a diagnosis of autism – regardless of their AQ score.

This distinction is useful for comparing the effects of autistic traits as measured on the AQ scale between the high and low scoring groups (*highAQ* and *lowAQ*) - which by definition must have a significant difference in AQ scores. A significant difference was found t (29.41) = -20.08, $p < 0.001$). The distinction in groups is useful for exploring the effects having had received an ASD diagnosis might have on an individual. No significant difference was found between the asdDX and highAQ groups on their AQ scores; t (19.53) = 1.33, $p = 0.199$).

In the exploratory section, the asdDX group and highAQ group were compared to test the null Hypothesis – that there will not be a statistically significant difference between the two groups. To test this, a combination of independent sampled *t*-tests and chi-square tests were used.

Ethics

This survey, recruitment avenues and procedure were submitted to and approved by the Human Research Ethics Committee at the School of Psychology, University of Waikato.

Chapter 3: Results

This Chapter is divided into six main sections that report analysis of the participants' answers to the study questionnaire. The first two sections provide an analysis of participant demographics and the demographics of the autistic participants specifically. Descriptive statistics for each measure are provided followed by their correlation to the AQ scale. The next section will analyse group differences between participants diagnosed with autism, and the participants who scored clinically significant levels of autistic traits but do not have a formal diagnosis. The final section will show results of interest that was not directly related to a specific hypothesis.

Demographic Overview

Tables 6, 7, and 8 provide an overview of respondents' life situations, focusing on their current student workload (Table 6), their living situation (Table 7), and their mental health histories in regards to diagnoses (Table 8).

Table 6

Participant occupational information

Occupational categories	Frequency	Percent
Full time student with student allowance	160	37.2%
Full time student without student allowance	114	26.5%
Full time student working more than 20 hours a week	25	5.8%
Full time student working less than 20 hours a week	101	23.5%
Part time student working more than 20 hours a week	16	3.7%
Part time student working less than 20 hours a week	11	2.6%

Table 6 displays an overview of the current occupational information for the participants in this study; three participants (0.7%) did not give an answer for this section. The data show that the great majority 93.7% (N=400) of the respondents in this sample were studying fulltime.

Table 7

Participant living arrangements

Living arrangements	Frequency	Percent
Renting/ flatting with others for the first time	44	10.2%
Renting/ flatting with others for your second year or more	123	28.6%
Living at your family home	132	30.7%
Boarding	12	2.8%
Living in university accommodation	67	15.6%
Living alone for the first time	7	1.6%
Living alone for your second year or more	6	1.4%
Living in a home you own	31	7.2%
Other, please specify	6	1.4%

Table 7 shows an overview of the living arrangements for respondents in this study. While a large portion of participants were living in their family home (30.7%), the largest group of students were renting or flatting (38.8%). Very few participants (3%) were living on their own. The 'other' category comprised unusual arrangements such as the respondent living in their car.

Table 8 shows the overall rates of previous diagnoses participants in this study disclosed; seven responses fell in the 'other' category (i.e. asthma and other medical conditions). Overall Anxiety/Panic Disorder (26.0%) and Depression (25.1%) had the greatest prevalence in this sample. The next most common disclosed disorders were eating (4.7%) and sleeping disorders (4.9%). Of the 430 responses recorded, the mean number of received diagnoses was 0.73 (*SD*= 1.13). The data ranged from 0 to 6 reported diagnoses, and were not normally distributed (Skewness = 1.639 and Kurtosis = 2.495).

Table 8

Self-reported frequencies of previous diagnoses

Diagnoses	Frequency	Percent
Anxiety/Panic Disorder	112	26.0%
Depression	108	25.1%
Sleeping Disorder	21	4.9%
Eating Disorder	20	4.7%
Dyslexia or another learning disorder	17	4.0%
Autism Spectrum Disorder	16	3.7%
Attention Deficit Hyperactivity Disorder	8	1.9%
Other	7	1.6%
Bipolar	7	1.6%
Obsessive-Compulsive Disorder/ Obsessive-Compulsive Personality Disorder	6	1.4%
Borderline Personality Disorder	6	1.4%
Substance or Addictive Disorders	5	1.2%
Post-Traumatic Stress Disorder	3	0.7%
Dissociative Disorder	2	0.5%

Descriptive Statistics

Autism Quotient

On the AQ scale, possible scores ranged from 0 to 50, with a higher score indicating the presence of more autistic traits. Respondent scores ranged from 6 to 49 (M= 20.60, SD = 7.37). Table 9 shows descriptive statistics of 430 responses for each of the five subscales of the AQ. All subscales were normally distributed.

Table 9

Participant scores for each subscale of the Autism Quotient measure

Subscales	Mean	SD	Skewness	Kurtosis	Range (min 0, max 10)
Social Skills	3.43	2.59	.65	-.44	0 -10
Attention Switching	5.31	2.12	.13	-.41	0 -10
Attention to Detail	5.45	2.14	-.08	-.41	0 -10
Communication	3.62	2.22	.66	.03	0 -10
Imagination	2.78	1.84	.64	-.06	0 - 9

A significant difference (t (1268) =7.477, p<0.001) was found when comparing overall results from Group 3 (university students; N = 840) in Cohen's study (M=17.6, SD= 6.4) with the overall AQ scores in this study (M=20.59), SD= 7.37). The sample of students in this study scored an average of 2.99 points higher.

In Cohen's study, 80% of adults with autism scored 32 or above (M= 35.8, SD = 6.5), whereas only 50% (N=8) of respondents (diagnosed with autism) in this study (M= 32.8, SD =7.8) scored 32 or above.

DASS-21

Participant scores for depression (N = 406) ranged from 0 – 42 (M = 12.5, SD = 10.5) with the majority of participants scoring within the normal (47.8%) or mild (13.3%) range for depressive distress (see Table 10).

Similarly, overall participant scores for anxiety (*N* = 406) ranged from 0 to 40 (*M* = 10.8, *SD* = 8.6) with the majority of participants reporting moderate (20.0%) or lower (52.8%) distress from anxiety. Respondents' stress scores ranged from 0 to 42 (*M* = 15.4, *SD* = 8.9) with over 50% of participants scoring within the normal range for stress generated distress (see Table 10).

Table 10

Participants' frequency of distress severity for the DASS subscales

	Depression		Anxiety		Stress	
Normal	194	47.8%	171	42.2%	224	55.3%
Mild	54	13.3%	43	10.6%	55	13.6%
Moderate	80	19.7%	81	20.0%	63	15.6%
Severe	32	7.9%	31	7.7%	48	11.9%
Extremely Severe	46	11.3%	79	19.5%	15	3.7%
Total	406		405		405	

ATS

A higher score on the ATS measure represents a higher rate of behaviours associated with each subscale. Table 11 provides an overview of the sample results on the ATS Scale. Overall, participants who completed this measure (*N* = 389) scored near the ceiling on all three subscales (see Table 11) but all 3 subscales were normally distributed.

The modal score for both the high standards and self-criticism subscales were 15, their maximum score. Of the total participants, the maximum score possible was reported by 107 (33.2%) for high standards, 32 (8.9%) for generalisation and 80 (22.3%) for self-criticism.

Table 11

Total participant scores for each subscale of the Attitudes Toward Self measure

Subscales	Mean	SD	Skewness	Kurtosis	Range
High Standards	12.23	2.54	-.72	-.12	3 -15
Generalisation	14.26	4.08	-.56	-.46	4 -20
Self-Criticism	12.06	2.48	-.80	.19	3-15

SF-8

The overall sample of 384 participants had Physical Health Quotient scores ranging from 4-22 (M= 9.79, SD = 3.66) and Mental Health Quotient scores ranging from 4 – 20 (M= 11.10, SD = 3.68). Both scales were normally distributed in this sample.

RYFF

Table 12

Total participant scores for each subscale of the Ryff scales of Psychological Wellbeing

Subscales	Mean	SD	Skewness	Kurtosis	Range
Environmental Mastery	26.16	5.90	.074	-.22	10-41
Personal Growth	31.89	5.82	-.56	.13	10-42
Positive Relations	29.95	6.51	-.35	-.36	7-42
Purpose in Life	29.24	5.35	-.06	-.36	14-42
Self-Acceptance	25.83	7.52	-.23	-.57	8-42
Autonomy	27.80	6.05	-.01	-.31	11-42

The Ryff scales of Psychological Wellbeing utilise both an overall wellbeing score and scores for individual subscales (see Appendix B.6 for a full overview of each

subscale). Higher scores represent greater psychological wellbeing. Table 12 shows an overview of scores for each subscale.

The overall Ryff score for this sample ranged between 91 and 232 (M=170.87, SD = 28.63). All subscales were normally distributed.

Brief COPE

Of the initial 430, 394 participants completed the Brief COPE, and the results were processed into eight factors for analysis (Please note that the factors do not contain the same number of items and therefore do not have the same range. Each item pair has a range from two to eight, therefore, the factors where pairs of two or more items are added together the range increases proportionately). For each question, participants could receive a score between one and four depending on which answer they selected.

Table 13 presents an overview of respondents' self-reported coping behaviours, with a higher score indicating a greater tendency to engage in that coping behaviour.

Table 13

Participant scores on each factor for coping behaviours

Factors	Mean	SD	Skewness	Kurtosis	Range
Active and Positive Coping	19.82	5.15	.166	-.271	8 -32
Seeking Support	8.86	3.49	.458	-.715	4 -16
Expression of Negative Feelings	8.64	2.80	.430	-.376	4-16
Behavioural Disengagement	3.23	1.48	1.286	1.211	2-8
Substance Use	3.03	1.64	1.674	2.042	2-8
Religion	3.09	1.70	1.565	1.414	2-8
Humour	4.15	1.85	.569	-.630	2-8
Avoidance	7.96	2.04	.158	-.113	4-16

Correlations with Autistic Traits

Number of non-autistic diagnoses

Due to not having a normal distribution, a Spearman's rho correlation was conducted between the number of non-autistic diagnoses a respondent received and their total AQ score. A small but significant positive correlation was found – r (428) = 0.13, p = 0.006.

Psychological Distress

When correlated to the total AQ score, all three DASS-21 subscales (Depression, Anxiety and Stress) showed a moderately significant positive relationship - r (404) = 0.35, p = <0.001, r (404) = 0.33, p=<.001, and r (403) = 0.39, p=<.001 respectively.

On the ATS scale, significant correlations between the total AQ score were found for both Generalisation - r (358) = 0.31, p = <0.001 and Self-criticism - r (357) = 0.20, p <0.001. No significant correlation was found for the High Standards subscale -r (320) = 0.08, p <0.082.

A small but significant positive correlation was found between autistic traits and MHQ scores - r (382) = 0.24, p<.001). No significant correlation was found between autistic traits and PHQ scores - r (382) = 0.088, p= .085).

Psychological Wellbeing

All aspects of psychological wellbeing measured in this study were found to be significantly negatively correlated with autistic traits (see Table 15) except for autonomy.

Table 14

Correlations between psychological wellbeing (RSPW) and Autistic tendencies (AQ)

Correlated Variable	Pearson Correlation	Sig. (2-tailed)	N
Overall Wellbeing	-0.360	<0.001	384
Environmental Mastery	-0.308	<0.001	384
Personal Growth	-0.305	<0.001	384
Positive Relations	-0.480	<0.001	384
Purpose in Life	-0.157	<0.001	384
Self-Acceptance	-0.319	<0.001	384
Autonomy	-0.056	0.275	384

Coping Behaviours

Table 15

Coping factors correlated with the total AQ scores

Correlated Coping Behaviour	Pearson Correlation	Sig. (2-tailed)	N
Active and Positive	0.054	0.288	394
Seeking Support	-0.088	0.082	394
Expression of Negative Feelings	0.153	0.001	394
Behavioural Disengagement	0.176	0.000	394
Substance Use	-0.028	0.575	395
Religion	-0.046	0.362	394
Humour	0.048	0.343	394
Avoidance	0.201	0.000	394

Three of the factors used in this measure (*Behavioural Disengagement, Substance Use*, and *Religion*) were not normally distributed (see Table 13) so nonparametric correlations (Spearman's rho) were used for these analyses. As can be seen in Table 15, small but significant positive correlations were found for expression of negative feelings, behavioural disengagement, and avoidance.

Two of the coping factors (Active and Positive, and Support Seeking) were subjected to further analysis by breaking them up into the variables that comprise them.

Table 16 shows the breakdown for the Active and Positive coping factor. Three of the four variables were significantly correlated with the total AQ score. Neither Emotional Support - r (392) = -0.08, *p* =0.106, nor Instrumental Support - r (392) = -0.08, *p* =0.098, were found to be significantly correlated with the total AQ score.

Table 16

Correlation between total AQ and the strategies that make up the Active and Positive coping factor

Coping Strategies	Pearson Correlation	Sig. (2-tailed)	N
Active Coping	0.070	0.162	395
Positive Reframing	-0.111	0.028	394
Planning	0.102	0.043	394
Acceptance	0.099	0.049	394

Overview for Hypothesis 1-4

Based on bivariate analyses, moderately significant positive correlations between the total AQ score and measures of psychological distress were discovered.

Negative correlations between total AQ score and psychological wellbeing were shown, and weak correlations between total AQ score and maladaptive coping strategies were found.

Lastly, a significant correlation was found between AQ score and the number of diagnoses previously received.

Exploring the significance of having received a diagnosis of autism

The following section tests a null hypothesis. That there are no significant differences between the diagnosed autistic group (asdDX; *n* = 16), and the group of participants who reported clinically significant levels of autistic tendencies without a formal diagnosis (highAQ; *n* = 22).

Diagnosed Disorders

As both group membership and diagnoses status for each disorder are categorical variables a Chi-Square analysis was used. Due to group size limitations when using a Chi-Square analysis, only disorders with five or more participants from each group were included. This narrowed it down to two disorders, depression and anxiety/panic disorder. A significant difference was found for reported diagnoses of depression (X^2 (1, *N* = 39) = 3.95, *p* = .047) with the AsdDX group reporting nearly double the rates of diagnosed depression (62.5%) than the highAQ group (31.8%). Similar rates of diagnosed anxiety/panic disorders (43.8% and 45.5%, respectively) were reported and no significant differences (X^2 (1, *N* = 39) = 0.000, *p* = .987) detected.

Table 17

Number of disclosed disorders per participant (Excluding ASD)

Number of Disorders	asdDX	highAQ
0	2 (12.5%)	13 (56.5%)
1	6 (37.5%)	1 (4.4%)
2	5 (31.3%)	6 (26.1%)
3	1 (6.3%)	1 (4.4%)
4	0 (0.0%)	2 (8.7%)
5	1 (6.3%)	0 (0.0%)
6	1 (6.3%)	0 (0.0%)

Table 17 shows an overview of the number of non-autistic diagnoses participants received based on their group association with autism. Overall, the undiagnosed group with high autistic traits (*M* = 1.04, *SD* = 1.36) had fewer reported diagnoses than the group with an autism diagnoses (*M* = 1.88, *SD* = 1.63). In order to process the results statistically using a Chi-Square test, the number of disorders were dichotomized into no disclosed disorders (0) and one and more disclosed disorders (1+). Based on the results from the Chi-Square test, 56.5% (*n*= 13) of the highAQ participants did not disclose having previously received a diagnoses of any kind, compared to 12.5% (*n*=2) of the asdDX group. When computing this difference with a Pearson Chi-Square test, the difference was found to be significant (X^2 (1, *N* = 39) = 7.73, *p* = .005).

Depression, Anxiety and Stress

Table 18

DASS-21 subscale scores for participant groups

Group	N	Mean	SD
Depression			
highAQ	22	19.46	10.31
asdDX	16	17.63	12.25
Anxiety			
highAQ	22	18.55	9.70
asdDX	16	15.25	9.77
Stress			
highAQ	22	23.14	9.26
asdDX	16	23.88	11.30

Table 18 shows a breakdown of DASS-21 scores for participants based on their group membership. No significant difference was found between the two groups for any of the subscales (Depression - (*t* (36) = -0.5, *p* =0.621, Anxiety - (*t* (36) = -1.03, *p* = 0.310), and Stress (*t* (36) = 0.22, *p* =0.826).

Table 19

Participants' health component scores based on their AQ group

Health Component	asdDX		highAQ	
PHQ (*M*; *SD*)	11.20	4.21	9.29	4.00
MHQ (*M*; *SD*)	13.20	3.28	12.71	3.73

No significant group differences were found for either the PHQ (t (34) = -1.392, p = .173) or MHQ (t (34) = -0.405, p = .688) scores.

Table 20, shows an overview of participant scores for each of the ATS subscales. No significant differences were found for any of the subscales (High Standards - (t (35) = 0.06, p =0.987, Generalisation of Failure - (t (35) = 0.47, p = 0.550), and Self-Criticism (t (35) = 0.02, p =0.341).

Table 20

Group differences and significance levels for Attitude Toward Self subscales

Attitude Measured	asdDX	highAQ
High Standards *M* (*SD*)	12.91 (2.24)	12.95 (2.66)
Generalisation of Failure *M* (*SD*)	16.19 (4.25)	16.81 (3.78)
Self-Criticism *M* (*SD*)	12.94 (2.41)	12.95 (1.88)

Psychological Wellbeing

In regards to overall wellbeing, no significant difference was found between the asdDX and highAQ groups (t (34) = 0.25, p = 0.806). Table 21 summarises the mean scores for all subscales, and t-tests confirmed that no statistically significant differences were found between the two groups.

Table 21

Group differences and significance levels for RYFF-PW subscales

Subscale groups	*n*= 21 highAQ - M (SD)	*n*= 15 asdDX - M (SD)	t	Sig.
Environmental Mastery	23.12 (7.22)	21.40 (5.63)	0.77	.447
Personal Growth	30.05 (5.96)	29.13 (7.22)	0.42	.680
Positive Relations	23.05 (5.21)	24.80 (6.76)	-0.88	.386
Purpose in Life	28.29 (4.67)	29.28 (6.29)	-0.79	.433
Self-Acceptance	21.95 (7.72)	20.94 (8.25)	0.38	.710
Autonomy	29.69 (6.49)	27.60 (7.81)	0.88	.388

Group differences in regards to Coping Behaviours

Table 22

Group differences and significance levels for the Brief COPE subscales

Subscale groups	*n*= 21 highAQ - M (SD)	*n*= 16 asdDX - M (SD)	t	Sig.
Active and positive	20.81 (4.71)	21.88 (5.34)	-0.64	.524
Seeking support	8.57 (2.25)	9.56 (4.03)	-0.95	.348
Expression of negative feelings	9.10 (2.43)	9.50 (2.94)	-0.46	.649
Behavioural disengagement	3.57 (1.50)	3.44 (1.50)	0.27	.787
Substance use	2.43 (0.81)	2.56 (1.03)	-0.44	.661
Religion	3.05 (1.60)	3.25 (2.02)	-0.34	.735
Humour	5.29 (2.03)	3.69 (1.78)	2.50	.017
Avoidance	9.19 (2.23)	9.00 (1.75)	0.28	.780

Table 22 presents a summary of the group statistics for all subscales of the Brief COPE. Only one of the results was significantly different (t (35) = 2.50, p = 0.017) with the asdDX group scoring less than the highAQ group on the use of humour as a coping behaviour. However, due to the number of t-tests, there is a 7.73% chance that the significance is due to chance. As such, a Bonferroni Correction was applied and the results were found to no longer be significant.

Further Analysis

Table 23

The correlation between Psychological-Wellbeing and Distress

Measures of Distress	N	Pearson Correlation	Sig.
ATS- High Standards	384	0.188	0.000
ATS- Generalisation of failure	384	-0.571	0.000
ATS- Self-Criticism	384	-0.272	0.000
DASS- Depression	383	-0.646	0.000
DASS- Anxiety	383	-0.452	0.000
DASS- Stress	382	-0.440	0.000
SF8- Physical Health	383	-0.280	0.000
SF8- Mental Health	383	-0.556	0.000

Table 23 shows the subscales of three distress measures (ATS, DASS, and SF-8), and their associations with overall psychological-wellbeing. It can be seen that all measures of distress were significantly correlated with wellbeing, and that small to moderate associations were found for all subscales bar the ATS-High-standards that was unique in that it had a positive association wellbeing.

Furthermore, when calculating Spearman's rho for Behavioural Disengagement and the DASS-21 – Depression subscale, a moderate correlation was found- r (391) = 0.58, p <0.000.

Chapter 4: Discussion

This study set out with the aim of broadening the current understanding of distress experienced by university students who display autistic tendencies, and how they cope with this distress. The research focused on the correlation between the number of autistic traits a person has, their levels of psychological distress, and the behaviours they employ to cope. The second aim of this study was to explore potential differences between diagnosed autistic students, and students displaying clinically significant levels of autistic tendencies without a formal diagnosis.

Psychological Distress

The first question of this study sought to investigate whether there was a significant correlation between autistic traits and psychological distress. This was done by comparing AQ scores to the overall psychological wellbeing score, and correlating those same AQ scores to psychological distress in the form of depression, anxiety, stress, negative attitudes toward self, and overall mental health.

As was predicted, a moderately significant positive correlation was found between the number of autistic tendencies an individual reports, and their reported levels of depression, anxiety, stress and tendency to generalise failure. Furthermore, smaller, but significant correlations were found for a tendency toward self-criticism and overall distress stemming from poor mental health. However, contrary to expectations, no significant correlation was found between the level of autistic traits and a tendency towards high standards.

Depression, Anxiety and Stress

These findings support previous literature that has shown that autistic individuals are more prone to experiencing depression, anxiety, and stress than NT individuals (Croen et al., 2015; Nah et al., 2017). The current study adds to the literature by showing elevated psychological distress in autistic students,

even when compared to a university population, which has previously been identified as a sub-group that experiences higher rates of psychological distress compared to a non-university population (Liu et al., 2018).

Attitudes Toward Self

While it appears that no prior research has looked at ATS scores for an autistic student population, this study opens up the field and provides a basis of comparison for future studies.

No significant correlations were found between autistic tendencies and high standards. This was unexpected as South et al. (2010) noted a tendency for autistic individuals' behaviour to be driven by a fear of failure. However, as Greenaway and Howlin (2010) observed, high standards in autism are often socially prescribed perfectionism in which people in the individual's environment push them to achieve higher standards than their peers. The current study asked for rates of self-prescribed high standards (i.e. whether the individuals themselves held high standards). It is then less unexpected that no significant association between autistic tendencies and high standards were found, as Greenaway and Howlin (2010) similarly found no difference in self-prescribed perfectionism between their ASD and NT groups.

It is interesting that, as hypothesised, a moderate association between autism and *over*-generalisation of failure was found. Previously, children with autism have been observed to be over-selective with stimuli (they tend to under generalise; for example see Lovaas, Koegel, & Schreibman, 1979), and thus fail to generalise behaviours to new situations or environments. However, there appears to be a paucity of research surrounding the over generalisation of failure in autistic students, and therefore more conclusions cannot be drawn without speculation. More research is needed to see if similar patterns emerge and if they do, the reason behind them. An example of future research could include setting up an experiment in which the given task will result in failure regardless of the participants' efforts and then giving them similar tasks and testing whether or not their failure from the first experiment will be generalised to a feeling of failure for the following task.

Similarly, self-criticism in autistic students has been a neglected topic and no known literature is available for comparison. The lack of comparison data shows a clear need for research on autistic students' attitudes towards themselves, which given their high rates of psychological distress, is concerning.

One intervention that has focused on dysfunctional beliefs in children with autism is Cognitive Behavioural Therapy (CBT). CBT is a problem-focused intervention that aims to teach clients missing skills that can help contribute to better psychological outcomes in the future. While it has addressed psychological distress in an autistic population, this is usually limited to anxiety, depression, and aggression (Attwood, 2004; Kincade, 2009). It is likely that CBT can address self-criticism with favourable outcomes and it would be interesting to see future research using CBT to address challenges for autistic tertiary students.

The current study opens up new areas of research on distress in autistic students by showing a correlation between autistic tendencies and both self-criticism, and a generalisation of failure.

Factors Relating to Psychological Wellbeing

With regard to psychological wellbeing, autistic tendencies were negatively correlated with *overall wellbeing*, *environmental mastery*, *personal growth*, *positive relations with others*, *purpose in life*, and *self-acceptance*. Contrary to the hypothesis, autistic tendencies were not significantly associated with *autonomy*.

While psychological well-being and distress are measured as two separate constructs, it seems intuitive that a population with elevated rates of distress will have reduced levels of overall wellbeing. In this study, significant associations between overall psychological wellbeing and distress were found for all subscales of distress. Interestingly, *high-standards* had a slight positive association with wellbeing, while *self-criticism* and *poor physical health* had a small negative association.

Although not directly related to autism, results in this study showed a moderate to large negative association between wellbeing and distress on the

over generalisation of failure, *depression*, *anxiety*, *stress,* and *poor mental health* subscales. This is important to note in order for future interventions to account for the effects these distress variables could have on participants, especially given that autistic tendencies were positively associated with experiencing all of the above-mentioned variables of distress.

Few studies (e.g. Arias et al., 2017; Rodgers et al., 2017) have focused on exploring constructs of wellbeing instead of distress in autism. For this reason, to compare results from this study to previous literature, it is necessary to look for reported experiences of distress that are similar to characteristics found in individuals who are categorised as "low scorers" for each of the following wellbeing subscales:

Environmental Mastery measures an individual's ability to manipulate their environment to meet their specific needs. Low scorers are identified as struggling with daily tasks, and experiencing feelings of a lack of control (Ryff, 1989). Autistic tendencies were moderately associated with a lower score. These findings are comparable to previous studies that have reported autistic students struggling with daily tasks (Anderson & Butt, 2017; Elias & White, 2017), and highlights a need for interventions to target missing skills.

Personal Growth measures a desire to pursue new experiences and develop ones potential. Low scorers experience feelings of stagnation, boredom, and lack interest in life (Ryff, 1989). Based on how this scale is operationally defined, it could be comparable to results from the "openness" subscale of the Big-five. In this case, findings of an association between autistic tendencies and lower openness to new experiences are consistent with previous literature such as Rodgers et al. (2017) who found that among their 253 participants, ASD characteristics were related to lower openness, conscientiousness, extraversion, agreeableness, emotional-stability, and self-concept clarity. Participants in their study were surveyed online, and their ages ranged from 18 to 63.

Positive Relations with Others measures intimate connections between individuals and their experiences of love and empathy (Ryff, 1989). Due to social and communication challenges being key to an ASD diagnosis (APA, 2013), it is hardly surprising that a negative correlation was found between autistic traits

and this subscale. This supports previous literature that has found a negative association between autistic traits and lower levels of positive relations with others (Bolourian et al., 2018; Rodgers et al., 2017), and an increased risk of feeling lonely (Anderson et al., 2018).

Purpose in Life measures feelings of purpose and direction. Low scorers are vulnerable to experiencing directionlessness, a lack of goals or aims, and have fewer beliefs that give their life meaning (Ryff, 1989). A negative correlation was found between autistic tendencies and this subscale. While directly measuring purpose in life for autistic students has not been addressed in the literature, factors that overlap with deficits in executive functioning such as directionlessness, lack of appropriate goal setting and challenges with goal-orientated behaviours have been (Ferraro, Hansen, & Deling, 2018). Ferraro et al. (2018) studied executive functioning in participants who scored high and low on the AQ and found significant differences concerning motivation/drive and organisational skills. Their findings, combined with results from the current study suggests that impairments in executive functioning might negatively affect psychological wellbeing for autistic students.

Lastly, *Self-Acceptance* is measured as a positive attitude toward oneself. Low scorers feel dissatisfied with themselves, often wishing that they were different (Ryff, 1989). Given the correlation of autistic tendencies with self-criticism and a generalisation of failure, it is not surprising that a negative correlation was found between autistic traits and self-acceptance. As mentioned above, a lack of research with autistic participants regarding their attitudes toward self (and in this case self-acceptance) makes it difficult to compare results to previous literature. However, data on self-esteem as whole has shown that autistic individuals often have poor self-esteem (Hillier et al., 2018). It is notable that most interventions with autistic children focus on changing their behaviours or teaching them to fit in with others (i.e. ABA and CBT). As such, it is not unexpected to find that these people might struggle to accept themselves, given how much effort society goes through to change their unique characteristics (for example, see concerns raised by Lynch, 2019). Future interventions should consider the ethical implications of attempting to 'normalise' autistic behaviours,

and instead, as the Neurodiversity Movement suggests (Kapp et al., 2013), perhaps focus on improving the university environment to make it more accepting of autistic tendencies.

The only subscale not significantly associated with autistic tendencies was *Autonomy*. This finding is most likely due to how it has been operationally defined: characterised by self-determination, self-regulation, and independence. Low scorers evaluate themselves by the standards of others, and conform to social pressure. High scorers are self-determined, resistant to social pressure, and evaluate themselves by their own standards. As autistic individuals struggle to relate to others, and have been characterised as excessively independent (Kanner, 1943; Asperger, 1991). Their lack of social concern or knowledge of the desires of others is likely to elevate scores on this subscale, thus accounting for the comparable rates of *autonomy* found despite a negative association being hypothesised.

Overall, these results match those observed by Rodgers et al. (2017), who also found an association between autistic tendencies and all subscales of the Ryff Scales of Psychological Wellbeing, except for *autonomy*. While the authors did not explore the reasoning behind this finding, they did find that personality mediated the relationship between autistic tendencies and psychological wellbeing. Hillier et al. 's (2018) study showed promise in reducing levels of both low self-esteem, and loneliness in autistic tertiary students and should be taken into account when planning future interventions.

Coping Behaviours

The second question of this study explored how autistic tendencies correlates with the coping behaviours students employ to approach distress. It was hypothesised that autistic tendencies would be positively correlated with maladaptive coping behaviours, but negatively correlated to adaptive coping behaviours.

In the current study, coping behaviours were categorised into eight factors, namely: *Active and Positive Coping* (comprised of planning, positive

reframing, active coping, and acceptance)*, Seeking Support* (both social and instrumental support), *Expression of Negative Feelings* (venting and self-blame), *Behavioural Disengagement, Substance Use, Religion, Humour*, and *Avoidance* (self-distraction and denial). Adaptive coping behaviours comprise two of these factors: *Active and Positive Coping*, and *Seeking Support*; while maladaptive coping is comprised of *Expression of Negative Feelings*, *Behavioural Disengagement*, *Substance use*, and *Avoidance*. The two remaining factors, *Religion* and *Humour* are considered neutral in that they are neither adaptive nor maladaptive in themselves.

As predicted, higher levels of autistic tendencies correlated with higher rates of employing maladaptive coping behaviours. However, it should be noted that while a significant correlation was found for *Expression of Negative Feelings, Behavioural Disengagement* and *Avoidance*, the effect size was small and no significant correlation was found for *Substance Use*.

Contrary to the hypothesis, no significant negative correlation was found between autistic tendencies and any of the adaptive coping behaviours (*Active and Positive Coping*, and *Seeking Support*). Furthermore, no significant correlation was found for either *Religion* or *Humour*.

There are a number of possible explanations as to why no significant correlation was found for *Active and Positive Coping*. The first possible explanation is that the factor might involve too many different variables. In this study (and as suggested by Kapsou et al., 2010), *Active and Positive Coping* is an amalgamation of planning, positive reframing, active coping, and acceptance. It is possible that a significant correlation could have been found had these variables been tested separately. Indeed, when breaking this factor into the four separate categories, small but significant correlations are found for *Planning*, *Positive Reframing*, and *Acceptance*.

However, the effect sizes are very small and both *Planning* and *Acceptance* have *p*-values bordering on insignificant. It is important to note that both *Planning* and *Acceptance* have positive associations with autistic tendencies, which is in the opposite direction than what was predicted. These results showed an association between higher autistic tendencies and the

likelihood of employing Planning and Acceptance as coping behaviours, while showing an increased unlikelihood of employing Positive Reframing. These results needs to be replicated and researched in more detail to determine whether they hold true in a different sample. In previous studies, *Positive Reframing* has been negatively associated with maladaptive behaviours in an autistic sample of 61 emerging adults (aged 14 – 24; Cai et al., 2018), and as such interventions might benefit from teaching Positive Reframing as a coping strategy.

It was unexpected to find no negative correlation between autistic tendencies and *Seeking Support,* as challenges in relation to social skills is a key characteristic of autism (APA, 2013). As above, this might partially be explained by the fact that *Seeking Support* consists of two separate factors, support from peers and instrumental support. However, when tested separately neither one of the *Seeking Support* variables was significantly associated with autistic tendencies (despite the correlational direction being in the predicted direction) and as such, the lack of an association was not due to the amalgamation of the two variables. There are two possible explanations for this finding. Firstly, given the current study sample comprised university students, autistic students might be able to seek support from faculty staff or disability centres who might be more accepting of their unique characteristics and challenges than their fellow students would be. These two sources of support might account for the lack of negative association between *Support Seeking* and autistic tendencies.

The first explanation is partially supported by Dachez and Ndobo's (2017) finding that autistic participants in their study sought out support from atypical friends and animals. While unconventional in terms of support sources, this could account for why no negative correlation was found. Alternatively, students who utilise services and supports might be more likely to enrol in tertiary education and a significant association might be found in students who did not elect to enrol at a university. Secondly, as Freire et al. (2016) noted, females are more likely to employ support seeking behaviours and given that the current study sample was predominantly female (63%), this could have skewed the results. However, further research is needed to draw any conclusions, and

qualitative data might be especially useful in trying to understand this coping behaviour.

It is important to note that the results show a significant correlation between autistic tendencies and maladaptive coping behaviours. The first construct, *Expression of Negative Feelings*, comprises behaviours such as venting and self-blame. As predicted, autistic tendencies were significantly associated with this construct. This meant that higher autistic tendencies were associated with being more likely to verbalise negative feelings, or for individuals to criticise and blame themselves for the situation. Given the above reported findings for elevated levels of self-criticism, this is not an unexpected finding. The association found for this construct was weak though, and more research is needed to see if similar findings will be observed.

Similarly, while significant, the association between autistic tendencies and *Behavioural Disengagement* was weak, but in the predicted direction. It should be noted that questions on this scale could be considered expressions of depression (i.e. "*I've been giving up trying to deal with it"* and "*I've been giving up the attempt to cope"*). Indeed, when correlated with ratings from the DASS a moderate to large correlation between *Behavioural Disengagement* and *Depression* was found however, this hypothesis is speculative and does not account for causality. Future research should consider using a different measure of *Behavioural Disengagement* to test if results are comparable despite the current measure's possible overlap with depression scales. However, this might be difficult given that behavioural disengagement is a prime symptom of depression.

The final coping behaviour that was significantly associated with autistic tendencies is *Avoidance.* Again, the association was weak but significant and in the predicted direction. *Avoidance* focused on respondents' reported rates of denial or self-distraction. This finding support previous literature that has found *Avoidance* coping strategies among high-functioning autistic participants (Dachez & Ndobo, 2017). It is concerning that autistic tendencies were correlated with avoidance as Aldao et al. (2010) found a significant relationship between *Avoidance* and depression, anxiety and eating disorders.

This finding, taken with research from Aldao et al. (2010), suggests the importance of encouraging adaptive coping and teaching students how to employ problem-solving skills in order to reduce the likelihood of maladaptive coping strategies forming (Aldao et al., 2010).

While previous research has focused on parents of autistic students using religion as a coping behaviour, no data were apparent for autistic students themselves. The present study might well be one of the first studies to look at religion from the perspective of autistic students, and it should be noted that autistic tendencies were not associated with the use of religion as a coping behaviour. One previous study to focus on autism and religion was conducted by Stuger (2018) but was a case study and the results cannot readily be extrapolated to the broader autistic phenotype.

Humour was identified as a coping strategy in Dachez and Ndobo (2017), and evidence from the current study suggests that autistic traits do not have an effect on students' use of *Humour* as a coping strategy. It therefore seems reasonable that students with high autistic traits are just as likely to use *Humour* as a coping strategy as students without high levels of autistic traits.

Overall, the results only partially support the notion that autistic tendencies are associated with the employment of less adaptive coping behaviours. While it is true that significant associations were found for most of the maladaptive strategies, these associations were weak. It is encouraging to find no negative association between autistic tendencies and the employment of adaptive coping behaviours. However, more research is needed to see if this is common among university students with high autistic tendencies, or if this sample was unique in this regard. It is possible that students without impaired adaptive coping are more likely to attend university than those who mainly rely on maladaptive coping behaviours.

Based on the findings of Folkman and Moskowitz (2000) and Aldao et al. (2010), future interventions should aim to encourage the use of coping strategies that allow the individual to experience positive emotions despite the distress.

Non-Autistic Diagnoses and Physical Health Distress

The third question in this study set out to explore the correlation between autistic tendencies and non-autistic psychiatric disorders, as well as autistic tendencies and distress experienced from poor physical health. It was hypothesised that higher autistic tendencies would be associated with a greater likelihood of having received a non-autistic, psychiatric diagnosis. Furthermore, it was hypothesised that students with higher autistic tendencies would report higher levels of distress stemming from poor physical health.

The results showed that the hypothesis was partially confirmed in that autistic tendencies were positively associated with psychiatric disorders. This supports previous studies that have found autistic individuals had higher rates of psychiatric disorders (Croen et al., 2015; Rosen et al., 2018).

Contrary to the hypotheses, no significant correlation was found between autistic tendencies and distress experienced from poor physical health. This was unexpected given the literature showing higher rates of medical disorders in an autistic sample (Croen et al., 2015).

One possible reason for this finding may be that the health services offered to students at a tertiary level are adequate to meet their physical health needs, or that autistic students at university might have fewer physical health concerns than their non-student counterparts (i.e. ASD individuals with greater physical health concerns might be less likely to attend university). This would be an interesting topic for future studies as it might identify a specific benefit from attending university that is not related to academic achievement. Future research should attempt to look at whether access to university health services reduce the level of distress adults with high autistic tendencies experience from poor physical health, compared to their non-university attending counterparts. If a significant finding is to be found, it would be of particular relevance to see which aspects of the university health services might have benefits over the public health services (i.e. other patients are also students, convenient location and accessibility in relation to classes, smaller waiting rooms etc.).

Autism and Autistic Tendencies

The final research question in this study was whether or not students with clinically significant levels of autistic traits (as is determined by scoring 32 or above on the AQ scale) differed from diagnosed autistic students in the levels of distress they experience, how they cope with distress, and the psychiatric disorders they are diagnosed with. It was hypothesised that there would be no significant differences between the two groups on any of the variables measured.

As predicted, results showed no significant difference between the two groups for either depression, anxiety and stress, nor tendencies to generalise failure, high standards, or self-criticism. Furthermore, no significant differences were found between the two groups concerning their mental and physical health component scores, their psychological wellbeing, or on the reported rates of employing most of the coping behaviours (*Active and Positive, Seeking Support, Expression of Negative Feelings, Behavioural Disengagement, Substance Use, Religion,* and *Avoidance)*.

The only other difference between the two groups was the number of non-autistic disorders they have been diagnosed with. The diagnosed autistic group were significantly more likely to have been diagnosed with a non-autistic disorder. This was especially noticeable in diagnosed rates of depression where the diagnosed autistic group had nearly double (62.5%) the rates of the non-diagnosed group (31.8%).

This was an unexpected finding, as the two groups did not differ significantly in their reported rates of experienced depression. It seems likely that this difference stems from respondents in the non-diagnosed group not having had the same amount of exposure to a mental health professional, and as such have been less likely to get any psychiatric diagnoses.

Due to the strong similarities between these two groups, it appears that they are in fact from the same population and that research should consider them as one group and not two separate divisions. This is a very important

finding and highlights the need to include students displaying clinically significant levels of autistic traits in research that aims to understand the condition.

Limitations and directions for future studies

While this study undoubtedly had many strengths, it also had a number of limitations. The first and most obvious limitation is that the study utilised self-report measures to obtain all data. This allowed participants to select answers without checking the validity of their responses. Results are subject to participants' honesty and their ability to objectively respond to questions about their behaviours. The questionnaire was anonymous and participants self-selected.

This ties in to the second limitation, the current responded group was over-sampled from psychology (33.5%) and psychology students had to contribute to research studies in order to pass their course. Psychology students might differ from those students enrolled in different majors in terms of their knowledge about coping with distress. However, the study did actively attempt to recruit students from other disciplines, so the participants did cover a wide variety of majors as is noted in Appendix C.1.

The current study was cross-sectional, and not longitudinal. This means that data on changing rates of psychological distress or coping behaviours are not available. This limits the potential for causal data and means that it was not possible to observe any changes in distress that might occur if students displaying clinically significant rates of autistic traits obtain an official diagnosis during the study period.

The current sample was limited mainly to two universities with 75.1% of respondents attending the University of Waikato and 18.5% of respondents attending Canterbury University. Coping behaviours or levels of distress might change depending on the university students attend, and the services or accommodations each university provides. Future studies should consider asking participants which, if any, accommodations or services they utilise.

The current study does not account for prescription medication participants are taking (62.5% of participants in the Jackson et al., 2017 study reported being prescribed at least one medication), and therefore fails to account for possible side effects (or intended effects like reducing distress) that could influence distress ratings. Future studies might benefit from including prescription medication as this might even affect participants' coping behaviours (for example some medications might aversely react to alcohol, and as such reduce the likelihood that the given participant would engage in substance use as a coping behaviour.)

Despite ASD being 4 times more likely to occur in males, 63% of the current study were female. Previous research (Baron –Cohen et al., 2014; Hull et al., 2017) has found different expressions of ASD symptomologies in males and females, and as such, the results in this study might differ slightly from a sample with a more traditional gender distribution. While this might be considered a limitation, it is also a strength in that it provides information about female tertiary students with ASD – a sample that is rare in the literature.

As is common with studies on autism, the current study had a small sample size of diagnosed autistic students (*N*=16). Similarly, the comparison group displaying clinically significant levels of autistic tendencies without a formal diagnosis had only 22 participants. Taken together these two groups form a relatively small sample size, and further research is needed to see if results remain consistent in different study samples.

Clinical Implications

So far, the literature has yet to create a robust picture of autistic wellbeing, and instead tends to focus on a narrow number of factors contributing to psychological distress. In order to help these individuals, future interventions should consider focusing on the positive aspects of wellbeing, and teach skills that support growth in those areas instead of just focusing on distress (Folkman & Moskowitz, 2000; Aldao et al., 2010)

A lack of significant differences between the two groups has the implication of services not providing adequate support to distressed students, because they have not received an official diagnoses at some stage in the past. Both this study and that done by White et al. (2011) provide evidence to suggest that universities need to support undiagnosed students displaying clinically significant levels of autistic traits. While it will likely prove challenging to try and account for all students who experience distress due to high autistic tendencies, universities might benefit from collaborating with school systems in order to set up a transitioning program similar to the STEPS programme described by White et al. (2017). Support strategies need to be broader and more general, for example making lecture notes available to all students and not just those with a proven disability, or having guided campus tours regularly in the weeks leading up to a semester start (Anderson and Butt, 2017).

Overall, services that aim to support students displaying high levels of autistic tendencies need to focus on identifying which skills a student is lacking, and facilitate the acquisition of these skills while simultaneously encouraging the use of adaptive coping behaviours.

Conclusion

The current study aimed to broaden the literature by providing data on the association between autistic tendencies and a wide range of variables relating to psychological distress, wellbeing, and coping strategies.

It replicated results that show an association between autistic tendencies and elevated levels of depression, anxiety, stress, comorbidities, poor mental health, and maladaptive coping strategies. Prior work on distress was extended by showing an association between autistic traits, and a tendency for self-criticism and to over generalise failures. Furthermore, it replicated previous studies that found a negative association between autistic tendencies and wellbeing in the areas of overall wellbeing, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Of note is that this research also replicated that autistic tendencies were *not* significantly associated with autonomy.

Overall, this study found a number of significant associations that can be used as a basis for comparison for future research, as well as having confirmed findings from previous literature for a New-Zealand tertiary context. It is the first of its kind in New Zealand, and measures variables that are not yet thoroughly researched in autistic adults.

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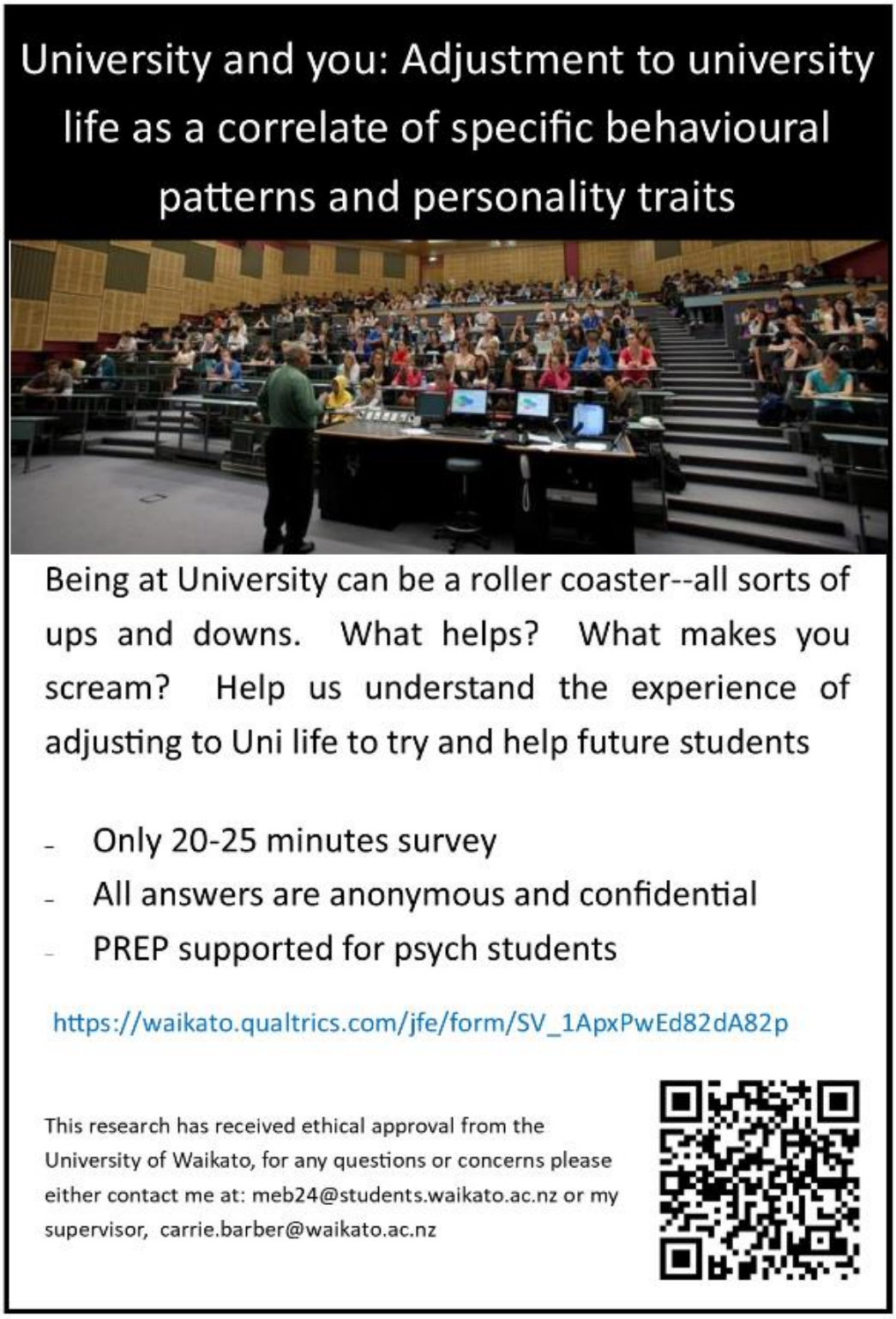
Appendices

Appendix A – Recruitment Information and Ethics

Appendix A.1 – Recruitment Flyer



Appendix A.2 – List of First Year Papers Contacted

1	ACCTN101	ENGEN184	MATHS168
2	ACCTN102	ENGLI100	MEDIA101
3	ANTHY102	ENGLI113	MGSYS101
4	ARTSC101	ENVPL101	MRKTG101
5	ARTSC103	ENVSC101	MUSIC115
6	ARTSC104	FINAN101	MUSIC120
7	ARTSC111	FRNCH132	PHILO102
8	BIOEB102	GEOGY101	PHILO103
9	BIOMO101	HISTY145	PHILO150
10	CHEMY102	HMDEV100	PHYSC101
11	CHINE132	HSHUP102	POLSC102
12	COMPX101	IRSST104	PSYCH101
13	COMPX102	JAPAN132	SDCOA101
14	COMPX151	LABST100	SOCWK102
15	COMPX161	LCOMM102	SPNSH132
16	CSMAX170	LEGAL104	STATS111
17	DANCE101	LLTED100	STMGT101
18	DIGIB101	MAORI101	TEACH100
19	DSIGN142	MAORI102	TEACH102
20	DSIGN151	MAORI103	TEACH110
21	EARTH102	MAORI112	TEEDU100
22	ECONS101	MAORI150	TEEDU101
23	ECONS102	MAORI157	TEEDU102
24	EDSOC101	MATHS101	TEMB150
25	ENGEN110	MATHS102	TEMS142
26	ENGEN112	MATHS135	TEPC120
27	ENGEN170	MATHS165	
28	ENGEN183	MATHS166	

Appendix A.3 - Number of Students from Each Tertiary Institute

Tertiary Institute	Frequency	Percentage
University of Waikato	320	75.1
University of Auckland	9	2.1
University of Otago	1	0.2
Massy University	14	3.3
Victoria University	1	0.2
Canterbury University	79	18.5
Ara	1	0.2
Wintec	1	0.2

Appendix A.4 – Consent Information Page

Hello and thank you for showing interesting in being a part of this study.

My name is Martina Bruwer and I am a current Masters student at the University of Waikato, this study is looking at the correlation between specific behaviours and personality traits in regards to adjustment to university life for current students. While the behaviours and traits being looked at are commonly associated with the autism spectrum, this study is interested in all students regardless of whether or not they have an autism spectrum disorder. It is my hope that this research will provide information to help with services providing support to future students.

It is comprised of a demographic section and six different questionnaires. It should take approximately 20-25 minutes to complete and you are able to take breaks, skip any questions you don't want to answer, and stop at any time by closing the browser.

There is the chance that this research will be published but rest assured that your results will in no way be linked to you and will remain completely anonymous. While this study is conducted through the University of Waikato, data from any New Zealand university student is welcomed. However, you must be a student CURRENTLY attending university. Results from this study will be publicly available as a Masters Thesis at the university library after examination.

Please note that when you complete the survey, you are giving your consent for the researcher to use the information you have provided.

This research is done through the University of Waikato and has received no sponsorship or funds. The data gathered by this research will be kept in a private file and accessed only by myself, and my supervisor. Some of the questions will address topics such as stress and self-esteem which might be distressing to some participants if that is the case you are welcome to discontinue the study at any point.

For any questions or concerns please feel free to contact either me (Martina) at meb24.students@waikato.ac.nz, my supervisor (Carrie) at carrie.barber@waikato.ac.nz

This research project has been approved by the Human Research Ethics Committee (Health) of the University of Waikato under HREC (Health) #2018-31. Any questions about the ethical conduct of this research may be addressed to the Secretary of the Committee, email humanethics@waikato.ac.nz, postal address, University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240.

- ○ I understand and agree (1)
- ○ I don't agree and no longer wish to participate in this study (2)

Thank you for taking the time to complete this survey. I appreciate your input and please remember that if you are struggling with academic or personal problems, your university will have a student support center and related services that can help you.

Otherwise, NZ has a range of services available, such as:

Lifeline – 0800 543 354 (0800 LIFELINE) or free text 4357 (HELP)
Suicide Crisis Helpline – 0508 828 865 (0508 TAUTOKO)
Healthline – 0800 611 116
Alcohol and Drug Helpline – 0800 787 797 or online chat
Are You OK – 0800 456 450 family violence helpline
Anxiety phone line – 0800 269 4389 (0800 ANXIETY)

Appendix B – Measures and Scoring Instructions

Appendix B.1 – Initial Demographic Questions

How old are you?

Which gender do you identify most strongly with?

- Male
- Female
- Non-binary
- I want to specify

Ethnicity

- European
- Māori
- Pacific Peoples
- Asian
- Middle Eastern/Latin American/ African
- Other, please specify

Where do you study?

- University of Waikato
- University of Auckland
- University of Otago
- Massy University
- Victoria University
- Canterbury University
- Auckland University of Technology
- Lincoln University
- Other, please specify

What qualification are you currently enrolled in?

- Bachelors
- Bachelors with Honours
- Masters
- PhD
- Postgraduate Diploma
- Certificate
- Other, please specify

What is your major?

Which best describes your current living arrangements?

- Full time student with student allowance
- Full time student without student allowance
- Full time student working more than 20 hours a week
- Full time student working less than 20 hours a week
- Part time student working more than 20 hours a week
- Part time student working less than 20 hours a week

Which best describes your current situation?

- Renting/ flatting with others for the first time
- Renting/ flatting with others for your second year or more
- Living at your family home
- Boarding
- Living in university accommodation
- Living alone for the first time
- Living alone for your second year or more
- Living in a home you own
- Other, please specify

What is your current Residency Status

- International Student
- Permanent resident
- NZ citizen born in a different country
- NZ citizen born in NZ

What languages besides English are you comfortable speaking?

How comfortable are you with your English ability?

- Extremely comfortable
- Comfortable
- Neither comfortable or uncomfortable
- Slightly uncomfortable
- Very uncomfortable

Appendix B.1b –Final Demographic Questions

Have you ever been diagnosed with any of the following? Please select all that apply

- ☐ Depression
- ☐ Anxiety/ Panic Disorder
- ☐ Autism Spectrum Disorder (Including Asperger Syndrome)
- ☐ Substance-Related or Addictive Disorders
- ☐ Schizophrenia
- ☐ Dyslexia or another learning disorder
- ☐ Bipolar Disorder
- ☐ Attention-deficit hyperactivity disorder (ADHD)
- ☐ Adjustment Disorder
- ☐ Eating Disorder
- ☐ Oppositional Defiant Disorder
- ☐ Sleeping Disorder
- ☐ Obsessive-Compulsive (OCD) or Obsessive-Compulsive Personality Disorder (OCPD)
- ☐ Dissociative Disorder
- ☐ Other, please specify

How did you hear about this survey?

- ○ Facebook
- ○ I saw a poster
- ○ Word of mouth
- ○ Email
- ○ Class Moodle page
- ○ PREP (Please open this link to complete your PREP requirements): https://waikato.qualtrics.com/jfe/form/SV_blOFl0EoWY84UCN
- ○ Other, please specify

Appendix B.2 – DSM-IV Diagnostic Criteria for Autistic Disorder

DSM IV CRITERIA FOR DIAGNOSING AUTISTIC DISORDER*

A. A total of six (or more) items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):

1. Qualitative impairment in social interaction, as manifested by at least two of the following:

> *a. marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction.*
>
> *b. failure to develop peer relationships appropriate to developmental level.*
>
> *c. a lack of spontaneous seeking to share enjoyment, interests or achievements with other people (e.g., by a lack of showing, bringing or pointing out objects of interest.*
>
> *d. lack of social or emotional reciprocity.*

2. Qualitative impairments in communication as manifested by at least one of the following:

> *a. delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime).*
>
> *b. in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others.*
>
> *c. stereotyped and repetitive use of language or idiosyncratic language.*
>
> *d. lack of varied, spontaneous, make-believe play or social imitative play appropriate to developmental level.*

3. Restricted, repetitive and stereotyped patterns of behavior, interests and activities, as manifested by at least one of the following:

> *a. encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus.*
>
> *b. apparently inflexible adherence to specific nonfunctional routines or rituals.*
>
> *c. stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements).*
>
> *d. persistent preoccupation with parts of objects.*

B. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play.

C. The disturbance is not better accounted for by Rett's Disorder or Childhood Disintegrative Disorder.

Appendix B.2b – Autism Quotient Scale (AQ)

The AQ Test

		Definitely agree	Slightly agree	Slightly disagree	Definitely disagree
1	I prefer to do things with others rather than on my own.				
2	I prefer to do things the same way over and over again.				
3	If I try to imagine something, I find it very easy to create a picture in my mind.				
4	I frequently get so strongly absorbed in one thing that I lose sight of other things.				
5	I often notice small sounds when others do not.				
6	I usually notice car number plates or similar strings of information.				
7	Other people frequently tell me that what I've said is impolite, even though I think it is polite.				
8	When I'm reading a story, I can easily imagine what the characters might look like.				
9	I am fascinated by dates.				
10	In a social group, I can easily keep track of several different people's conversations.				
11	I find social situations easy.				
12	I tend to notice details that others do not.				
13	I would rather go to a library than to a party.				
14	I find making up stories easy.				
15	I find myself drawn more strongly to people than to things.				
16	I tend to have very strong interests, which I get upset about if I can't pursue.				
17	I enjoy social chitchat.				
18	When I talk, it isn't always easy for others to get a word in edgewise.				
19	I am fascinated by numbers.				
20	When I'm reading a story, I find it difficult to work out the characters' intentions.				
21	I don't particularly enjoy reading fiction.				
22	I find it hard to make new friends.				
23	I notice patterns in things all the time.				
24	I would rather go to the theater than to a museum.				
25	It does not upset me if my daily routine is disturbed.				
26	I frequently find that I don't know how to keep a conversation going.				
27	I find it easy to 'read between the lines' when someone is talking to me.				

28	I usually concentrate more on the whole picture, rather than on the small details.				
29	I am not very good at remembering phone numbers.				
30	I don't usually notice small changes in a situation or a person's appearance.				
31	I know how to tell if someone listening to me is getting bored.				
32	I find it easy to do more than one thing at once.				
33	When I talk on the phone, I'm not sure when it's my turn to speak.				
34	I enjoy doing things spontaneously.				
35	I enjoy doing things alone.				
36	I find it easy to work out what someone is thinking or feeling just by looking at their face.				
37	If there is an interruption, I can switch back to what I was doing very quickly.				
38	I am good at social chitchat.				
39	People often tell me that I keep going on and on about the same thing.				
40	When I was young, I used to enjoy playing games involving pretending with other children.				
41	I like to collect information about categories of things (e.g., types of cars, birds, trains, plants).				
42	I find it difficult to imagine what it would be like to be someone else.				
43	I like to carefully plan any activities I participate in.				
44	I enjoy social occasions.				
45	I find it difficult to work out people's intentions.				
46	New situations make me anxious.				
47	I enjoy meeting new people.				
48	I am a good diplomat.				
49	I am not very good at remembering people's date of birth.				
50	I find it very easy to play games with children that involve pretending.				

Psychologist Simon Baron-Cohen and his colleagues at Cambridge's Autism Research Centre have created the Autism-Spectrum Quotient, or AQ, as a measure of the extent of autistic traits in adults. In the first major trial using the test, the average score in the control group was 16.4. Eighty percent of those diagnosed with autism or a related disorder scored 32 or higher. The test is not a means for making a diagnosis, however, and many who score above 32 and even meet the diagnostic criteria for mild autism or Asperger's report no difficulty functioning in their everyday lives.

How to score: "Definitely agree" or "Slightly agree" responses to questions 2, 4, 5, 6, 7, 9, 12, 13, 16, 18, 19, 20, 21, 22, 23, 26, 33, 35, 39, 41, 42, 43, 45, 46 score 1 point.
"Definitely disagree" or "Slightly disagree" responses to questions 1, 3, 8, 10, 11, 14, 15, 17, 24, 25, 27, 28, 29, 30, 31, 32, 34, 36, 37, 38, 40, 44, 47, 48, 49, 50 score 1 point.

MRC-SBC/SJW February 1998.
Published: *Journal of Autism* and Developmental Disorders, 31, 5-17 (2001).

Appendix B.3 – Depression, Anxiety and Stress Scales (DASS-21)

DASS21

Name: *Date:*

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (eg, in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3

DASS21

Name: Date:

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you **over the past week**. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree or a good part of time
3 Applied to me very much or most of the time

1 (s)	I found it hard to wind down	0	1	2	3
2 (a)	I was aware of dryness of my mouth	0	1	2	3
3 (d)	I couldn't seem to experience any positive feeling at all	0	1	2	3
4 (a)	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5 (d)	I found it difficult to work up the initiative to do things	0	1	2	3
6 (s)	I tended to over-react to situations	0	1	2	3
7 (a)	I experienced trembling (e.g. in the hands)	0	1	2	3
8 (s)	I felt that I was using a lot of nervous energy	0	1	2	3
9 (a)	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10 (d)	I felt that I had nothing to look forward to	0	1	2	3
11 (s)	I found myself getting agitated	0	1	2	3
12 (s)	I found it difficult to relax	0	1	2	3
13 (d)	I felt down-hearted and blue	0	1	2	3
14 (s)	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15 (a)	I felt I was close to panic	0	1	2	3
16 (d)	I was unable to become enthusiastic about anything	0	1	2	3
17 (d)	I felt I wasn't worth much as a person	0	1	2	3
18 (s)	I felt that I was rather touchy	0	1	2	3
19 (a)	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3
20 (a)	I felt scared without any good reason	0	1	2	3
21 (d)	I felt that life was meaningless	0	1	2	3

DASS-21 Scoring Instructions

The DASS-21 should not be used to replace a face to face clinical interview. If you are experiencing significant emotional difficulties you should contact your GP for a referral to a qualified professional.

Depression, Anxiety and Stress Scale - 21 Items (DASS-21)

The Depression, Anxiety and Stress Scale - 21 Items (DASS-21) is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress.

Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest / involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset / agitated, irritable / over-reactive and impatient. Scores for depression, anxiety and stress are calculated by summing the scores for the relevant items.

The DASS-21 is based on a dimensional rather than a categorical conception of psychological disorder. The assumption on which the DASS-21 development was based (and which was confirmed by the research data) is that the differences between the depression, anxiety and the stress experienced by normal subjects and clinical populations are essentially differences of degree. The DASS-21 therefore has no direct implications for the allocation of patients to discrete diagnostic categories postulated in classificatory systems such as the DSM and ICD.

Recommended cut-off scores for conventional severity labels (normal, moderate, severe) are as follows:

NB Scores on the DASS-21 will need to be multiplied by 2 to calculate the final score.

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Lovibond, S.H. & Lovibond, P.F. (1995). Manual for the Depression Anxiety & Stress Scales. (2nd Ed.)Sydney: Psychology Foundation.

Appendix B.4 –Coping Orientation to Problems Experienced Inventory (Brief COPE)

These items deal with ways you've been coping with the stress in your life since you found out you were going to have to have this operation. There are many ways to try to deal with problems. These items ask what you've been doing to cope with this one. Obviously, different people deal with things in different ways, but I'm interested in how you've tried to deal with it. Each item says something about a particular way of coping. I want to know to what extent you've been doing what the item says. How much or how frequently. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Use these response choices. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

1 = I haven't been doing this at all
2 = I've been doing this a little bit
3 = I've been doing this a medium amount
4 = I've been doing this a lot

1. I've been turning to work or other activities to take my mind off things.
2. I've been concentrating my efforts on doing something about the situation I'm in.
3. I've been saying to myself "this isn't real.".
4. I've been using alcohol or other drugs to make myself feel better.
5. I've been getting emotional support from others.
6. I've been giving up trying to deal with it.
7. I've been taking action to try to make the situation better.
8. I've been refusing to believe that it has happened.
9. I've been saying things to let my unpleasant feelings escape.
10. I've been getting help and advice from other people.
11. I've been using alcohol or other drugs to help me get through it.
12. I've been trying to see it in a different light, to make it seem more positive.
13. I've been criticizing myself.
14. I've been trying to come up with a strategy about what to do.
15. I've been getting comfort and understanding from someone.
16. I've been giving up the attempt to cope.
17. I've been looking for something good in what is happening.

18. I've been making jokes about it.
19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
20. I've been accepting the reality of the fact that it has happened.
21. I've been expressing my negative feelings.
22. I've been trying to find comfort in my religion or spiritual beliefs.
23. I've been trying to get advice or help from other people about what to do.
24. I've been learning to live with it.
25. I've been thinking hard about what steps to take.
26. I've been blaming myself for things that happened.
27. I've been praying or meditating.
28. I've been making fun of the situation.

Scales are computed as follows (with no reversals of coding):

Self-distraction, items 1 and 19
Active coping, items 2 and 7
Denial, items 3 and 8
Substance use, items 4 and 11
Use of emotional support, items 5 and 15
Use of instrumental support, items 10 and 23
Behavioral disengagement, items 6 and 16
Venting, items 9 and 21
Positive reframing, items 12 and 17
Planning, items 14 and 25
Humor, items 18 and 28
Acceptance, items 20 and 24
Religion, items 22 and 27
Self-blame, items 13 and 26

Appendix B.5 – Attitudes Toward Self (ATS)

ATS

Respond to each of the following statements by marking a number on your answer sheet. Do not leave any items blank. Please be as honest as you can throughout, and try not to let your answer to one item influence your answers to other items. There are no correct or incorrect answers. You are simply to express your own personal feelings. For each statement, indicate how much you agree or disagree with it, by choosing one of the following responses:

1 = I agree a lot
2 = I agree a little
3 = I'm in the middle--I neither agree nor disagree
4 = I DISagree a little
5 = I DISagree a lot

1. Compared to other people, I expect a lot from myself.
2. When even one thing goes wrong I begin to wonder if I can do well at anything at all.
3. I get angry with myself if my efforts don't lead to the results I wanted.
4. When it comes to setting standards for my behavior, I aim higher than most people.
5. I hardly ever let unhappiness over one bad time influence my feelings abut other parts of my life.
6. When I don't do as well as I hoped to, I often get upset with myself.
7. I set higher goals for myself than other people seem to.
8. If I notice one fault of mine, it makes me think about my other faults.
9. I get unhappy with anything less than what I expected of myself.
10. A single failure can change me from feeling OK to seeing only the bad in myself.

Reverse-code all items except 5

High Standards = Items 1, 4, 7
Self-Criticism = Items 3, 6, 9
Generalization = Items 2, 5, 8, 10

Appendix B.6 – Ryff Scales of Psychological Wellbeing (Ryff – PW)

Ryff's Scales of Psychological Well-Being (PWB) • 42 Item Version Formatted

Scales & Items:

Items shaded grey (# 3, 5, 8, 10, 13, 14, 15, 16, 17, 18, 19, 23, 26, 27, 30, 31, 32, 34, 36, 39, 41) should be reverse scored:

Six Scales:	Items in that Scale (in the questionnaire below):						
Autonomy	1	7	13	19	25	31	37
Environmental Mastery	2	8	14	20	26	32	38
Personal Growth	3	9	15	21	27	33	39
Positive Relations with Others	4	10	16	22	28	34	40
Purpose in Life	5	11	17	23	29	35	41
Self-Acceptance	6	12	18	24	30	36	42

Formatted 42 Item Instrument:

The following set of questions deals with how you feel about yourself and your life. Please remember that there are no right or wrong answers.

Circle the number that best describes your present agreement or disagreement with each statement.	Strongly Disagree	Disagree Somewhat	Disagree Slightly	Agree Slightly	Agree Somewhat	Strongly Agree
1. I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people.	1	2	3	4	5	6
2. In general, I feel I am in charge of the situation in which I live.	1	2	3	4	5	6
3. I am not interested in activities that will expand my horizons.	1	2	3	4	5	6
4. Most people see me as loving and affectionate.	1	2	3	4	5	6
5. I live life one day at a time and don't really think about the future.	1	2	3	4	5	6
6. When I look at the story of my life, I am pleased with how things have turned out.	1	2	3	4	5	6
7. My decisions are not usually influenced by what everyone else is doing.	1	2	3	4	5	6
8. The demands of everyday life often get me down.	1	2	3	4	5	6

Circle the number that best describes your present agreement or disagreement with each statement.	Strongly Disagree	Disagree Somewhat	Disagree Slightly	Agree Slightly	Agree Somewhat	Strongly Agree
9. I think it is important to have new experiences that challenge how you think about yourself and the world.	1	2	3	4	5	6
10. Maintaining close relationships has been difficult and frustrating for me.	1	2	3	4	5	6
11. I have a sense of direction and purpose in life.	1	2	3	4	5	6
12. In general, I feel confident and positive about myself.	1	2	3	4	5	6
13. I tend to worry about what other people think of me.	1	2	3	4	5	6
14. I do not fit very well with the people and the community around me.	1	2	3	4	5	6
15. When I think about it, I haven't really improved much as a person over the years.	1	2	3	4	5	6
16. I often feel lonely because I have few close friends with whom to share my concerns.	1	2	3	4	5	6
17. My daily activities often seem trivial and unimportant to me.	1	2	3	4	5	6
18. I feel like many of the people I know have gotten more out of life than I have.	1	2	3	4	5	6
19. I tend to be influenced by people with strong opinions.	1	2	3	4	5	6
20. I am quite good at managing the many responsibilities of my daily life.	1	2	3	4	5	6
21. I have a sense that I have developed a lot as a person over time.	1	2	3	4	5	6
22. I enjoy personal and mutual conversations with family members or friends.	1	2	3	4	5	6
23. I don't have a good sense of what it is I'm trying to accomplish in life.	1	2	3	4	5	6
24. I like most aspects of my personality.	1	2	3	4	5	6

Circle the number that best describes your present agreement or disagreement with each statement.	Strongly Disagree	Disagree Somewhat	Disagree Slightly	Agree Slightly	Agree Somewhat	Strongly Agree
25. I have confidence in my opinions, even if they are contrary to the general consensus.	1	2	3	4	5	6
26. I often feel overwhelmed by my responsibilities.	1	2	3	4	5	6
27. I do not enjoy being in new situations that require me to change my old familiar ways of doing things.	1	2	3	4	5	6
28. People would describe me as a giving person, willing to share my time with others.	1	2	3	4	5	6
29. I enjoy making plans for the future and working to make them a reality.	1	2	3	4	5	6
30. In many ways, I feel disappointed about my achievements in life.	1	2	3	4	5	6
31. It's difficult for me to voice my own opinions on controversial matters.	1	2	3	4	5	6
32. I have difficulty arranging my life in a way that is satisfying to me.	1	2	3	4	5	6
33. For me, life has been a continuous process of learning, changing, and growth.	1	2	3	4	5	6
34. I have not experienced many warm and trusting relationships with others.	1	2	3	4	5	6
35. Some people wander aimlessly through life, but I am not one of them.	1	2	3	4	5	6
36. My attitude about myself is probably not as positive as most people feel about themselves.	1	2	3	4	5	6
37. I judge myself by what I think is important, not by the values of what others think is important.	1	2	3	4	5	6
38. I have been able to build a home and a lifestyle for myself that is much to my liking.	1	2	3	4	5	6
39. I gave up trying to make big improvements or changes in my life a long time ago.	1	2	3	4	5	6

Circle the number that best describes your present agreement or disagreement with each statement.	Strongly Disagree	Disagree Somewhat	Disagree Slightly	Agree Slightly	Agree Somewhat	Strongly Agree
40. I know that I can trust my friends, and they know they can trust me.	1	2	3	4	5	6
41. I sometimes feel as if I've done all there is to do in life.	1	2	3	4	5	6
42. When I compare myself to friends and acquaintances, it makes me feel good about who I am.	1	2	3	4	5	6

Length Options: **Items to Include for Each Option (see below):**

The **7-item scales (42 items total)**

Autonomy:	2, 3, 4, 6, 9, 10, 14
Environmental Mastery :	1, 2, 3, 4, 5, 13, 14
Personal Growth:	1, 5, 6, 9, 10, 11, 13
Positive Relations With Others:	1, 2, 3, 4, 9, 10, 12
Purpose In Life:	2, 4, 5, 6, 8, 10, 11
Self-Acceptance:	1, 2, 3, 5, 7, 10, 13

AUTONOMY

Definition: High Scorer: Is self-determining and independent; able to resist social pressures to think and act in certain ways; regulates behaviour from within; evaluates self by personal standards.

Low Scorer: Is concerned about the expectations and evaluations of others; relies on judgments of others to make important decisions; conforms to social pressures to think and act in certain ways.

Positive or Negative Scoring	Use in 7-item Scale		AUTONOMY
–		1.	Sometimes I change the way I act or think to be more like those around me.
+	X	2.	I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people.
+	X	3.	My decisions are not usually influenced by what everyone else is doing.
–	X	4.	I tend to worry about what other people think of me.
+		5.	Being happy with myself is more important to me than having others approve of me.
–	X	6.	I tend to be influenced by people with strong opinions.
+		7.	People rarely talk me into doing things I don't want to do.
–		8.	It is more important to me to "fit in" with others than to stand alone on my principles.
+	X	9.	I have confidence in my opinions, even if they are contrary to the general consensus.

–	X	10.	It's difficult for me to voice my own opinions on controversial matters.
–		11.	I often change my mind about decisions if my friends or family disagree.
+		12.	I am not the kind of person who give in to social pressures to think or act in certain ways.
–		13.	I am concerned about how other people evaluate the choices I have made in my life.
+	X	14.	I judge myself by what I think is important, not by the values of what others think is important.

Internal consistency (coefficient alpha) = .83

Correlation with 20-item parent scale = .97

ENVIRONMENTAL MASTERY

Definition: High Scorer: Has a sense of mastery and competence in managing the environment; controls complex array of external activities; makes effective use of surrounding opportunities; able to choose or create contexts suitable to personal needs and values.

Low Scorer: Has difficulty managing everyday affairs; feels unable to change or improve surrounding context; is unaware of surrounding opportunities; lacks sense of control over external world.

Positive or Negative Scoring	Use in 7-item Scale		ENVIRONMENTAL MASTERY
+	X	1.	In general, I feel I am in charge of the situation in which I live.
–	X	2.	The demands of everyday life often get me down.
–	X	3.	I do not fit very well with the people and the community around me.
+	X	4.	I am quite good at managing the many responsibilities of my daily life.
–	X	5.	I often feel overwhelmed by my responsibilities.
+		6.	If I were unhappy with my living situation, I would take effective steps to change it.
+		7.	I generally do a good job of taking care of my personal finances and affairs.
–		8.	I find it stressful that I can't keep up with all of the things I have to do each day.
+		9.	I am good at juggling my time so that I can fit everything in that needs to get done.
+		10.	My daily life is busy, but I derive a sense of satisfaction from keeping up with everything.

–		11.	I get frustrated when trying to plan my daily activities because I never accomplish the things I set out to do.
+		12.	My efforts to find the kinds of activities and relationships that I need have been quite successful.
–	X	13.	I have difficulty arranging my life in a way that is satisfying to me.
+	X	14.	I have been able to build a home and a lifestyle for myself that is much to my liking.

Internal consistency (coefficient alpha) = .86

Correlation with 20-item parent scale = .98

PERSONAL GROWTH

Definition: High Scorer: Has a feeling of continued development; sees self as growing and expanding; is open to new experiences; has sense of realizing his or her potential; sees improvement in self and behaviour over time; is changing in ways that reflect more self-knowledge and effectiveness.

Low Scorer: Has a sense of personal stagnation; lacks sense of improvement or expansion over time; feels bored and uninterested with life; feels unable to develop new attitudes or behaviours.

Positive or Negative Scoring	Use in 7-item Scale		PERSONAL GROWTH
–	X	1.	I am not interested in activities that will expand my horizons.
+		2.	In general, I feel that I continue to learn more about myself as time goes by.
+		3.	I am the kind of person who likes to give new things a try.
–		4.	I don't want to try new ways of doing things--my life is fine the way it is.
+	X	5.	I think it is important to have new experiences that challenge how you think about yourself and the world.
–	X	6.	When I think about it, I haven't really improved much as a person over the years.
+		7.	In my view, people of every age are able to continue growing and developing.
+		8.	With time, I have gained a lot of insight about life that has made me a stronger, more capable person.

+	X	9.	I have the sense that I have developed a lot as a person over time.
–	X	10.	I do not enjoy being in new situations that require me to change my old familiar ways of doing things.
+	X	11.	For me, life has been a continuous process of learning, changing, and growth.
+		12.	I enjoy seeing how my views have changed and matured over the years.
–	X	13.	I gave up trying to make big improvements or changes in my life a long time ago.
–		14.	There is truth to the saying you can't teach an old dog new tricks.

Internal consistency (coefficient alpha) = .85

Correlation with 20-item parent scale = .97

POSITIVE RELATIONS WITH OTHERS

Definition: High Scorer: Has warm satisfying, trusting relationships with others; is concerned about the welfare of others; capable of strong empathy, affection, and intimacy; understands give and take of human relationships.

Low Scorer: Has few close, trusting relationships with others; finds it difficult to be warm, open, and concerned about others; is isolated and frustrated in interpersonal relationships; not willing to make compromises to sustain important ties with others.

Positive or Negative Scoring	Use in 7-item Scale		POSITIVE RELATIONS WITH OTHERS
+	X	1.	Most people see me as loving and affectionate.
–	X	2.	Maintaining close relationships has been difficult and frustrating for me
–	X	3.	I often feel lonely because I have few close friends with whom to share my concerns.
+	X	4.	I enjoy personal and mutual conversations with family members or friends.
+		5.	It is important to me to be a good listener when close friends talk to me about their problems.
–		6.	I don't have many people who want to listen when I need to talk.
+		7.	I feel like I get a lot out of my friendships.
–		8.	It seems to me that most other people have more friends than I do.
+	X	9.	People would describe me as a giving person, willing to share my time with others.

–	X	10.	I have not experienced many warm and trusting relationships with others.
–		11.	I often feel like I'm on the outside looking in when it comes to friendships.
+	X	12.	I know that I can trust my friends, and they know they can trust me.
–		13.	I find it difficult to really open up when I talk with others.
+		14.	My friends and I sympathize with each other's problems.

Internal consistency (coefficient alpha) = .88

Correlation with 20-item parent scale = .98

PURPOSE IN LIFE

Definition: High Scorer: Has goals in life and a sense of directedness; feels there is meaning to present and past life; holds beliefs that give life purpose; has aims and objectives for living.

Low Scorer: Lacks a sense of meaning in life; has few goals or aims, lacks sense of direction; does not see purpose of past life; has no outlook or beliefs that give life meaning.

Positive or Negative Scoring	Use in 7-item Scale		PURPOSE IN LIFE
+		1.	I feel good when I think of what I've done in the past and what I hope to do in the future.
–	X	2.	I live life one day at a time and don't really think about the future.
–		3.	I tend to focus on the present, because the future nearly always brings me problems.
+	X	4.	I have a sense of direction and purpose in life.
–	X	5.	My daily activities often seem trivial and unimportant to me.
–	X	6.	I don't have a good sense of what it is I'm trying to accomplish in life.
–		7.	I used to set goals for myself, but that now seems like a waste of time.
+	X	8.	I enjoy making plans for the future and working to make them a reality.
+		9.	I am an active person in carrying out the plans I set for myself.
+	X	10.	Some people wander aimlessly through life, but I am not one of them.

–	X	11.	I sometimes feel as if I've done all there is to do in life.
+		12.	My aims in life have been more a source of satisfaction than frustration to me.
+		13.	I find it satisfying to think about what I have accomplished in life.
–		14.	In the final analysis, I'm not so sure that my life adds up to much.

Internal consistency (coefficient alpha) = .88

Correlation with 20-item parent scale = .98

SELF-ACCEPTANCE

Definition: High Scorer: Possesses a positive attitude toward the self; acknowledges and accepts multiple aspects of self, including good and bad qualities; feels positive about past life.

Low Scorer: Feels dissatisfied with self; is disappointed with what has occurred in past life; is troubled about certain personal qualities; wishes to be different than what he or she is.

Positive or Negative Scoring	Use in 7-item Scale	SELF-ACCEPTANCE	
+	X	1.	When I look at the story of my life, I am pleased with how things have turned out.
+	X	2.	In general, I feel confident and positive about myself.
–	X	3.	I feel like many of the people I know have gotten more out of life than I have.
–		4.	Given the opportunity, there are many things about myself that I would change.
+	X	5.	I like most aspects of my personality.
+		6.	I made some mistakes in the past, but I feel that all in all everything has worked out for the best
–	X	7.	In many ways, I feel disappointed about my achievements in life.
+		8.	For the most part, I am proud of who I am and the life I lead.
–		9.	I envy many people for the lives they lead.
–	X	10.	My attitude about myself is probably not as positive as most people feel about themselves.
–		11.	Many days I wake up feeling discouraged about how I have lived my life.

+		12. The past had its ups and downs, but in general, I wouldn't want to change it.
+	X	13. When I compare myself to friends and acquaintances, it makes me feel good about who I am.
–		14. Everyone has their weaknesses, but I seem to have more than my share.

Internal consistency (coefficient alpha) = .91

Correlation with 20-item parent scale = .99

Appendix B.7 – Health Survey (SF-8)

Date _____ Name _____

SF-8™ Health Survey

This survey asks for your views about your health. This information will help you keep track of how you feel and how well you are able to do your usual activities.
Answer every question by selecting the answer as indicated. If you are unsure about how to answer a question, please give the best answer you can.
For each of the following questions, please mark an [x] in the one box that best describes your answer.

1. Overall, how would you rate your health during the **past 4 weeks**?

   Excellent Very Good Good Fair Poor Very Poor

2. During the **past 4 weeks**, how much did physical health problems limit your physical activities (such as walking or climbing stairs)?

   Not at all Very little Somewhat Quite a lot Could not do physical activities

3. During the **past 4 weeks**, how much difficulty did you have doing your daily work, both at home and away from home, because of your physical health?

   Not at all Very little Somewhat Quite a lot Could not do daily work

4. How much bodily pain have you had during the **past 4 weeks**?

   None Very mild Mild Moderate Severe Very severe

5. During the **past 4 weeks**, how much energy did you have?

   Very much Quite a lot Some A little None

6. During the **past 4 weeks**, how much did your physical health or emotional problems limit your usual social activities with family or friends?

   Not at all Very little Somewhat Quite a lot Could not do social activities

7. During the **past 4 weeks**, how much have you been bothered by **emotional problems** (such as feeling anxious, depressed or irritable)?

   Not at all Slightly Moderately Quite a lot Extremely

8. During the **past 4 weeks**, how much did personal or emotional problems keep you from doing your usual work, school or other daily activities?

   Not at all Very little Somewhat Quite a lot Could not do daily activities

Thank you for completing these questions.

Appendix C – Demographic Information

Appendix C.1 – List of Participant Majors

Participant's Major	Frequency	Percentage
Psychology	145	33.7
Law	22	5.1
Human Performance Science	15	3.5
Social Work	14	3.3
Engineering	11	2.6
Marketing	10	2.3
Biological Sciences	9	2.1
Computer Science	9	2.1
Chemistry	8	1.9
Earth Science	7	1.6
Human Resource Management	7	1.6
Civil Engineering	6	1.4
Ecology and Biodiversity	5	1.2
Environmental science (incl. engineering and planning)	5	1.2
Geography	5	1.2
Human Development	5	1.2
Molecular and Cellular Biology	5	1.2
Political Science	5	1.2
Primary School Teaching	5	1.2
Sport science	5	1.2
Teaching and Learning	5	1.2
Mathematics	4	0.9

Accounting	3	0.7
Communications	3	0.7
Education	3	0.7
English	3	0.7
History	3	0.7
Linguistics	3	0.7
Music	3	0.7
Public Relations	3	0.7
Screen and Media Studies	3	0.7
Sociology	3	0.7
Biochemistry	2	0.5
Cellular and Molecular Biology	2	0.5
Criminal Justice	2	0.5
Data Analytics	2	0.5
Economics	2	0.5
Finance	2	0.5
Finance and Economics	2	0.5
Forestry Science	2	0.5
Interface design and Media design	2	0.5
LLB	2	0.5
Mechanical Engineering	2	0.5
Philosophy	2	0.5
Public Health	2	0.5
Statistics	2	0.5
Building science	1	0.2

Business Information Systems	1	0.2
Commerce	1	0.2
Community health	1	0.2
Defence Studies	1	0.2
Design	1	0.2
Disability and Inclusion Studies	1	0.2
German	1	0.2
Health Psychology	1	0.2
Health science	1	0.2
International agribusiness	1	0.2
international languages and cultures	1	0.2
Management	1	0.2
Materials and Process Engineering	1	0.2
Communications	1	0.2
Medical Sciences	1	0.2
Natural Resources Engineering	1	0.2
Physics	1	0.2
Product design	1	0.2
Professional development	1	0.2
Social Sciences	1	0.2
Software Engineering	1	0.2
Spanish	1	0.2
Speech and Language Pathology	1	0.2
Strategic Communication	1	0.2

Structural Fire Engineering	1	0.2
Tourism and Hospitality management	1	0.2
Zoology	1	0.2

Appendix D – Results

Appendix D.1 – List of non-English languages respondents spoke

Languages	Frequency	Percent
Chinese (either Mandarin or Cantonese)	24	5.6%
Te Reo Māori	20	4.7%
Hindi	13	3.0%
French	12	2.8%
German	10	2.3%
Spanish	8	1.9%
Japanese	5	1.2%
Arabic	4	0.9%
Malayalam	4	0.9%
Punjabi	4	0.9%
Afrikaans	3	0.7%
Kiribati	3	0.7%
Korean	3	0.7%
NZ sign language	3	0.7%
Tongan	3	0.7%
Vietnamese	3	0.7%
Dutch	2	0.5%
Filipino	2	0.5%
Khmer	2	0.5%
Portuguese	2	0.5%
Tagalog	2	0.5%
Telugu	2	0.5%
Thai	2	0.5%
Bahasa	1	0.2%
Czech	1	0.2%
Farsi	1	0.2%
Flemish	1	0.2%

Gujarati	1	0.2%
Indonesian	1	0.2%
Italian	1	0.2%
Mandalorian	1	0.2%
Ndebele	1	0.2%
Russian	1	0.2%
Samoan	1	0.2%
Turkish	1	0.2%
Urdu	1	0.2%
Welsh	1	0.2%
Zulu	1	0.2%