Coping mechanism and anxiety in university students with autism and healthy controls

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COPING MECHANISM AND ANXIETY IN UNIVERSITY STUDENTS WITH AUTISM AND HEALTHY CONTROLS

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Abstract

Background:

Since the COVID-19 pandemic, society has witnessed a variety of changes which have forced individuals to find more ways for coping with increasing difficulties (such as social distancing, self-isolation, and lack of physical contact). For people with autism, the negative impact may be greater due to an interaction between the traits associated with the disorder and the environmental changes.

Aim:

To investigate anxiety in university students with autism and healthy students during the COVID-19 pandemic. Secondly, to explore the coping mechanisms of these two groups of students.

Methods:

Participants completed self-report online questionnaires for autism diagnosis, autism symptoms, primary coping style and anxiety.

Results:

Both an autism diagnosis and the type of the primary coping style were associated with anxiety. A post-hoc analysis showed that anxiety is statically greater in people who use avoidant coping style. Finally, students with autism spectrum disorder end to primarily use a maladaptive coping style.

Limitations:

The study is using self-report scales via online questionnaires therefore the data has the tendency to be more biased. Another limitation is regarding the focus group since the presence of autism is known to cause disruption in the understanding of the self as well as social relationships. This raises the question whether the subjects in the ASD group can adequately asses their anxiety levels and the ability to cope with stress.

Conclusion:

The present study provides further evidence that ASD individuals tend to be more anxious and tend to use more maladaptive coping strategies in order to deal with this anxiety compared to their peers. Results from the current research support the hypothesis that having an autism spectrum disorder predicts usage of avoidant coping strategies as a primary coping style.

Coping styles and anxiety in university students with and without an ASD diagnosis

Autism spectrum disorder (ASD) refers to a range of early-onset neurodevelopmental conditions which may include diagnoses of autism, Asperger's syndrome (AS) and pervasive developmental disorder-not otherwise specified (Lai, Lombardo, Baron-Cohen, 2013; Sturmey et al., 2007). The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM–5; American Psychiatric Association, 2013) states that ASD is characterized by persistent deficits in the areas of social communication and interaction, restricted and repetitive behaviours and interests, as well idiosyncratic sensory sensitivity. Individuals on the autism spectrum often experience difficulties in social-emotional reciprocity, non-verbal communicative behaviors, and in developing, maintaining or understanding interpersonal relationships (APA, 2013). M.C Lai, M.V. Lombardo, S. Baron-Cohen (2013) Autism Furthermore, people with autism may show deficits in language comprehension and oftentimes develop the ability to speak later in childhood compared to their neurotypical counterparts (Talbot et al., 2020). ASD symptoms are present in the early developmental period and cause clinically significant impairment in social, occupational, or other important areas of functioning (Hertz-Picciotto & Delwiche, 2009). In addition, it is important to note that autism is conceptualized as a spectrum disorder. Therefore, ASD presents in vastly different ways and not all symptoms or characteristics associated with the disorder might be present in a single individual. Recent research using data collected from the United States has estimated that ASD occurs in approximately 1 in 44 children (Maenner et al., 2018).

During the last two decades, the numbers of university students diagnosed with ASD, and neurodivergent students as a whole, have been steadily growing as more and more individuals on the autism spectrum enroll in higher education (Pino and Mortari, 2014). Although students with autism may possess skills which are particularly suited for university education, such as a focus on detail, creativity, and strong desire for acquiring knowledge (Drake 2014; Gobbo Shmulsky 2014; Van Hees, Moyson, and Roeyers 2015), a large body of previous research has shown that university students with a diagnosis of ASD may experience considerably greater challenges in the university environment than students without a diagnosis of ASD (Matthews & Goldberg, 2015; White, Elias & Salinasa, 2016; Ward & Webster, 2018). Moreover, students diagnosed with ASD may also report higher levels of anxiety in an academic environment, in comparison to their peers (Hannah & Topping, 2012). Research further suggests that university students with autism are more susceptible to experience higher levels of social anxiety in class and are at heightened risk of

remaining anxious in the future (Bertrams & Zäch, 2021). Therefore, the overall number of challenges that students experience during the academic or school year, including encountering anxiety, are observed to be higher in person with austim according various of researches and studies

Anxiety can be defined as the anticipation of future concerns or having worried thoughts that in turn provoke avoidance behavior, experiences of muscle tension, increased blood pressure, rapid breathing or restlessness (Wolitzky-Taylor et al., 2010). Occasional feelings of anxiety are considered normal and can even aid individuals to be productive at times. When it becomes persistent, anxiety can interfere with daily life tasks and can have a negative impact on an individual's physical and mental health (Beck, 2012). Excessive lasting anxiety and worrying that are difficult to control and overcome might be signs of Generalized Anxiety Disorder (GAD). Individuals diagnosed with GAD may be hypervigilant and anticipate the worst-case scenario in numerous situations without any apparent reason. While worrying thoughts in typical anxiety tend to be related mostly to the situation which provokes the negative feelings, GAD is characterized by exaggerated worry and chronic anxiety (Stein & Sareen, 2015). Anxiety disorders of this type may cause individuals to actively avoid certain situations that can trigger their symptoms. In these cases, the individual may experience disturbances in different domains of daily functioning such as work performance or interpersonal relationships (Lee, Orsillo, Roemer & Allen, 2010; Tull, 2022). Although anxiety is not a diagnostic criterion of ASD, symptoms related to anxiety are thought to amplify ASD symptoms and are positively correlated with increased behavioral problems (Farrugia et al., 2006).

A systematic review of the literature by White et al. (2009) focusing on anxiety disorders within the ASD population showed significant heterogeneity, with prevalence rates of clinical anxiety ranging from 11% to 84%. The substantial range in prevalence can be explained by the different definitions of anxiety, diagnostic subtypes and the different methods which are used to measure anxiety (White et al, 2009). Furthermore, the rate of anxiety within children with ASD is significantly higher than the rate of anxiety in typically developing children (Gillot et al., 2001; Bellini et al, 2004). In addition, children with ASD are significantly more likely to have an anxiety disorder or to have more severe anxiety symptoms compared with other risk groups (Burtnette et al, 2005; Green et al, 2000). In conclusion, individuals with ASD are more likely to experience anxiety compared to those without a diagnosis. Because of the great impact of anxiety on the course

of the disorder, recognizing anxiety and treating it properly is particularly important for the well-being of these patients.

In addition, due to the COVID-19 pandemic, the world has witnessed a number of impactful changes such as social distancing, self-isolation and lack of physical contact (Marroquin, Vine & Morgan, 2020). These have had a significant impact on the well-being of individuals, leading to higher levels of stress and depression (Marchetti et al., 2020; Roma et al., 2020), as well as higher levels of anxiety (Roy et al., 2020). Research has shown that the consequences of the COVID-19 pandemic have had a disproportionate impact on individuals on the autism spectrum (Courtenay & Perera, 2020; den Houting, 2020; Pellicano & Stears, 2020). One characteristic of ASD which may pose unique challenges during situations such as the pandemic is a preference for sameness and routines (APA, 2013). When strong demands outside of the scope of an individual's "typical" routine arise suddenly and unexpectedly, the difficulty of maintaining one's preferred routine may result in heightened levels of stress and anxiety (Wigham et al., 2015). Studies have shown that disruptions in routines and insistence on sameness relate to a series of down-stream effects, such as increased aggressive behavior in children diagnosed with ASD, as well as behavioral outbursts, increased levels of anxiety in adults with autism (Simonoff et al., 2008; van Steensel et al., 2011; White et al., 2009) and in addition rise in stress levels in their parents (Baribeau et al., 2021; Bearss et al., 2016; Bull et al., 2015; Kanne & Mazurek, 2011; Reese et al., 2005). In addition, situations like the COVID-9 pandemic create mass confusion, fear and overall raise in the levels of uncertainty which affects the psychological wellbeing of citizens (Ni et al., 2019). This challenges individuals, and particularly those with a diagnosis of ASD, to find ways of coping with the current changes and stressors in order to sustain themselves.

Coping theory defines the use of different coping strategies as the act of consciously or unconsciously dealing with difficult or stressful situations in order to mitigate the levels of distress which are brought on by the problematic situation (Chowdhury, 2019). The main aim of using such coping strategies is believed to revolve around alleviating stress, anxiety, and negative emotions, thereby allowing the individual to enter optimal functional state. In other words, coping strategies (or coping skills) are regarded as a set of adaptive tools that individuals use to prevent the onset of negative physical and mental health consequences, such as stress, anxiety, or burnout. These tools can consist of certain behavioural responses, but also emotions and thoughts and vary between individuals as well as within the same individual of the course of time (Freire et al., 2020). Adaptive

coping styles can be defined as the set of behavioural and cognitive strategies that individuals employ in order to improve their mental well-being and overall functioning (Vizoso et al., 2019). Adaptive coping can be further subdivided into problem-focused coping and emotion-focused coping (Vizoso et al., 2019). Problem-focused coping involves mitigating a stressful situation by taking direct action and searching for possible solutions. Therefore, problem-focused strategies aim to eliminate or at least lessen the impact of a stressor, and include planning, time-management, problem-solving, or taking any kind of action that results in the mitigation of the stressful situation (Carroll, 2013). Emotion-focused coping strategies aim to regulate an individual's emotional and behavioural responses to a certain problem (Raypole, 2020). In other words, emotion-focused coping includes strategies that allow an individual to reduce, eliminate, or tolerate their emotional response to a stressor, such as venting to someone, letting out anger and frustration, seeking emotional support, meditation, journaling, and acceptance. Nevertheless, in addition to adaptive coping strategies, some forms of coping can be classified as maladaptive. Maladaptive coping strategies prevent an individual from properly eliminating or regulating the problem or situation that is the source of their stress (Vizoso et al., 2019). One form of a maladaptive coping style is avoidant coping, which reflects the tendency to tend to avoid the problem that one is faced with, rather than actively taking action or searching for ways to resolve it or change the situation. In other words, avoidant coping includes strategies that aim to minimize or deny the presence of a difficult situation as a way to mitigate the resulting distress, such as denial, situational avoidance, distraction, substance use, and resigned acceptance (Brittany, Weiner & Carton, 2012).

Importantly, the use of different coping styles has been linked to multiple mental health outcomes, including the levels of anxiety that an individual may experience (Gurvich et al., 2020, Goldman, J., 2021). Research examining the link between different coping strategies and anxiety in individuals with diabetes showed a significant negative relation between anxiety symptoms and problem-focused coping mechanisms, as well between anxiety symptoms and emotion-focused coping style (Tuncay, 2008). Furthermore, a meta-analysis showed that problem-focused strategies were associated with better health outcomes including physical health objective outcomes (outcomes which can be obtained from medical records), subjective physical health outcomes (self-reported questionnaire for one's own physical health), and psychological health outcomes (self-reported questionnaires such as Beck Depression Inventory scores) (Penley et al. 2002). Research on emotion-focused coping strategies has produced more contradictory findings. On the one hand,

emotion-focused coping was associated with lower levels of anxiety in people with diabetes (Tuncay, 2008), while another study also showed that individuals who primarily used emotion-focused coping strategies were more resilient to stress and demonstrated greater overall wellbeing (Juth et al., 2015). On the other hand, another study which also focused on individuals with diabetes concluded that emotion-focused strategies were predictive of higher anxiety levels (Karlsen & Blu, 2002), whereas a meta-analysis revealed a negative association between the use of emotion-focused coping styles and various health outcomes (Penley et al., 2002). The contradictory results might be due to that the adaptiveness and effectiveness of a coping strategy depend on the nature of the problems and what the situations demand (Baker & Berenbaum, 2007). For instance, problem-focused comping may be more adaptive in situations which require an individual to solve a problem. While emotion-focused coping may be more appropriate and adaptive in in situations that require an individual to focus on regulating their emotions rather than solving a problem (in situations where a problem can't be solved the best option is to regulate one's emotions). Lastly, avoidant coping may be adaptive in situations where distracting oneself from a stressful situation may mitigate negative emotions (Baker & Berenbaum, 2007).

Research on the link between anxiety and avoidant coping has produced more consistent results. Previous studies have shown that avoidant coping is associated with higher levels of anxiety, depression and distress in both nonclinical (Whatley et al., 1998; Aldao et al., 2010, Cronkite & Moss, 1995) and clinical samples (Ravindran et al. 1996; Aldao et al., 2010), as well as that avoidant coping is the most prevalent coping style in individuals diagnosed with panic disorder (Vitaliano et al., 1987; Hughes et al., 1999) and in individuals with various types of phobias (Davey et al., 1995). Finally, meta-analytic evidence has further shown that the use of avoidant coping strategies is negatively associated with health outcomes (Penley et al., 2002).

Research focused on the relationship between coping styles and anxiety in university students with and without an ASD diagnosis are limited. However, these few existing studies have shown differences in the use of coping styles between these two groups. For example, research from 2009 (Browning et al.), shows that participants diagnosed with ASD were more hesitant to seek support and guidance from others, compared to participants without ASD. Therefore, ASD students are less likely to use emotion-focused coping, which includes seeking emotional support and guidance from others. Furthermore, students with an ASD diagnosis experience more difficulties with problem-solving and emotion regulation when coping with challenging situations, which hindered

them from employing problem-focused, and emotion-focused coping strategies (Lei & Russel, 2021). Thus, it is expected that students with ASD will tend to use more avoidant coping strategies compared to students without an ASD diagnosis.

The present study was designed to assess the anxiety levels of university students with and without a diagnosis of ASD during the COVID-19 pandemic. In addition, we aimed to examine the link between the use of different coping styles and levels of anxiety in university students. Finally, the current research aimed to further explore differences in the primary coping styles employed by university students with and without a diagnosis of ASD. Firstly, we hypothesized that university students who use a problem-focused or emotion-focused style as their primary coping style show lower levels of anxiety symptoms than university students who use avoidant coping as their primary coping style. Secondly, we hypothesized that university students with a diagnosis of ASD are more likely to use an avoidant as opposed to an emotion-focused or problem-focused style as their primary coping style, compared to university students without a diagnosis of ASD.

Method

Participants

Eligible participants were above the age of 18 and enrolled as a student at university. Moreover, in order to form part of the ASD group, participants were required to have obtained a formal diagnosis of autism, including autism spectrum disorder (ASD), pervasive developmental disorder-not otherwise specified (PDD-NOS), or Asperger's syndrome (AS).

Materials

Autism Diagnosis

Information regarding the presence of a diagnosis of autism was obtained by means of self-report ("Do you currently have a diagnosis of autism?"). Participants who reported having a diagnosis were then asked to specify which diagnosis they had obtained. The available options were ASD, PDD-NOS or Asperger's syndrome. Participants were also provided with the option to type their own response in case none of the available diagnostic categories applied to them.

Autism symptoms

In order to quantify the severity and nature of autistic traits, the Autism Quotient-Short (AQ-Short; Hoekstra et al., 2011) was used. The 28-item AQ-Short is an abridged version of the original 50-item Autism-Spectrum Quotient (Baron-Cohen et al., 2001). The AQ-Short consists of two higher order factors, one factor assessing a broad range of social communication deficits (Social Behavior factor) and one factor assessing fascination with patterns and numbers (Numbers/Patterns factor). The Social Behavior factor also contains four lower order factors, namely Social Skills, Routine, Switching, and Imagination (Hoekstra et al., 2011). Examples of items from the AQ-Short include "I prefer to do things with others rather than on my own" (Social Behaviour factor), "I find it hard to make new friends" (Social Skills), "I prefer to do things the same way over and over again" (Routine), "I find it difficult to figure out people's intentions" (Imagination), "I can easily keep track of several different people's conversations" (Switching) and "I usually notice car number plates or similar strings of information" Responses to each item are provided with the use of a 4-point Likert scale, which ranges from 1 ("definitely agree") to 4 ("definitely disagree"). Each participant's total score on the AQ-Short is obtained by calculating the sum of their scores on each individual item. Higher scores are associated with higher degree of autistic traits. Overall, the AQ-Short has shown high reliability scores (ω_h=0.86) similar to the full 50-item version (Murray et al., 2017), in addition to correlating highly (r=0.95) with the original measure (Hoekstra et al., 2011). Results have shown the AQ to have reasonably high sensitivity (0.77), correctly identifying 76% of individuals with ASD at a cutoff score of 26, as well as moderately high specificity (0.74), when applied to a referred clinical sample.

Coping Style

The Brief COPE self-report questionnaire contains 28 items and measures adaptive and maladaptive coping strategies. The items are scored on a 4-point Likert scale ranging from 1 (I do not do this at all) to 4 (I do this a lot). The questionnaire consists of three subscales, namely Problem-Focused, Emotion-Focused and Avoidant Coping (Carver, 1997). Problem-Focused Coping is characterized by strategies such as planning, positive reframing, and the use of informational support. Emotion-Focused Coping includes the use of emotional support, acceptance, humor and religion. Finally, avoidant Coping is characterized by the facets of denial,

disengaging behavior, self-distraction and substance use (Carver et al., 1989; García et al., 2018). This test has good validity and reliability (Carver, 1997).

Anxiety

The severity of anxiety symptoms during the past week was measured with the 21-item Beck Anxiety Inventory (BAI; Beck et al., 1988). Scores on the BAI range from 0-63 and can also be used to categorize the severity of an individual's anxiety symptoms into different levels. Scores ranging from 0-7 are classified as minimal anxiety, 8-15 as mild anxiety, 16-25 as moderate anxiety and 26-63 as severe anxiety (Beck et al., 1988).The BAI has good concurrent validity, with correlations between 0.78 and 0.81 with the SCL-90 Anxiety Subscale (Steer et al., 1993), the Hamilton Anxiety Scale (Hamilton, 1959) and Spielberger's STAI (Spielberger, Gorsuch & Lushene, 1970)

Procedure

The data analyzed in the current study were collected using the Qualtrics platform. University students throughout the Netherlands were recruited through social media platforms, various advertisements placed at different locations of the university campus, as well as through personal contacts by using a snowball sampling method. The data were collected as part of a broader project which aimed to explore the mental health of university students with and without a diagnosis of autism. The overall survey took approximately 25-30 minutes to complete, and contained questions related to participants' general demographic characteristics (age, gender, nationality, living situation, etc.), autism diagnosis and symptoms, university studies, fear of COVID-19, academic stress, meaning in life, perceived social support, as well as coping strategies. Before beginning with the survey, participants were informed that participation was entirely voluntary, that they were allowed to withdraw their participation at any point during the study without providing a reason or without experiencing any consequences, and that all information they provided was confidential and their responses would remain anonymous. Participants were also informed about the content, the aim, and the duration of the research. All participants provided informed consent. After completing the survey, participants were presented with a debriefing and were provided with

resources in case they were experiencing suicidal thoughts or other complaints related to suicidality. For the participation in the study, students could choose between entering a lottery for monetary compensation or, if applicable, receiving study participation credits lottery or SONA credits (if they are Psychology, Education and Child Studies students).

Statistical analyses

All statistical analyses were performed using IBM SPSS Statistics for Windows, version 28.00 (IBM Corporation, Armonk, N.Y., USA). First, the data were inspected in order to assess whether any outliers were present, and whether the assumptions of linearity, independence of the residuals, normal distribution of the residuals, and homoscedasticity were met. For all the analyses, the threshold for statistical significance was set to $p < 0.05$.

After ensuring that no outliers were present, the data were normally distributed, and all assumptions were met, the statistical analyses were performed in order to examine the hypotheses. First, it was hypothesized that having a problem-focused style as a primary coping style would be associated with lower levels of anxiety symptoms, compared to having an emotion-focused or avoidant style as a primary coping style. This hypothesis was investigated using an Analysis of Variance (ANOVA), with primary coping style (problem-focused, emotion-focused, avoidant) as the independent variable and anxiety symptoms as the dependent variable. Planned post-hoc analysis was performed in order to compare the levels of anxiety symptoms between students with a problem-focused primary coping style and students with an avoidant primary coping style, students with a problem-focused primary coping style and students with an avoidant primary coping style, as well as students with a problem-focused primary coping style and students with an emotion-focused primary coping style.

Second, it was hypothesized that university students with a diagnosis of autism would be more likely to use avoidant rather than problem-focused or emotion-focused coping as their primary coping style, compared to university students without a diagnosis of autism. This was examined by using a multinomial logistic regression analysis, with autism diagnosis (diagnosis, no diagnosis) as the independent variable and primary coping style (problem-focused, emotion-focused, avoidant) as the dependent variable.

Results

Participants

A total of 284 participants initially took part in the survey. However, 62 participants were excluded due to a large number of missing data. Therefore, the final sample consisted of 222 students, 59 of whom reported having a diagnosis of autism (26.6%), while the remaining 163 did not report having obtained a diagnosis of autism (73.4%). Inclusion criteria for the study were the participants to be university students and older than 18 years. Participants' current age ranged between 18 and 56 years old (M = 23.05, SD = 5.63).

Results showed that 61.02% (n = 36) of participants with autism employed avoidant coping as their primary coping style, while 40.49 % (n = 66) of normaly developing students employed the same style. Furthermore, 16.95% (n = 10) of participants with autism employed problem-focused coping as their primary coping style, whereas 50.31% (n = 82) of normally developing people used this style as a primary one. Finaly, 22.03% (n = 13) of the students with autism employed emotion-focused coping as their primary coping style and 9.2% (n = 15) of their normally developing peers.

Means, standard deviations, scoring ranges are presented in table 1. Alongside with demographic information and the mean scores for each coping scale (PFC, EFC, and AC) from the Brief-COPE.

Data screening

The assumption of normality of the data distribution was met, as skewness values for all variables were between 1 and -1. The kurtosis values for all variables are between 3 and -3 and this indicated that the data doesn't have outliers. Based on the ANOVA output, it can be concluded that there is a linear relationship between the variables ASD diagnosis and avoidant coping style (value sig. deviation from linearity of 0.644 >0.05). Lastly, the independence of error terms/residuals was also tested by using the Durbin-Watson test . The value is between 1.5 and 2.5 and we can say that our observations are independent, and we have met the assumption.

Table 1

		Having ASD diagnosis (n = 59)					Not having ASD diagnosis (n = 163)				
		Count	Mean	Max	Min	St. Dev.	Count	Mean	Max	Min	St. Dev.
Gender	Male Female Non-binary third gender Prefer not to say	18 36 5 0					55 94 10 4				
Country of origin	France Germany Italy Netherlands Spain Turkey United Kingdom Other	2 12 1 36 1 2 1 4					2 37 3 81 5 6 3 26				
Age			23	39	18	5		23	56	18	6
AQ-short scores			72.62	84	60	5.24					
Anxiety			45.71	64	21	11.13		41.01	64	26	11.34
Problem focused coping			2.14	3	1.25	.48		2.57	4	1.38	.61
Emotion focused coping			2.34	3.08	1.75	.31		2.42	3.33	1.75	.30
Avoiding coping			2.73	4.00	1.71	.60		2.51	4.00	1.29	.75
Primary coping style	Problem-focused Emotion-focused Avoidant	10 13 36					82 15 66				

Hypotheses testing

First, a one-way Analysis of Variance (ANOVA) was performed in order to examine whether using problem-focused or emotion-focused coping as a primary coping style would be associated with lower levels of anxiety symptoms in university students with and without a diagnosis of ASD, compared to using avoidant coping as a primary coping style. Primary coping style (problem-focused, emotion-focused, and avoidant) was used as the categorical predictor variable and anxiety symptoms was used as the quantitative outcome variable. Levene's test was statistically significant, indicated that the assumption for homogeneity of variances was not met ($F = 23.49$, $p < .01$), indicating that the variances are significantly different between all groups. Results showed a statistically significant effect of primary coping style on levels of anxiety symptoms ($F = 35.08$, $p < .01$, $\eta_p^2 = .25$). Students who employed avoidant coping as their primary coping style had the highest levels of anxiety symptoms ($M = 48.31$, $SD = 11.90$), followed by students who used emotion-focused coping ($M = 38.32$, $SD = 8.82$), and students using problem-focused coping ($M = 36.53$, $SD = 7.60$) as their primary coping style. The Games-Howell post-hoc analysis showed that levels of anxiety symptoms did not differ significantly between university students who use problem-focused coping and university students who used emotion-focused coping as their primary coping style ($p = .602$). However, there was a statistically significant difference in levels of anxiety symptoms between university students who used emotion-focused coping ($M = 38.32$, $SD = 8.82$) and students who used avoidant coping ($M = 48.31$, $SD = 11.90$) as their primary coping style ($Mdiff = 9.99$, $p < .001$), as well as between university students who used problem-focused coping ($M = 36.53$, $SD = 7.60$) and students who used avoidant coping ($M = 48.31$, $SD = 11.90$) as their primary coping style ($Mdiff = 11.78$, $p < .001$).

Finally, a multinomial logistic regression was performed in order to examine the probability that students with and without a diagnosis of ASD would use avoidant coping or emotion-focused coping as their primary coping style, compared to problem-focused coping.

Therefore, problem-focused coping served as the reference category. The results from the likelihood ratio test shows that having an ASD diagnosis is related to the type of primary coping style which is used ($p<.01$). The results from the multinominal logistic regression show that students who have ASD are more likely to use avoidant coping compared to problem-focused coping style ($B = 1.50$, $p<.01$). Furthermore, ASD students are more likely to use emotion-focused coping mechanisms rather than problem focused ($B = 1.96$, $p<=.01$).

Discussion

The goal of the current study was to better understand the relationship of anxiety, coping mechanisms and having an ASD diagnosis. More specifically, we aimed to examine whether avoidant coping style and ASD diagnosis are associated with greater anxiety levels, and if having an ASD diagnosis predicts maladaptive coping. The results show that people who tend to use avoidant coping style have a significantly higher mean anxiety score Furthermore, the results show that students with ASD are more anxious than students who do not have ASD. Consistent with our hypothesis, the results from the regression analysis show that having an ASD diagnosis predicts using avoiding coping style as primary coping mechanism. In other words, it was confirmed that people who have ASD tend to deal with stressful situations by using avoidant coping strategies, such as distractions, addictions, denying. Furthermore, they reported higher anxiety levels compared to students who do not have autism spectrum disorder. This raises the question of spreading ASD awareness within the education systems and work settings since it could be helpful in establishing an autism friendly environment which can in turn aid these individuals to use their strong sides and to enhance them as well as to gradually improve their weaknesses through the support of the communities surrounding them.

Altogether, the results of the study support the suggestion that avoidant coping is associated with higher levels on anxiety (Whatley et al. 1998; Aldao et al. 2010, Cronkite & Moss, 1995). Furthermore, the findings of the study confirm prior work which shows that the rate of anxiety within ASD children is higher compared to typically developing children (Gillot et al.,

2001; Bellini et al, 2004). Our work extends previous research by exploring a sample of ASD university students, which is not so well studied but important group. Thus, we provide evidence that anxiety is prevalent in ASD people despite of their age.

Understanding the relationship between anxiety, coping mechanisms and ASD might help psychologists (clinical and school psychologists, too) in developing treatment plans for ASD people which are focused on expanding their coping mechanisms and advancing adaptive coping strategies (e.g., time-management, mindfulness, problem-focused thinking). For example, there is a lot of research which shows that mindfulness is effective in reducing anxiety levels in clinical and non-clinical samples (Arch & Craske, 2010; Young and Baime, 2010). Even though, it is still a newly developed field, research suggests that implementation of mindfulness in therapy can reduce anxiety in ASD children and adults (Cachia et al. 2016; Hwang et al. 2015; Wisner et al. 2010). In addition, another study (Zandi et al., 2021) has gathered evidence that mindfulness training can be an effective intervention to improve coping and elevate happiness. This type of treatment includes different meditation exercises, body scan examinations which aim to help the individual to focus on the present moment with everything that is happening in the now without commenting or judging the experience and the feelings that arise from it. In this way a subject can gain acceptance and an understanding that both pleasant and unpleasant emotions can occur which is overall linked to lower levels of anxiety. Moving from conceptual to perceptual state of mind decreases the effect of past beliefs on processing information and subsequent emotional reactions. (Zandi et al., 2021).

One of the potential limitations of the current study is the using of self-report scales via online questionnaires. According to research (Devaux and Sassi, 2016) self-report data tends to be more biased. People might want to present themselves in more desirable positions and therefore to not be completely genuine. Furthermore, some of the people might not have good enough insight in order answer the questions as they truly are. Since the focus group is students with ASD, we should keep in mind that autism "…disrupts not only understanding of others and their social relationship, but also understanding of self" (Frith & Happe, 1999). Research (Baron-Cohen, 2003; Frith & Happe, 1999; Lombardo & Baron-Cohen, 2011) show that the neurocognitive mechanism which is damaged in ASD enables the attribution of mental states to others as well as to oneself. Therefore, ASD people have trouble in understanding their own and others' feelings, intentions, thoughts, attitudes, motivations, behaviors, and so on. Thus, we might

conclude that the ASD group might not have adequately assessed themselves, their anxiety levels, and their ability to cope with stress.

However, despite the noted limitations of the current study, the results are valuable since they give further understanding of the relationship between anxiety coping, and ASD. The study suggests that if interventions for ASD people who suffer from anxiety are focused on developing adaptive coping strategies, the level of anxiety may decrease. Since autism spectrum disorder varies in terms of range, this means that the symptoms might differ in ASD people and have different levels. Therefore, future research might focus on the relationship between ASD levels and coping style, and anxiety. Furthermore, it will be helpful and useful to study the relationship of anxiety and ASD personality traits. Research has shown that are predictors and provide a basis for psychopathology (Finch & Graziano, 2001; Kajonius & Daderman, 2017). For example, neuroticism has been connected with anxiety and depression (Karsten et al., 2012; Smith et al., 2017). Knowing which ASD personality traits are connected to anxiety, clinicians and psychologist can focus their treatment on them in order to help ASD students and people in general, to deal with their anxiety.

In conclusion, the present study provides further evidence that ASD people tend to be more anxious and tend to use more maladaptive coping strategies in order to deal with this anxiety compared to their peer. Results from the current research support the hypothesis that having an autism spectrum disorder predicts usage of avoidant coping strategies as a primary coping style.

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