

# Camouflage, self-esteem, and gratitude in young adults with autism spectrum conditions in Poland

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## HOW TO CITE:

Nieradka, F., & Kossewska, J. (2023).  
Camouflage, self-esteem, and  
gratitude in young adults with autism  
spectrum conditions in Poland.  
*International Journal  
of Special Education*, 38(2), 188-198.

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## DOI:

<https://doi.org/10.52291/ijse.2023.38.33>

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## ABSTRACT:

Autistic spectrum conditions (ASC) imply functioning difficulties in adulthood due to the fact that they are caused by early-onset problems in social communication, unusually restricted repetitive behavior, and narrow interests. Living with ASC might be difficult for young adults who face specific developmental tasks, such as undertaking a professional career and engaging in social and civic responsibilities. Because of the need to hide their dysfunctions and to conform to social norms and conventions, affected people use camouflage strategies. In order to improve their well-being and functioning, they may also use the regulatory function of self-esteem and gratitude.

The presented research carried out in Poland aimed to determine the relations between the intensity of camouflage, self-esteem, and gratitude and to test for differences in the levels of these variables, taking into consideration the intensity of the autism spectrum conditions (ASC). The study comprised a total of 104 young adults (68 women = 65.38%, and 36 men = 34.62%) who graduated from secondary or tertiary education aged between 19 and 35 years. The entire group was divided into two subgroups based on the screening questionnaire Autism Spectrum Quotient (AQ10), a ten-item abridged version.

One subgroup consisted of 52 adults with a high intensity of autistic traits, and the other consisted of individuals with a low intensity of autistic traits. The results showed a correlation between the level of autism spectrum conditions and camouflage. The level of camouflage was significantly higher in the subgroup with an increased severity of autistic traits compared with the subgroup with a low severity. In contrast, no significant differences were detected between the subgroups in the levels of self-esteem and gratitude, nor were any linear correlations between spectrum conditions and self-esteem and gratitude found.

**Keywords:** autism spectrum conditions, ASC, camouflage, self-esteem, gratitude

## INTRODUCTION

Some of the causes of autism spectrum disorders (ASD) with a complex and multifactorial etiology are structural or functional dysfunctions of the brain (Taylor et al., 2020). According to the current classification of the American Psychiatric Association (DSM-5), autism spectrum disorders manifest as difficulties in social functioning and communication, as well as a repetitive repertoire of behaviors and limited specific interests (APA, 2013). In order to differentiate autism spectrum disorders, the most recent International Statistical Classification of Diseases and Related Health Problems (ICD-11) introduces criteria for (1) functional language level and (2) intellectual deficit (World Health Organization, 2019). According to both of these classifications, symptoms of a spectrum disorder begin in early childhood but may be noticed later in life. The prevalence of autism spectrum disorder in Poland is not precisely recognized, but it can be assumed that it is the same as in the world population, which means that it affects approx. 1% of people (Lai et al., 2019).

The term used in the diagnostic nomenclature, i.e., autism spectrum disorders (ASD), started to be replaced, both in scientific terminology and in the broadly understood public opinion, by the term autism spectrum conditions (ASC) to describe the whole spectrum of individuals (Baron-Cohen et al., 2008; Rynkiewicz & Łucka, 2015). This is mainly due to the development of the neurodiversity theory, which assumes the existence of functional differences in the structure of the human brain (Baron-Cohen, 2010; Lai & Baron-Cohen, 2015). The theory mentioned above is the opposite of the medical approach based on strict cut-off scores as it assumes the diversity of all individuals in society and emphasizes that there is a place in society for each of them (Cierzniewska & Podgórska-Jachnik, 2021). Simon Baron-Cohen et al. (2010) point out that autism spectrum conditions (ASC), in contrast to autism spectrum disorders (ASD), might be diagnosed later, even in adulthood, since specific symptoms are manifested in lower intensity in the general population. In England, the weighted estimated prevalence of autism spectrum conditions in adults is 1.47% and might even be underestimated (Lai & Baron-Cohen, 2015); however, there is no evidence or estimates from Poland.

Autism spectrum conditions might be estimated by screening instruments such as questionnaires that measure quantitative autistic traits. This assumption made by the researchers was based, among other things, on the

AQ questionnaire to measure the severity of autistic traits characterized by satisfactory psychometric values. Using the AQ assessment method, the prevalence of autistic traits was demonstrated both among typically developing individuals and among those with a formal diagnosis of Autism. It is noteworthy, however, that in 99% of cases, the latter group scored above the cut-off point established by the scale authors (Baron-Cohen et al., 2010).

People with ASC often have additional co-morbidities. These include symptoms of depression and anxiety (Hull et al., 2019b) and low mood (Perry et al., 2021). Moreover, some individuals on the autism spectrum have co-occurring intellectual disability (Morrison, 2016) and epilepsy (in approx. 25-50%), as well as digestive disorders and immunological complaints (Pisula, 2012). More than half of the autistic spectrum population have attention deficits and/or hyperactivity (Rybakowski et al., 2014).

Camouflage in the context of the functioning of individuals with ASC is understood as the use of conscious or unconscious strategies, which can be learned through being indirectly or directly placed in social situations, to limit the exposure of the autistic traits to other individuals (Hull et al., 2017). The phenomenon of camouflage in the context of individuals who have ASC or manifest traits typical of the condition is currently being studied worldwide (Lai & Baron-Cohen, 2015; Cook et al., 2021; Hongo et al., 2022; Dell'Osso et al., 2022; Hannon et al., 2023).

Camouflage has three slightly different functions. These are (1) compensation, which includes, inter alia, mimicking the interlocutor's facial expressions or learning behaviors from films, etc.; (2) camouflage, exemplified by forcing oneself to make eye contact with one's communication partner; and (3) assimilation, involving, e.g., schematic organization of conversation with others (Cage & Troxell-Whitman, 2019). Under certain conditions, camouflage can lead individuals with ASC to be socially perceived as high-functioning individuals who do not experience any difficulties even though they still confront numerous difficulties in social interactions (Tubío-Fungueiriño et al., 2021).

A differentiating factor in the use of camouflage by people with conditions on the spectrum is gender. Women are more likely to use this strategy than men (Hull et al., 2019a). Therefore, it is recognized that camouflage may be a reason for difficulties and delays in the process of diagnosing women with ASC because of treating it as a manifestation of the female phenotype (Gould & Ashton-Smith, 2011; Kirkovski et al., 2013; Lai

& Baron-Cohen, 2015). Furthermore, camouflage is also associated with the severity of autistic traits, as higher overall scores on the Camouflaging Autistic Traits Questionnaire (CAT-Q) were associated with high AQ scores. The said pattern was present in both formally diagnosed individuals and those who did not have a formal diagnosis (but exhibited typical ASC traits) (Livingston et al., 2019). Laura Hull et al. (2017) also noted that the use of camouflage by people with ASC can lead to the onset of psychological exhaustion and have a negative impact on their self-esteem.

Studies conducted on individuals on the autism spectrum have shown that they present lower self-esteem than individuals with typical development (Cooper et al., 2017). This state of affairs may be influenced by several negative experiences experienced by individuals with autism spectrum conditions. These may include negative social relationships or focusing primarily on one's dysfunctions. Low self-esteem can lead to the development of comorbid disorders (Van Tuijl et al., 2014), which is why the diagnosis of self-esteem in people on the spectrum is essential, as low self-esteem together with high levels of depression are associated with a higher risk of suicide (Lai & Baron-Cohen, 2015; Arwert & Sizoo, 2020).

Gratitude, although variously defined, is perceived by its overarching goal of creating and maintaining positive ties with other people, which fosters a sense of happiness (Algoe et al., 2008; Gruszecka, 2015). It can be conceptualized in different ways, e.g., as an approach to life, i.e., a perspective in which people appreciate the very fact of existence, the ability to perform everyday activities, or their skills (Wood et al., 2010). In a more general approach, gratitude is a dispositional and positive trait that refers to the recognition of the role of the kindness and contributions of others to positive subjective experiences (McCullough et al., 2002), which triggers the kindness and mercy of the giver towards the recipient, implying the emergence of a relationship and the need for reciprocity. It can also be defined as a reaction to giving thanks for favorable situations, behaviors, and things received, both tangible and intangible, or as a positive emotion experienced in connection with being given a gift (Lasota et al., 2020b).

In general, gratitude is an essential resource as it supports coping with stress and triggers positive emotions, i.e., hope or happiness, which increase the quality of life. Research has shown that higher gratitude is associated with higher quality of life, self-esteem and optimism, good relations with others, and self-acceptance. Further-

more, there is a link between gratitude and lower levels of depression and hostility (Davis et al., 2016; Wood et al., 2010). Thus, gratitude is the foundation of kindness manifested in social relationships, and its display strengthens interpersonal relationships (Fredrickson, 2001). Despite the importance of gratitude for normal functioning, development, and quality of life, this phenomenon has not been studied in people with conditions on the spectrum or with enhanced features typical of these conditions. The concept of gratitude has only been examined concerning parents of children on the autistic spectrum (Lestari & Pratisti, 2019). Parents of children on the autism spectrum exhibit equal levels of gratitude regardless of sex. Thanks to this disposition, they more often experience positive emotions such as joy, enthusiasm, love, happiness, and optimism, and gratitude protects them from the destructive emotions of envy, resentment, or greed. Therefore, they more easily accept a child manifesting developmental difficulties and can better cope with daily stress. Given the beneficial impact of gratitude on an individual's quality of life in various spheres of existence, it seems important to explore it.

The level of functioning of individuals on the autism spectrum may, therefore, vary enormously due to the severity of the autistic traits and/or co-occurring disorders (Hull et al., 2019a; Perry et al., 2021; Morrison, 2016; Pisula, 2012). Given the camouflage among the population of individuals with ASC or with enhanced features typical of these conditions and the implications of its use for mental health (Hull et al., 2019a) as well as self-esteem (Hull et al., 2017), it is worth pursuing further exploration of the variables above. Moreover, noting the findings of Davis et al. (2016) regarding the association of gratitude with lower levels of depression and more positive attitudes toward other people, it seems reasonable to undertake research focusing on the constructs mentioned above in the context of the functioning of young adults with varying degrees of autism spectrum traits.

## METHODS

### *Study aim and research hypothesis*

The present study aimed to examine differences in the levels of camouflage, self-esteem, and gratitude between adults with a high level of autism conditions and those with a low level of autism conditions and to explore the correlations between camouflage, self-esteem, and gratitude about autism spectrum conditions.

The analysis of the literature allowed us to develop the following research hypotheses:

- H1: The level of camouflage varies with the severity of autism conditions.
- H2: The level of self-esteem varies with the severity of autism conditions.
- H3: The level of gratitude varies with the severity of autism conditions.

### Study group

The study comprised a total of 104 people who had secondary or higher education. The average age of all the subjects was 24.68 years. Sixty-eight women participated in the study, 65.38% of the study group, and 36 men, or 34.62% of the study participants. The subjects were included in two subgroups based on their scores on AQ-10, which is used to diagnose ASC risk. In case of a score of 6 or more, an in-depth diagnosis of autism spectrum disorder is recommended. The subgroup with high severity of autistic conditions consisted of 52 young adults (34 females, 18 males) aged between 19 and 35 years, with a mean age of 26.01 years. The subgroup with low severity of autistic conditions (AQ-10 scores of 5 or lower) also consisted of 52 young adults (34 females, 18 males) aged between 19 and 35 years. The mean age for the subgroup with low severity of autistic conditions was 23.34 years.

### Measures

The study used a diagnostic survey and a measurement technique, and data were collected using four standardized measurement scales. The severity of autistic conditions was tested using the *Short Autism Spectrum Quotient Test (AQ-10)* questionnaire (Baron-Cohen et al., 2001) modified for this study based on an adaptation to the Polish conditions of the complete AQ questionnaire by Rynkiewicz and Łucka (2010). The short scale consists of 10 statements to which respondents were asked to respond on a four-point Likert scale. The results indicate the overall intensity of autistic conditions and the specific problems covering five domains (attention to detail, attention switching, communication, imagination, and social skills). Cronbach's alpha reliability coefficient for the original (English) scale is  $\alpha=0.85$ .

Camouflage, understood as the tendency to mask autistic conditions, was examined using the *Camouflaging Autistic Traits Questionnaire (CAT-Q)* (Hull & Mandy, 2019), translated by Agnieszka Siedler<sup>1</sup>. The questionnaire consists of 25 statements to which respondents were asked to respond using a seven-point Likert scale. Scores above 100 indicate camouflaging traits typical of

Autism. The scale measures the overall camouflage index and its specific categories in three domains (compensation, masking, and assimilation). Cronbach's alpha reliability coefficient for the English scale is  $\alpha=0.94$ .

Self-esteem was examined using the Polish adaptation of the *Rosenberg Self-Esteem Scale (SES)* (1965) by Dzwonkowska et al. (2008). This questionnaire is a one-dimensional tool. It consists of 10 diagnostic statements. The respondents' task was to respond to each statement on a four-point Likert scale. Cronbach's alpha reliability coefficient for the tool in the Polish version for adults ranges from  $\alpha=0.81$  to  $\alpha=0.83$ .

Gratitude was examined using *The Gratitude Questionnaire-Six Item Form (GQ-6)* (McCullough et al., 2002), translated by Początek<sup>2</sup>. The questionnaire is designed to assess individual differences in the propensity to experience gratitude in everyday life. It consists of six statements to which respondents were asked to respond using a seven-point Likert scale. Cronbach's alpha is  $\alpha=0.86$ , indicating a high internal consistency (Lestari & Pratisti, 2019).

### Procedure

The study was conducted online and ran from May to November 2021. A battery of scales including the AQ-10 (Allison et al., 2012), CAT-Q (Hull & Mandy, 2019), GQ-6 (McCullough et al., 2002), and the SES by Rosenberg (1965), adapted by Dzwonkowska et al. (2008), were made available on various forums and social networks. It also included information on the purpose of the study as well as a disclaimer that the research is voluntary, anonymous, and for research purposes only. The research design was approved for implementation by the Research Ethics Committee of the Institute of Psychology at the Pedagogical University on 30<sup>th</sup> April 2021.

### Statistical analyses and descriptive statistics used

In order to verify the hypotheses, statistical analyses were carried out using IBM SPSS Statistics version 29.0. statistical software allows top-down hypothesis testing while maintaining the principles of high quality and accuracy of the analyses. Table 1 shows the descriptive statistics for the study subgroup (N=104) together with the results of the Shapiro-Wilk test. This test is used to check the normality of the data.

<sup>1</sup> \* used with the permission of the author and translator.

<sup>2</sup> \* used with the permission of the author and translator. The translation was done within the research project supported by the grant (W101) given by the Polish Ministry of Education „Najlepsi z najlepszych! 4.0”. No MEiN/2021/233/DIR/NN4, on 20th Oct.2021.

Table 1. Descriptive statistics for the entire study group (N=104)

	N	Missing	Mean	Median	SD	Min	Max	Shapiro-Wilk W	Shapiro-Wilk p
AQ- 10	104	0	5.40	5.50	2.94	0	10	.941	.001
CAT-Q	104	0	104.00	104.00	26.80	46	163	.987	.396
SES	104	0	26.50	27.00	5.14	11	39	.992	.766
GQ-6	104	0	27.10	26.50	4.18	17	42	.968	.013

Note to the Shapiro-Wilks test. A low p-value suggests a violation of the assumption of normality.

Considering the results of the Shapiro-Wilk test (Table 1), it can be concluded that the data distribution deviates from the normal distribution in the area of two of the four variables explored. Therefore, non-parametric tests were applied for all the variables for exploratory purposes. Correlational analyses (Spearman’s rank correlation analysis) and comparative analyses (checking for intergroup differences using the Mann-Whitney *U* Test) were used.

**RESULTS**

To verify the hypotheses, Spearman rank correlations were initially performed, the coefficient of which allows the strength and direction of the relation between two variables to be determined.

Correlation analyses (Table 2) in the study group showed positive and high linear relations (according to J. Guilford’s classification) (Guilford, 1942) between autistic conditions and camouflage – taking into account both the total CAT-Q (rho=0.55, p<0.001) and the two subscales included in the camouflage instrument. It is also worth emphasizing that the correlations between the CAT-Q subscales show high internal consistency.

Furthermore, it can be concluded that as the severity of autistic conditions increases, the intensity of camouflage use increases – the most commonly used strategies for hiding autistic conditions are *assimilation* (rho=0.65, p<0.001), which involves forcing oneself to interact with other people or being overly rigid when interacting with an interlocutor, but also *compensation* (rho=0.53, p<0.001) which consists in learning observed social behaviors which then serve to build patterns that can be useful in similar situations. No linear relation was found between the severity of autistic conditions and *masking*, i.e., a technique that mainly involves excessive control of one’s body posture or focusing very hard on making eye contact with the interlocutor.

No linear relation was found between the severity of autistic conditions and self-esteem. Regarding the relation between self-esteem and camouflage, no correlation was shown considering the total CAT-Q, but a negative, moderate correlation was demonstrated between self-esteem and *assimilation* (rho=-0.30, p<0.01). The other two CAT-Q subscales, *compensation* and *masking*, respectively, are not in a linear relation with self-esteem, either. Thus, considering the patterns mentioned above, it can be concluded that people with lower self-esteem

Table 2. Spearman’s rho correlations between the variables for the whole study group (N=104)

	AQ-10	CAT-Q_ Total	CAT-Q_ Compensation	CAT-Q_ Masking	CAT-Q_ Assimilation	SES
CAT-Q_ Total	.55***	_____				
CAT-Q_ Compensation	.53***	.88***	_____			
CAT-Q_ Masking	.16	.74***	.55***	_____		
CAT-Q_ Assimilation	.65***	.82***	.62***	.38***	_____	
SES	-.14	-.14	-.01	-.02	-.30**	_____
GQ-6	-.17	-.15	-.13	.01	-.16	.21*

Note. \* p < .05. \*\* p < .01. \*\*\* p < .001

Table 3. Intergroup differences in the area of the variables explored, tested by the Mann-Whitney U Test for the subgroups with high (N=52) vs. low severity of autistic conditions (N=52)

	subgroup with high autistic conditions (N=52)		subgroup with low autistic conditions (N=52)		U	p	rg
	M rank	Median	M rank	Median			
CAT-Q	66.83	114.00	38.17	93.00	607,000	.001	0.55
SES	50.90	27.00	54.10	27.00	1269,000	.591	0.06
GQ-6	48.63	26.00	56.37	27.00	1151,000	.190	0.15

rg – Glass rank biserial correlation

compensate for their deficits using the assimilation strategy, which may result in excessive avoidance of contact with others or lead to constant involuntary contact based on rigid conversation patterns or reactions to situations.

Regarding gratitude, no linear relations were shown between gratitude and the severity of autistic conditions or camouflage. However, there is a positive, moderate correlation between gratitude and self-esteem ( $\rho=0.21$ ,  $p<0.05$ ), which suggests that as self-esteem increases, so does the level of gratitude.

A Mann-Whitney *U* test was then performed, the results of which made it possible to discern the differences between the two subgroups in terms of selected quantitative variables.

Comparative analyses (table 3) using the Mann-Whitney *U* Test revealed that only within one of the three variables explored was a statistically significant difference found regarding the severity of autistic conditions. It was observed that the level of camouflage is higher in the subgroup with an increased severity of autistic disorders (M rank=66.83; Me=114.00) compared with the subgroup with a low severity of autistic conditions (M rank=38.17; Me=93.00;  $U=607.00$ ;  $p<.001$ ). Based on the Glass rank biserial correlation coefficient, the effect can be considered strong, so it can be concluded that the level of camouflage is strongly correlated with autistic conditions and determined by their severity. Concerning the following two variables, there are no statistically significant differences in their levels between the subgroups.

In order to analyze the correlations in the variables explored more precisely, it was decided to divide the subgroup into people with high and low severity of autistic conditions based on their AQ-10 scores. Thereafter, correlational analyses were carried out separately for each subgroup.

An analysis of the data in the table above (table 4) reveals that positive correlations were found between the severity of the autistic conditions concerned and cam-

ouflage in the subgroup with high severity of autism spectrum conditions and the total CAT-Q ( $\rho=0.34$ ,  $p<0.05$ ) and within the two subscales, i.e., **compensation** ( $\rho=0.44$ ,  $p<0.01$ ) and **assimilation** ( $\rho=0.38$ ,  $p<0.01$ ), which was also true for the subgroup as a whole (with low and high severity of ASC-typical conditions combined). Still, the correlations were not as strong or significant. Again, no correlation was shown between the severity of autistic conditions and **masking**. Moreover, no linear relation was demonstrated between the severity of autistic conditions and self-esteem or gratitude. The situation is similar to the relation between self-esteem and camouflage. Regarding the latter variable, no linear relationship between gratitude and self-esteem or camouflage was found.

In the case of the subgroup with low severity of autistic conditions, no associations were shown between the traits in question and camouflage for the total CAT-Q or within the two of its subscales, i.e., **compensation** and **masking**. An exception is one of the CAT-Q subscales ( $\rho=0.30$ ,  $p<0.05$ ). This means that when people with relatively low severity of autistic conditions experience an increase in the severity of these conditions, they become more reluctant to interact with other people or use rigid conversational patterns with the interlocutor (**assimilation strategies**) more often. Moreover, the relation between the severity of autistic conditions and self-esteem was not shown, either. The situation is similar for the relation between self-esteem and camouflage with the exception of one of the CAT-Q subscales (**assimilation strategy**,  $\rho=-0.41$ ,  $p<0.001$ ).

Interestingly, for the subgroup with low severity of autistic conditions, the relation found was negative, significant, and moderate, which is not reflected in the subgroup with high severity (no correlation). This may be due to excessive avoidance of interpersonal interactions or frequent failures in the said area, which may be related to a higher self-awareness of one's difficulties regarding

Table 4. Spearman’s rho correlations between the variables explored for the subgroups with high (N=52) vs. low severity of autistic conditions (N=52)

	High autistic conditions (N=52)	Low autistic conditions (N=52)	High autistic conditions (N=52)	Low autistic conditions (N=52)	High autistic conditions (N=52)	Low autistic conditions (N=52)	High autistic conditions (N=52)	Low autistic conditions (N=52)	High autistic conditions (N=52)	Low autistic conditions (N=52)	High autistic conditions (N=52)	Low autistic conditions (N=52)
	AQ- 10		CAT- Q_ Total		CAT-Q_ Compensation		CAT-Q_ Masking		CAT-Q_ Assimilation		SES	
CAT-Q_ Total	.34*	.27	—	—								
CAT-Q_ Compensation	.44**	.27	.89***	.83***	—	—						
CAT-Q_ Masking	.06	.17	.78***	.80***	.63***	.49***	—	—				
CAT-Q_ Assimilation	.38**	.30*	.76***	.75***	.56***	.49***	.39**	.41**	—	—		
SES	-.12	-.27	-.08	-.13	.06	-.02	-.09	.06	-.24	-.41**	—	—
GQ-6	-.14	-.08	-.13	-.01	-.10	-.00	.05	.02	-.24	.07	.24	.16

Note. \* p<.05. \*\* p<.01. \*\*\* p<.001

social functioning. Furthermore, it is worth emphasizing that the level of an individual’s self-esteem is vital in adjusting one’s attitude toward relations with others (Szpitalak & Polczyk, 2015). Regarding gratitude, no correlation between gratitude and the other variables was found in the subgroup with low severity of autistic conditions.

**DISCUSSION**

The study assumed a relation between the severity of autistic conditions and camouflage, self-esteem, and gratitude among Polish adults. Furthermore, it was assumed that the level of the variables concerned would vary between the subgroups with high and low severity of autistic conditions.

The assumptions about camouflage were mainly based on the fact that in the context of the functioning of people with ASC, camouflage limits the exposure of autistic conditions in social interactions (Hull et al., 2017). The results of our study show that in the case of the entire study group (with high and low severity of autistic conditions combined), an increase in the severity conditions typical of autism spectrum conditions implies a corresponding increase in the strength with which camouflage is used. The results are consistent with a study conducted

among a Polish group of individuals with ASC (Kossewska & Milczarek, 2022) and similar to foreign research results (Cook et al., 2021; Hannon et al., 2023). Furthermore, the most frequently used strategies for hiding autistic conditions are *assimilation* and *compensation*. Thus, an individual with higher severity of autistic conditions will also have a higher level of concealing these symptoms by, e.g., involuntarily interacting with or withdrawing from such interactions or by learning acceptable social behaviors.

Furthermore, it can be concluded that people with lower self-esteem camouflage their autistic conditions by using the strategy of *assimilation*. For individuals with high and low severity of autistic conditions combined, no relation between the severity of the conditions and self-esteem was shown, which differs from the results of studies conducted on individuals with ASC (Hull et al., 2017; Cooper et al., 2017). Regarding gratitude, this construct has not been previously addressed in the context of autistic conditions and their relation with the functioning of young adults. Still, it was decided to test its relation with conditions typical on the spectrum. The hypothesis put forward was supported by research, the results of which showed that gratitude is associated with, among other things, higher quality of life (Tomaszek

& Lasota, 2019), self-esteem, and relations with other people as well as lower levels of depression (Davis et al., 2016). Thus, individuals exhibiting higher levels of autistic conditions may be characterized by lower self-esteem compared with individuals from the general population (Hull et al., 2017), taking into account their risk of developing depressive symptoms (Hull et al., 2019a) leads to the conclusion that the quality of life of young adults with elevated conditions typical of autism spectrum conditions (exceptionally high severity of autistic conditions) is reduced. However, in the area of gratitude versus severity of autistic conditions and camouflage, no linear relations were found for the group of individuals with high and low severity of autistic conditions combined. However, it was reported that as self-esteem increases, gratitude levels also increase (Lasota et al., 2020a; 2020b).

When attempting to compare the issues of linear relations in the subgroup with high and low severity of autistic conditions, it is imperative to note that the *masking* technique was not used in either subgroup, regardless of the level of severity of autistic conditions. Furthermore, the strategies of *assimilation* and *compensation* were used in the case of the subgroup with high severity of autistic conditions, as was camouflage in general. So, it can be inferred that individuals with high levels of autistic conditions use camouflage more extensively, which seems reasonable in relation to the reasons for using camouflage (Cage & Troxell-Whitman, 2019). It is noteworthy that people with low severity of autistic conditions used one of the camouflage strategies, i.e., *assimilation*, which may be related to a higher awareness of having certain difficulties in the area of social functioning and trying to limit their exposure. There are no linear relations between self-esteem and camouflage (Kossewska & Milczarek, 2022) for both subgroups, except for one of the CAT-Q subscales (*assimilation strategy*) in the subgroup with low severity of autistic conditions. In this subgroup, it is negative and moderate, which may be linked, among other things, to failures or difficulties experienced in interacting with others or, e.g., a higher awareness of one's difficulties. A further explanation may be that an individual's self-esteem level adjusts their attitude toward others and, thus, is important for their social relations with others. Individuals with high self-esteem may feel well among others, whereas when low, they may tend to limit interpersonal relations (Szpitalak & Polczyk, 2015).

Comparative analyses showed that camouflage was more intense for the subgroup with a high intensity of traits characteristic of ASC than for the subgroup with a low intensity of traits characteristic of ASC, which is

similar to research results revealing that individuals with an ASC diagnosis scored higher on the questionnaire that examined camouflage (CAT-Q) than those whose traits are not severe (Hull et al., 2019). Our study did not demonstrate any significant differences in self-esteem or gratitude between the subgroups with more and less severe autistic traits, which differs slightly from the results of a study that showed lower self-esteem for individuals with ASC (Cooper et al., 2017). However, it was expected that adults with higher autism spectrum conditions might be vulnerable to low self-esteem (Lai & Baron-Cohen, 2015). The differences in results may be primarily due to differences between the study samples as participants in the research conducted for this publication may have exhibited and likely did exhibit, lower severity of ASC traits as they did not have a formal autism spectrum diagnosis.

## CONCLUSIONS

As a result of the statistical analyses applied, it was concluded that:

- There is a linear relation between autistic traits and camouflage, which takes the following direction: the higher the severity of autistic traits, the higher the level of camouflage use;
- There is no linear relation between autistic traits and self-esteem;
- There were no significant differences in self-esteem between those with high and low severity of autistic traits;
- There is no linear relation between autistic traits and gratitude;
- There were no significant differences in the levels of gratitude between those with high and low severity of autistic traits.

## LIMITATIONS

The study discussed in this publication included young adults with high and low-severity autistic traits. The results provided valuable information, which makes it possible to confirm previous research findings partially but also to highlight some patterns in the psychosocial functioning of young adults with varying degrees of autism spectrum conditions. A strength of the study is the use of the AQ-10 screening test score to divide the subgroup into those at high and low risk of autism spectrum disorders instead of just considering the subjects' declarations of having or not having an ASC diagnosis. It seems that another appropriate solution was to ensure that the sub-



groups with high and low severity of autistic traits were uniform concerning sex.

A limitation of the study was undoubtedly the form of the study, i.e., the small size of the study group, the lack of verification of the IQ level of the respondents, as well as the disproportion between men and women or the failure to include people from outside the binary division of genders. Thus, the research procedure can be improved by organizing face-to-face surveys. Also, a larger sample of respondents should be included. Furthermore, it would be a valuable exercise to assess the IQ levels of the subjects. It would also be worthwhile to make an effort to increase the ratio of men to women and to include people from outside the binary division of genders, as well as to try to use the AQ test in its full version (instead of the short version, i.e., the AQ-10). It

would also be worthwhile to monitor the indicators mentioned through objective measurement tools rather than only self-reporting ones. It may also be worthwhile to extend statistical analyses and/or check for other relations or differences within the range of the variables discussed.

#### ACKNOWLEDGEMENT:

None

#### DECLARATION OF INTEREST:

No potential conflict of interest was reported by the author.

#### FUNDING

Research was supported by the grant (W101) given by the Polish Ministry of Education „Najlepsi z najlepszych! 4.0”. No MEIN/2021/233/DIR/NN4.

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