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ASSOCIATIONS BETWEEN WELL-BEING AND ADHD/AUTISTIC TRAITS IN SECONDARY SCHOOL STUDENTS

Shikhah Almayobed and *Andrew P. Smith

Centre for Occupational and Health Psychology, School of Psychology, Cardiff University, 70 Park Place, Cardiff CF10 3AT, UK.

***Corresponding Author: Andrew P. Smith**

Centre for Occupational and Health Psychology, School of Psychology, Cardiff University, 70 Park Place, Cardiff CF10 3AT, UK.

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ABSTRACT

Background: There has been recent research on the associations between ADHD/autistic traits and well-being. The present study continued this line of inquiry using the Well-being Process approach with a sample of secondary school students. **Methods**: Two hundred students completed an online survey, which included the Short-Form Well-being Process Questionnaire, the Short-Form Strengths and Difficulties Scale, and the Autism Spectrum Quotient (AQ10) and the ADHD Self-Report Scale (ASRS). **Results**: Many associations were observed in univariate analyses; however, these often became non-significant when the established well-being predictors were covariied. In the multivariate analyses, there was little evidence of associations between the AQ10 and ASRS scores and the well-being outcomes. In contrast, significant associations remained between the AQ10 and ASRS scores and the SDQ outcomes (peer problems, emotional problems and hyperactivity). **Conclusion**: The study found no significant relationships between ADHD/autistic traits and well-being when established predictors were controlled for, confirming previous findings. However, the ADHD/autistic trait scores were good predictors of the SDQ outcomes, confirming predictions based on previous research. A longitudinal methodology should now be employed to determine the underlying mechanisms.

KEYWORDS: Well-being; Strengths and Difficulties; ADHD; Autistic Traits; Secondary School Students.

INTRODUCTION

The Well-being Process approach was based on the Demands-Resources-Individual-Effects (DRIVE) model, which was developed using occupational samples.[1,2] Research then utilised the Well-being Process Questionnaire with occupational samples,[3-21] followed by research with students.[22-40] Much of the Student WPQ research has involved university students. However, a study conducted by Smith and James[41] with secondary school students from a school in South Wales did not include ADHD or autism traits in the study. The Cardiff University sample and the secondary school sample differed in terms of age; gender ratio – the university sample was mainly female; socioeconomic status – the secondary school is in a deprived area in the Welsh valleys; the language used in teaching – the secondary school students are taught mainly in Welsh; residence – the secondary school students live at home. The university students may also have other health-related behaviours (smoking, drug use, and alcohol consumption) that may be less frequent in younger students living at home. There are few studies on ADHD traits and well-being among university and secondary school students (university: N = 39; secondary: N = 14). A similar result is observed for autistic traits and well-being (university: N = 95; secondary: N = 27). Again, more research on these topics is being carried out using university samples.

In the present study, the participants were from a Cornish Academy based in a deprived area of the UK. A combined effects approach was used to reduce the established predictors in the WPQ to a single variable. This combined effects variable strongly predicts well-being outcomes in occupational samples.[42,43] Combined effects analyses have not yet been applied to the Student WPQ; therefore, the present study tested this approach. Additionally, anxiety and depression variables were added to the outcomes, as these are often co-morbid factors in ADHD and autism.

Based on the previous study, the following hypotheses were tested:

1. Univariate analyses will reveal significant associations between ADHD and autistic traits, as well as their corresponding outcomes.
2. These significant effects will be significantly reduced in multivariate analyses covarying the established predictors.

METHODS

Ethical Approval

This study was approved by Cardiff University's School of Psychology Ethics Committee (ethical number: EC2003105988R2A).

Participants

The population for this study were secondary students from a Cornish Academy secondary school. The final sample consisted of 200 participants. The sample consisted of 41.5% male students (n = 83) and 58.5% female students (n = 117). Regarding the students' school year, the sample consisted of 58.5% from Year 8 (n=117), 32.5% from Year 9 (n=65), and 9% from Year 7 (n=18). The characteristics of the students are described in an earlier paper.[48]

The short-form Student Well-being Process Questionnaire[44] was used to assess specific aspects of established predictors and well-being outcomes. Two variables, anxiety and depression, were also included. The Autism Spectrum Quotient[45] was used to calculate the total scores of autistic traits. The ADHD Self-Report Scale[46] was used to calculate the total scores for Part A of ADHD traits, and the SDQ[47] was used to measure behavioural outcomes.

Study Design and Procedure

The data were collected through an online survey hosted by Qualtrics, part of an online self-report survey methodology that took approximately 20 minutes to complete. The survey was then analysed using IBM SPSS 29 to produce precise tests of the hypotheses. Associations between well-being and the total scores for ADHD/autistic traits were also examined. The established predictors were also covaried in analyses examining the associations between the other variables and well-being in multivariate analyses. It is worth noting that the regression model did not include all established predictors as covariates; only those predictors that were significantly related to the outcomes were included. The outcome variables were positive well-being, negative well-being, flourishing, physical health, depression, and anxiety. These outcomes were taken from the WPQ. Other outcome variables were derived from the SDQ, including conduct problems, hyperactive behaviour, emotional problems, peer problems, and prosocial behaviour.

The combined effects approach was also used with the established WPQ predictors. This method was applied in a secondary analysis study of nurses, and the findings validated the possibility of combining the established predictors from the well-being process model into a single item. The WPQ-established predictors were combined into a single score by summing the negative well-being predictors (student stressors and negative coping) and the reverse-scored positive predictors (e.g., social support and psychological capital). A new variable, combining established predictors labelled as a negative factor, was introduced; a high score on this variable represented a strong predictor of negative well-being.

RESULTS

Descriptive Analysis

The descriptive statistics for the well-being predictors, well-being outcomes and SDQ scores are shown in our previous paper.[48]

Descriptive Statistics for ADHD/Autistic Trait Questionnaires

Tables 1 and 2 present the results of the questionnaire for ADHD and autistic traits. The average AQ-10 score was m = 5.12 (SD = 1.44). This indicated that most students' scores were below the cutoff point for the AQ-10 scale. However, 73 students scored six or above. The average score for the ADHD questionnaire (ASRS) was 3.64 (SD = 1.49). The average score for ADHD was near the cutoff point of the scale, and 130 students scored four and above. Again, the high number of potential autism and ADHD cases suggests that the cutoff points are inappropriate for this sample.

Table 1: Descriptive analysis for ADHD/autistic trait questionnaires.

ADHD/Autism	Total Score	Min.	Max.	Mean	SD
Total score: Autism	0-10	2	9	5.12	1.44
Total score: ADHD	0-6	0	6	3.64	1.49

Table 2: Descriptive analysis of ADHD and autism questionnaires (cutoff points).

ADHD/Autism	Type of Score	N (%)	
Autism	No autism traits (0–5)	128	64%
	Autism traits (6–10)	72	36%
ADHD	No ADHD traits (0–3)	69	34.5%
	ADHD traits (4–6)	130	65%

Univariate Analyses

Associations between Total ADHD/Autistic Trait Scores and Outcomes

Pearson's correlation analysis was used to examine the relationship between ADHD/autistic traits and the outcome. The findings revealed that the ADHD/autistic trait scores and most outcome variables were significant or marginally significant (see Table 3).

Total Scores for ADHD Traits and Outcomes

ADHD scores were positively correlated with conduct behaviour, hyperactivity behaviour, emotional problems, and peer problems. In addition, there was a significant positive correlation between ADHD scores and anxiety, although the significance was marginal between ADHD scores and anxiety. Negative associations between ADHD scores and flourishing were observed, though the correlation between ADHD and flourishing was only marginally significant.

Total Scores for Autistic Traits and Outcomes

Autistic traits were positively correlated with emotional problems, conduct problems, hyperactivity, and peer problems. Moreover, autism scores were negatively correlated with positive well-being, flourishing, physical health, and prosocial behaviour. Table 3 illustrates the significance value and the direction of correlation.

Table 3: Correlation matrix between the total scores for ADHD, autism, and outcomes.

	Total Scores for ADHD		**Total Scores for Autism**	
Outcomes				
	r	**p**	**r**	**p**
Positive well-being	-.120	.092	**-.140**	**.048**
Negative well-being	.113	.113	.090	.205
Anxiety	.136	.055	.116	.101
Depression	.030	.678	.014	.842
Flourishing	-.136	.055	**-.231**	**.001**
Physical health	-.128	.076	**-.187**	**<.009**
Conduct problems	**.163**	**.022**	**.187**	**.008**
Hyperactivity behaviour	**.412**	**<.001**	**.359**	**<.001**
Emotional problems	**.343**	**<.001**	**.193**	**.006**
Prosocial behaviour	.000	.995	**-.145**	**.040**
Peer problems	**.184**	**.011**	**.242**	**<.001**

Note: *All correlations are Pearson's (two-tailed). p< 0.05 are displayed in bold.*

Multivariate Analysis

Multiple linear regression models (using the Enter method) were employed for the multivariate analysis of each outcome.

Positive and Negative Well-being Regression Models

The first multiple linear regression analysis was performed to identify the predictors of positive well-being. A second multiple linear regression analysis was carried out to identify the predictors of negative well-being. No significant relationships existed between positive and negative well-being, ADHD scores, and autism scores.

Anxiety and Depression Regression Models

There were no significant relationships between anxiety, ADHD scores, and autism scores. Similarly, there were no significant associations between ADHD/autistic traits and depression.

Flourishing and Physical Health Regression Models

There were no associations between ADHD scores, autism scores, and flourishing. The ADHD and autistic trait variables were not significant in the multivariate analysis of physical health.

Conduct and Hyperactivity Behaviour Regression Models

There were significant associations between ADHD scores, autism scores, and hyperactivity ($\beta = 0.283$, $p = 0.001$ and $\beta = 0.187$, $p = 0.005$, respectively).

Emotional and Peer Problem Regression Models

The ADHD score was related to emotional problems in the univariate analysis and remained significant in the multivariate analysis ($\beta = 0.236$, $p = 0.001$). The autism score ($\beta = 0.205$, $p = 0.009$) was associated with peer problems.

Prosocial Behaviour Regression Model

There were no significant effects of the ADHD or autistic trait variables.

DISCUSSION

This study examined the relationships between ADHD/autistic traits, well-being, and SDQ outcomes among secondary school students. The results of the univariate analysis confirmed the findings from earlier research on university and secondary school students. Adjustment for established predictors was then carried out in the multivariate analyses to determine whether ADHD and autistic characteristics remain significantly associated with the outcomes. In the univariate analyses, higher levels of ADHD and autistic traits were associated with more conduct problems, hyperactivity, peer problems, and emotional problems. In contrast, low positive well-being, low prosocial behaviour, poor physical health, and poor flourishing were associated with autistic traits. In the multivariate analyses, after controlling for established predictors and health-related behaviours, the results revealed that individuals with high ADHD/autistic traits had higher hyperactivity. ADHD traits were associated with increased emotional problems. Autistic traits were related to peer problems in the multivariate analyses. No significant associations were

found between the ADHD/autistic trait scores and the well-being outcomes in the multivariate analyses. The results of the present study largely confirm the previous findings obtained from surveys of university students. These confirmatory results are important indicators of the extent to which results from studies using the Student WPQ generalise to other groups.

CONCLUSION

This study examined the relationship between ADHD and autistic traits, well-being outcomes, and strengths and difficulties outcomes. The sample consisted of secondary students; prior to this study, little research had been conducted on the well-being of this age group. ADHD and autistic traits were associated with the outcomes in the univariate analyses. Significant associations were observed only in the multivariate analyses using the Strengths and Difficulties Questionnaire.

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