DOI: http://dx.doi.org/10.22122/ijbmc.v11i2.532 Published by Vesnu Publications

International Journal of Body, Mind and Culture

Psychological Vulnerability and Self-Efficacy of Adolescents with and without Attention Deficit Hyperactivity Disorder

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Quantitative Study

Abstract

Background: Along with the negative effects of attention deficit hyperactivity disorder (ADHD) symptoms on individuals, various psychological factors are thought to be associated with these symptoms. The aim of the current study was to compare psychological vulnerability and self-efficacy in teenagers with or without ADHD syndrome.

Methods: This study was conducted using comparative method. The statistical population comprised all the first-grade middle school students of Karaj City, Iran, in 2018 (n = 100). A total of 100 people (50 people with ADHD by referring to Alborz Health Counseling Center and 50 normal people by referring to the first secondary school in Karaj) were selected and tested by a convenience sampling method. To collect data, Self-Efficacy Questionnaire for Children (SEQ-C) and Symptom Checklist-25 (SCL-25) were administered. Kolmogorov-Smirnov test was used at the level of descriptive statistics, as well as multiple regression, analysis of variance (ANOVA), and independent t-tests. The analysis was conducted using SPSS software.

Results: Based on the results, f values observed regarding obsessive-compulsive ($F = 20.01$, $P = 0.001$), depression ($F = 19.48$, $P = 0.001$), anxiety ($F = 8.74$, $P = 0.001$), morbid phobia ($F = 5.58$, $P = 0.001$), and psychosis ($F = 19.06$, $P = 0.001$) were significant at the level of $P \leq 0.05$. Therefore, there was a significant difference between the two groups regarding the symptoms of the above mental disorders. Moreover, social ($F = 8.05$, $P = 0.001$), educational ($F = 2.70$, $P = 0.001$), and emotional ($F = 9.42$, $P = 0.001$) self-efficacy were significant at the level of $P \leq 0.05$.

Conclusion: According to the results, self-efficacy and psychological vulnerability in adolescents with ADHD are lower than in normal adolescents. Since inefficiency and mental damage can bring problems in the later stages of development, it is suggested that schools focus more on the extracurricular and collective activities of students.

Keywords: Attention deficit disorder with hyperactivity; Adolescents; Psychological vulnerability; Self-efficacy

Citation: Yari Z, Mahdavi-Nia F, Balaghi HS, Ali-Mohammadlou F. **Psychological Vulnerability and Self-Efficacy of Adolescents with and without Attention Deficit Hyperactivity Disorder.** Int J Body Mind Culture 2024; 11(2): 136-46.

Received: 20 May 2023
Accepted: 19 Aug. 2023

Introduction

Attention deficit hyperactivity disorder (ADHD) is a childhood-onset disorder with core symptoms of inattention and hyperactivity/impulsivity, which may persist into adulthood (Brinksma et al., 2021). Since the diagnosis of ADHD depends on a clinician's interpretation of behavior and how he or she integrates reports from parents, caregivers, and teachers, measuring the true prevalence of the disorder can be challenging (Fadus et al., 2020). ADHD severely affects people's health and performance. Besides having a profound impact on the lives of thousands of children and adolescents, this disorder also places an individual at greater risk for mental health issues (Chen, 2022). Clinically, ADHD is characterized by persistent symptoms of inattention, hyperactivity, and impulsivity that impair functioning across multiple domains of daily life (Sedgwick-Muller et al., 2022).

Besides short attention spans, difficulties prioritizing activities, being easily bored, being distracted from activities that require reading or attention, and avoiding uninteresting activities, clinical psychologists list other symptoms associated with adult ADHD. Difficulties related to difficulties in organizing, focusing, and completing tasks may induce stress, anxiety, and feelings of inadequacy among those who experience these problems (Sahmurova, Arikan, Gursesli, & Duradoni, 2022). Several longitudinal studies have suggested that children and adolescents with ADHD are more likely to develop depression as adults. The co-occurrence of depression significantly worsens health outcomes (including the risk of completing suicide), causes psychosocial impairment, lowers the quality of life, and increases medical costs compared to those resulting from either disorder alone (Mayer et al., 2022).

Interestingly, these profound changes can trigger the vulnerability in teens, including mental health problems (Lonigro, Longobardi, & Laghi, 2023). As estimated by the World Health Organization (WHO) (2020), up to 50% of mental health conditions appear before the age of 14 years, with suicide representing one of the three leading causes of death among older adolescents (World Health Organization, 2020). In Bandura's definition of self-efficacy, self-confidence refers to confidence in a person's ability to succeed (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003). Due to low self-expectations, people with low self-efficacy believe that accidents and incidents are higher than they are, as well as adolescents with ADHD disorder (Lev, 1997). They often experience low self-efficacy, which increases the possibility of psychological damage to these teenagers (Komarraju & Nadler, 2013).

Self-efficacy is a universal psychological need that controls an individual’s cognition, emotions, and decisions related to psychological well-being. Self-efficacy plays a critical role in stress management, influencing stressor assessment, method selection, and implementation (Sabouripour, Roslan, Ghiami, & Memon, 2021; Villada, Hidalgo, Almela, & Salvador, 2017). It does not hide the importance of mental health in human growth and development from anyone, and this issue is more important during adolescence. Investigators have determined that happiness, hope, life satisfaction, self-efficacy, and stress are significant predictors of adolescent mental health. Adolescents, especially those with ADHD, experience considerable psychological problems and receive less professional help (Wilcox & Nordstokke, 2019). Earlier research found a relationship between self-efficacy and psychological well-being (environmental mastery, autonomy, self-acceptance, positive relationships with others, personal growth, and purpose in life) (Komarraju & Nadler, 2013;

Sabouripour et al., 2021; Villada et al., 2017; Wilcox & Nordstokke, 2019). Despite this, little research has been conducted in Iran on how self-efficacy relates to health in normal and hyperactive individuals. The importance of adolescence as an infrastructure for mental health and improving mental disorders has already been demonstrated in past studies. This study was carried out to evaluate the psychological vulnerability and self-efficacy among adolescents with ADHD and healthy adolescents in Karaj City, Iran.

Methods

This study was conducted using a causal-comparative method. The research purpose was to compare patterns of psychological vulnerability and self-efficacy in adolescent boys with ADHD and normal boys. The statistical population comprised all the first-grade middle school students of Karaj City in 2018 (n = 100). A total of 100 people (50 people with ADHD by referring to Alborz Health Counseling Center and 50 normal people by referring to the first secondary school in Karaj) were selected and tested by a convenience sampling method. They were matched in two variables of age and economic income. The inclusion criteria were the informed consent of the children's parents to take part in the research and no history of participating in the self-efficacy and self-confidence training courses. Moreover, the exclusion criteria included incomplete questionnaires and dissatisfaction to continue the study. The method of conducting the research was to give a questionnaire to the group with ADHD disorder who were referred to Alborz Health Psychiatry Clinic, and to the normal group after referring to secondary school students. During the questionnaire, no personal information was asked of the respondents to maintain confidentiality. However, the researcher reminded them that the information collected was confidential. Additionally, they have been asked to answer the questionnaires with the researcher to improve the quality of the study.

Self-Efficacy Questionnaire for Children (SEQ-C): Muris (2001) developed this questionnaire based on the self-efficacy questionnaire (Bandura et al., 2003; Muris, 2001). SEQ-C contains 23 items, including academic self-efficacy, social self-efficacy, and emotional self-efficacy. It measures the subjects' ability in different situations. The social self-efficacy subtest consisted of the first eight items of the questionnaire. This scale measures the ability to communicate with peers, assertiveness, and social standards achievement. The academic self-efficacy subtest consisted of the second eight items of the questionnaire and measured a feeling of empowerment in managing learning behaviors, having mastery of the course topics, and fulfillment of academic expectations. The subtest of emotional self-efficacy includes the last seven items of the questionnaire and measures one's ability to deal with negative emotions and control them. Muris, 2001 showed a three-factor structure of scale in three social, academic, and emotional domains. A five-point Likert scale (ranging from 1 to 5) was used. Score one shows the lowest level of self-confidence, and score five shows the highest self-confidence. The author reported that the scale reliability was good and calculated an internal consistency of 0.80. Investigating the convergent and divergent validity of the scale, this study reported the reliability of the whole scale as 0.70, social self-efficiency as 0.78, academic self-efficiency as 0.80, and emotional self-efficiency as 0.87 . In Iran, the internal consistency of the whole scale was reported as 0.89, respectively (Khodayarifard, Manzari Tavakoli, & Farahani, 2012).

Symptom Checklist-25 (SCL-25): This is a brief form of SCL-90 made by Najarian and Davoodi (2001) based on the original version through explorative factor analysis

(Mayer et al., 2022; Najarian & Davoodi, 2001). Participants' responses on a Likert scale included: never (0), a few (1), somewhat (2), great (3), and very great or severe (4) according to the original scale. The total score is extracted from this list and higher scores mean more psychopathology. Mayer et al. (2022) assessed its validity through factorial analysis, convergent and divergent validity, and reliability via an internal consistency and re-test. They reported Cronbach's α of the new version as 0.97 for women and 0.98 for men and re-test coefficients after five weeks in the total sample as 0.78, women 0.77, and men 0.79.

Research findings have been analyzed at two levels: descriptive and inferential. Kolmogorov-Smirnov test was used at the level of descriptive statistics, as well as multiple regression, analysis of variance (ANOVA), and independent t-tests at the level of inferential statistics. The analysis was conducted using SPSS software (version 23, IBM Corporation, Armonk, NY, USA).

Results

The research sample comprised 50 boys with ADHD [mean ± standard deviation (SD) of age = 12.23 ± 0.09] and 50 normal boys (mean ± SD of age = 11.31 ± 1.07).

Based on the results of table 1, the range of scores for physical complaints was between 6 and 27, obsessive-compulsive between 3 and 15, depression between 2 and 7, anxiety between 3 and 12, morbid fear between 3 and 10, paranoid thoughts between 1 and 4, psychosis between 3 and 9, and total score fluctuated between 28 and 78 in the normal group. Besides, the range of scores for physical complaints was between 6 and 23, obsessive-compulsive between 3 and 12, depression between 2 and 8, anxiety between 3 and 12, morbid fear between 3 and 14, paranoid thoughts between 1 and 5, psychosis between 3 and 13, and total score fluctuated between 30 and 83 in the ADHD group. According to these results, the mean scores of all symptoms of mental disorders in the group of adolescents with ADHD symptoms were higher than that of normal students.

Based on the results of table 2, the range of social self-efficacy scores was between 17 and 37, academic between 14 and 38, emotional between 11 and 32, and the total score fluctuated between 58 and 101 in the normal group.

Table 1. Distribution of minimum, maximum, mean, and standard deviation (SD) of symptoms of mental disorders in the groups

Groups	Variable	Minimum	Maximum	Mean ± SD
Normal	Somatic complaints	6	27	12.97 ± 4.98
	Obsessive-compulsive	3	15	6.05 ± 2.56
	Depression	2	7	2.91 ± 1.19
	Anxiety	3	12	6.26 ± 2.32
	Morbid phobia	3	10	5.07 ± 1.96
	Paranoid thoughts	1	4	2.14 ± 1.01
	Psychosis	3	9	4.88 ± 1.07
ADHD symptoms	Somatic complaints	6	23	14.76 ± 4.91
	Obsessive-compulsive	3	12	8.79 ± 2.47
	INT	3	12	8.02 ± 2.57
	Depression	2	8	4.50 ± 1.72
	Anxiety	3	12	7.94 ± 2.34
	Morbid phobia	3	14	7.02 ± 2.61
	Paranoid thoughts	1	5	2.41 ± 1.41
	Psychosis	3	13	7.14 ± 2.50
	ADI	1	4	2.29 ± 1.05

ADHD: Attention deficit hyperactivity disorder; SD: Standard deviation

Table 2. Distribution of minimum, maximum, mean, and standard deviation (SD) of self-efficacy in normal and attention deficit hyperactivity disorder (ADHD) groups

Groups	Variable	Minimum	Maximum	Mean ± SD
Normal	Social self-efficacy	17	37	26.70 ± 4.25
	Educational self-efficacy	14	38	30.29 ± 4.92
	Emotional self-efficacy	11	32	22.27 ± 5.25
ADHD symptoms	Social self-efficacy	15	36	23.52 ± 4.94
	Educational self-efficacy	14	37	73.23 ± 5.46
	Emotional self-efficacy	10	31	19.11 ± 4.42

ADHD: Attention deficit hyperactivity disorder; SD: Standard deviation

In addition, the social self-efficacy scores ranged from 15 to 36, academic scores from 14 to 37, emotional scores from 10 to 31, and the total score ranged from 43 to 99 in the ADHD group. Based on these results, the mean score of all self-efficacy components in the group of adolescents with ADHD symptoms was lower than that of normal students.

According to the results of table 3, the Kolmogorov-Smirnov statistics was not significant at the level of P ≥ 05. Therefore, the distribution of scores was normal and there was a difference between the level of psychological vulnerability of adolescent students with ADHD and normal students.

In table 4, considering that the significance level is greater than 0.05, the assumption of the equality of the observed covariance matrix of the symptoms of mental disorders is accepted. Considering that the significance level is more than 0.05, the assumption of the equality of the observed self-efficacy covariance matrix is accepted.

Based on the findings in table 5, the observed f was significant at the level of P ≤ 0.05. In other words, the relationship between the linear combination of the dependent variables and the independent variable was significant.

Based on the results of table 6, f values observed regarding obsessive-compulsive, INT, depression, anxiety, morbid phobia, and psychosis were significant at the level of P ≤ 0.05. Therefore, there was a significant difference between the two groups regarding symptoms of the above mental disorders.

Besides, the f value observed regarding social, academic, and emotional self-efficacy was significant at the level of P ≤ 0.05. Therefore, there was a significant difference between the two groups regarding the components of self-efficacy. Based on the findings in table 7, the observed t was significant at the level of P ≤ 0.05. Therefore, there was a significant difference between the psychological vulnerability of normal students and those with ADHD symptoms. Moreover, there was a significant difference between the self-efficacy of normal students and those with ADHD symptoms.

Table 3. Comparison of the distribution of self-efficacy scores and symptoms of mental disorders with normal distribution

Groups	Variable	Kolmogorov-Smirnov	P-value
Symptoms of mental disorders	Somatic complaints	0.859	0.452
	Obsessive-compulsive	0.732	0.658
	Depression	0.428	0.642
	Anxiety	0.040	0.227
	Morbid phobia	1.250	0.061
	Paranoid thoughts	1.160	0.135
	Psychosis	0.102	0.202
Self-efficacy	Social self-efficacy	0.643	0.803
	Educational self-efficacy	1.020	0.243
	Emotional self-efficacy	0.831	0.495

Table 4. The covariance matrix test of symptoms of mental disorders and self-efficacy in two groups

Groups	Box's M	F	df1	df2	P-value
Symptoms of mental disorders	64.130	1.218	45	14310.252	0.151
Self-efficacy	8.450	1.339	6	31560.453	0.236

df: Degree of freedom

Discussion

In Powell et al. (2020) study, childhood ADHD is associated with an increased risk of later depression (Powell et al., 2020). Childhood ADHD symptoms were associated with higher depressive symptoms and an increased odds of clinically significant depressive symptoms in adolescence (Najarian & Davoodi, 2001). Perceived stress and sleep problems should be considered when mapping ADHD-related problems (Masi, Abadie, Herba, Emond, Gingras, & Amor, 2021). Further, ADHD is associated with higher exposure to stressors, and perceived stress has been found to be associated with comorbid emotional and externalizing symptoms in individuals with ADHD (Frick, Meyer, & Isaksson, 2023).

A recent qualitative study reported that adolescents with ADHD experienced stress as closely intertwined with negative feelings and anxiety (Hartman, Rommelse, van der Klugt, Wanders, & Timmerman, 2019). These authors found a significant relationship between the presence of externalizing behaviors in childhood and the appearance of ADHD traits at the start of adolescence. Moreover, the relationship between both variables appears to increase over time. As for internalizing symptoms, Sevincok et al. (2020) indicate a prevalence of 4.79% of anxious-depressive symptomatology, 2.72% of withdrawal, and 1% of somatic complaints among adolescents with ADHD (Oster, Ramklint, Meyer, & Isaksson, 2020; Sevincok, Ozbay, Ozbek, Tunagur, & Aksu, 2020).

To explain this finding, some of the problems experienced by adolescents or adults with ADHD, such as planning and organizing problems, time management difficulties, and difficulties in setting priorities and paying attention can create extra stress. Moreover, problems related to difficulties in organizing, focusing, and completing tasks may induce stress, anxiety, and feelings of inadequacy among those who experience these problems. Traditionally, stress-psychopathology relationships are studied in the context of internalizing problems, in particular depression, anxiety disorders, and medically unexplained somatic complaints rather than ADHD (Frick et al., 2023). Therefore, when studying stress exposure and the course of ADHD, not only the core symptoms of ADHD, but also the classic stress-related anxiety, depression, and somatic complaints need to be considered as possible comorbid outcomes. It may be hypothesized that individuals with ADHD who are exposed to stress are characterized both by a more persistent form of ADHD and by the onset of comorbid internalizing problems alongside this persistent ADHD trajectory (Sevincok et al., 2020). In addition, the effects of stress exposure in children with ADHD may also differ from the classic stress-related internalizing problems.

Table 5. Multivariate analysis of variance (ANOVA) comparing the mean score of symptoms of mental disorders and self-efficacy in two groups

Groups	Value	F	P-value	Eta
Symptoms of mental disorders	0.591	4.45	0.001	0.409
Self-efficacy	0.688	9.69	0.001	0.312

Table 6. Comparison of the mean score of symptoms of mental disorders and self-efficacy in two groups

Groups	Variable	SS	df	F	Eta	Statistical power
Symptoms of mental disorders	Somatic complaints	54.720	1	2.230	0.033	0.313
	Obsessive-compulsive	127.191	1	20.010	0.233	0.993
	Depression	42.880	1	19.480	0.228	0.992
	Anxiety	47.770	1	8.740	0.117	0.830
	Morbid phobia	29.770	1	5.580	0.078	0.644
	Paranoid thoughts	1.190	1	0.782	0.012	0.141
	Psychosis	87.190	1	19.060	0.224	0.990
Self-efficacy	Social self-efficacy	171.529	1	8.050	0.109	0.779
	Educational self-efficacy	731.309	1	2.700	0.290	0.999
	Emotional self-efficacy	222.485	1	9.429	0.125	0.857

SS: Sum of squares; df: Degree of freedom

Recent accounts of ADHD symptomatology have proposed that emotional regulation problems (e.g., low frustration tolerance, and explosive anger) are an important aspect of ADHD (Larsson, Dilshad, Lichtenstein, & Barker, 2011).

Researchers concluded that adolescents with ADHD suffer from low self-efficacy, which means that increasing self-efficacy speeds up the recovery process. Related literature reveals that adults with ADHD showed lower levels of self-esteem and self-efficacy when compared with the control group. The authors found some, but not all, of the resources of adults with ADHD to be reduced. In other words, people with ADHD seem to possess specific resources (Bunford, Evans, & Wymbs, 2015). Female youth with ADHD reported the lowest levels of confidence in their ability to self-regulate their learning.

Male youth with ADHD reported similar levels of self-efficacy for self-regulated learning (SESRL) beliefs as youth without ADHD (Newark, Elsasser, & Stieglitz, 2016). In fact, according to the results of the mediation analysis, the self-efficacy worked as a partial mediator in the association between mindfulness, stress, depression, and anxiety (Major, Martinussen, & Wiener, 2013). Thus, high self-efficacy beliefs lead to better management of interpersonal relationships and in this way, overestimate life satisfaction. Such adolescents who are strong in terms of self-efficacy believe that they are able to effectively control their life events. This understanding and belief gives them a different perspective from adolescents who are low in self-efficacy because this feeling has a direct effect on the behavior of these adolescents (Newark et al., 2016).

In order to explain this finding, according to Barclay's Hierarchy Theory (2003), the disturbance in inhibiting the behavior of adolescents suffering from ADHD causes disturbance in emotional self-regulation (drive and motivation) and this leads to disturbance in the temporary organization of behavior, prediction, and control. According to this theory, the effectiveness of the self-regulation of motivational behaviors on the academic self-efficacy beliefs and finally the academic progress of these teenagers take place through the mediation of executive functions and the behavioral inhibition system

Table 7. Comparison of the mean score of symptoms of mental disorders in two groups

Groups	Variable	ADHD group (mean ± SD)	Normal group (mean ± SD)	T	P-value
Symptoms of mental disorders	Social self-efficacy	62.70 ± 15.62	49.67 ± 12.62	3.78	0.001
Self-efficacy	Emotional self-efficacy	66.38 ± 12.49	79.72 ± 10.33	4.80	0.001

ADHD: Attention deficit hyperactivity disorder; SD: Standard deviation

In explaining this finding, it can be said that teenagers with low self-efficacy may think that events are more difficult than they really are, which increases stress and anxiety. On the other hand, high self-efficacy helps in creating a feeling of calm in facing difficult tasks and activities. Therefore, self-efficacy becomes an important source of feeling happy and causes mental health (Sabouripour et al., 2021). Psychological treatments have been evaluated for other psychiatric disorders in Iran (Dana, Effatpanah, & Mahjoub, 2018; Lee & Zentall, 2012; Sami, Effatpanah, Moradi, & Massah, 2017; Sharma & Kumra, 2022).

The sample of this research consisted only of male adolescents and cannot necessarily be generalized to female adolescents. Because the present study only compares students with ADHD with normal students, generalizing the findings to other groups of exceptional students should be done with caution. Moreover, the sample in this study included only willing respondents from 12-year-old students who were in the first grade of the first secondary school in Karaj City, which may limit the generalizability of the results. Self-reported questionnaires may propagate reporting bias, as students might not judge their skill levels accurately. Therefore, future research should consider utilizing integrated methods, such as combining quantitative and qualitative designs, to obtain complete information and minimize such bias.

It is suggested that self-efficacy and psychological damage among adolescents with special needs and normal adolescents be compared in future research. In addition, it is suggested that the self-efficacy and psychological vulnerability be investigated in adolescents with ADHD and adolescents with special needs and compared with the self-efficacy and psychological vulnerability of adolescents without special needs. Furthermore, it is recommended that future studies should carry out the research with a larger sample, and longitudinal and prospective studies in the sample group can better determine the evolution of this category of disorders in people who receive this diagnosis. This research showed that adolescents with ADHD are different from normal adolescents of the same age in terms of self-efficacy and psychological vulnerability. Therefore, measures should be taken through timely interventions and training of necessary skills for teenagers with this disorder to increase appropriate social, academic, occupational, and other skills. Teachers, parents, and peers can become better acquainted with the signs and symptoms of this disorder by participating in counseling sessions and gaining more knowledge about how to interact with adolescents with ADHD.

Conclusion

As a final summary of the results of this research, it can be stated that between the dimensions of self-efficacy including academic self-efficacy, social self-efficacy, emotional self-efficacy, and dimensions of psychological vulnerability including physical complaints, obsessive-compulsive, depression, anxiety, morbid fear, paranoid thoughts, and psychosis, there is a difference in two groups of adolescents with and without ADHD. According to the results of the present research, self-efficacy and psychological vulnerability in adolescents with ADHD are lower than in normal adolescents. Since inefficiency and mental damage can bring problems in the later stages of development, it is suggested that schools focus more on the extracurricular and collective activities of students. By consciously directing these programs, it is possible to help improve the self-efficacy and mental health of children and teenagers.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgements

The authors would like to express their gratitude towards all the participants involved in this study.

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