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Effectiveness of Intervention Based on Academic Buoyancy on Academic Burnout and Academic Engagement of Students with Reading Learning Disorder

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A B S T R A C T

The present study was conducted with the aim of investigating the effectiveness of intervention based on academic buoyancy on academic burnout and academic engagement of students with reading learning disorder. The research method was quasi-experimental with a pre-test and post-test design with a control group. The statistical population included all female students with reading learning disabilities in the fifth and sixth grades of elementary school in the academic year of 2022 in the city of Isfahan. The sample of the study was 30 people who were selected by available sampling method and were randomly divided into two experimental (n=15) and control (n=15) groups. The experimental group received 12 70-minute sessions of intervention based on academic buoyancy (Fooladi et al, 2017). The research tools were the reading and under-reading test (Karami Nouri & Moradi, 2014), academic burnout questionnaire (Breso et al, 1977) and academic engagement (Archambault et al., 2009). Multivariate covariance analysis was used to analyze the data. The findings showed that the intervention based on academic vitality has a significant effect on reducing academic burnout (F=32.64) and increasing academic engagement (F=43.53) of students with reading learning disorder (P< 0/001). According to the findings, it is recommended to use the intervention based on academic vitality as a preventive educational program to reduce the educational problems of students with learning disabilities.

Keywords: *Academic Buoyancy, Academic Burnout, Academic Engagement, Reading Learning Disorder*

1. Introduction

Specific learning disorder is a neurodevelopmental disorder with a biological origin that leads to cognitive abnormalities (1). It is characterized by signs such as incorrect and laborious reading of words, difficulty in understanding meanings, spelling issues, difficulty in writing, difficulty in numerical calculation, and problems in understanding mathematics (2). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), reading involves the visual recognition of a series of letters and identifying them as a meaningful unit (word), recalling that word (memory), and integrating it with other words in the context of the text (3). Reading is a skill acquired at older ages through educational

interventions, unlike language, which develops naturally and is acquired during growth (4).

Dyslexia is a term referring to a pattern of learning difficulties, including problems in word recognition, decoding, and spelling (5). Reid (2016) believes that dyslexia is a combination of abilities and difficulties that affect the learning process in one or more areas such as reading, writing, and spelling, and may be associated with issues in processing speed, short-term memory, visual-auditory sequential perception, verbal language, and motor skills (6).

Children with dyslexia face multiple challenges that affect their academic progress (5); one such issue in the Iranian education system, leading to a waste of human resources, time, and money, is academic burnout. Salmela-Aro et al. (2009) suggest that students with learning disabilities are more likely to experience academic burnout during their educational journey (7). Academic burnout is a state of mental and emotional exhaustion resulting from chronic role overload, pressure, time constraints, and a lack of necessary resources to fulfill assigned tasks. Individuals with academic burnout typically exhibit symptoms such as disengagement from school subjects, inability to maintain regular attendance in class (8). High levels of academic burnout are associated with dropping out of school (9) and lower levels of academic performance and psychological well-being (10, 11). Research indicates that academic burnout is related to lower academic engagement (12), and avoidance goal orientation (13, 14), and frequent absences from class (15). Symptoms of academic burnout are not limited to fatigue and absence from class; they can also include psychosomatic issues like headaches, sleep problems, and depression (13, 14).

The three components of academic burnout are: academic fatigue, emotional exhaustion, and cynicism about academic work, and inefficacy in study (16, 17). Academic fatigue causes students to cognitively and emotionally distance themselves from their educational environment, possibly as a way to cope with academic pressures. Emotional exhaustion and academic cynicism involve a type of academic disengagement and emotional detachment from studies (14, 18). Academic cynicism is characterized by negative or overly cold responses to various academic situations, leading to negative attitudes, feelings of inadequacy, and ultimately a gap between the student and the school. Academic inefficacy refers to feelings of failure and unproductivity in studies, decreasing students' sense of competence and progress in academic matters (16).

Another factor affecting the academic progress of students with dyslexia is school engagement or academic engagement. Academic engagement is a motivational construct reflecting a learner's commitment to study (19) and refers to the amount of energy or effort a student puts into academic activities and the effectiveness and efficiency of that effort (20). Academic engagement has three components: cognitive, behavioral, and emotional. Cognitive engagement relates to a student's personal investment in learning activities and the use of cognitive and metacognitive learning strategies, as well as commitment to mastery learning (12). Behavioral engagement refers to active participation and involvement of a student in classroom relations, studying in educational and home environments, extracurricular activities, and exhibiting positive academic behaviors. Emotional engagement relates to love, interest, enjoyment, buoyancy, inclination, and attachment to the entire educational environment including teachers, administrators, and peers (21). Students with high academic engagement show more attention and focus on educational content, make greater efforts, enjoy academic tasks more, and have a higher commitment to educational rules and regulations (22).

To enhance the academic capabilities and reduce the educational problems of students with dyslexia, various methods exist, among which is an intervention based on academic buoyancy (23). Academic buoyancy is an important indicator in fruitful education and empowerment, enhancing students' coping abilities against academic challenges (24, 25). It is a construct designed according to positive psychology, signifying learners' successful dealing with academic challenges and a positive, constructive, and adaptive response to various educational challenges and obstacles (26). The antecedents of academic buoyancy, according to Martin and Marsh (2008), include psychological factors related to education (academic resilience, motivation, and academic self-efficacy), school-related factors and involvement in education (class structure, perceived goal in class, involvement in improving class atmosphere and quality and how time is spent in class), and family and peer-related factors (cognitive and emotional support from family and friends and communication patterns with family and peers) (27).

The importance and necessity of the current research is evident in that students with specific learning disorders face challenging educational situations during their schooling

that, if not addressed, can lead to academic decline, dropout, and even expulsion from school. Academic burnout is a serious barrier to the success and progress of students' education, and their failure to learn the taught material results in decreased academic engagement, stagnation of education, and societal regression. Moreover, an increase in academic burnout can harm the mental health of students, confronting them with various failures in their educational and non-educational lives. Upon review of the literature and research, no study was found investigating the effectiveness of an intervention based on academic buoyancy on the educational problems of students with reading disorders. Therefore, the main question of the current research is whether an intervention based on academic buoyancy is effective in reducing academic burnout and increasing academic engagement in students with reading disorders.

2. Methods and Materials

2.1. Study Design and Participants

The present study is applied in terms of its objective and quasi-experimental by design, utilizing a pre-test and post-test approach with a control group. The population comprised fifth and sixth-grade female dyslexic students in the 2023-2024 academic year in Isfahan city, who were referred to specialized educational and rehabilitation centers for specific learning disorders. Thirty students were selected using convenience sampling and randomly assigned to experimental (15 students) and control (15 students) groups. Inclusion criteria included a diagnosis of dyslexia, age range of 11 to 12 years, absence of concurrent disorders, willingness to participate in intervention sessions, parental consent, not receiving any other educational intervention, and not taking any psychiatric medications. Exclusion criteria included absence from more than two sessions and non-cooperation in the research.

The research process commenced with obtaining necessary permissions from the Isfahan Provincial Education Department and consent from the directors of learning disorder centers and parents for the regular attendance of their children at the centers and collaboration with their homework. The students were diagnosed with dyslexia using diagnostic tests from the centers. To ensure the accuracy of the diagnosis, the Reading and Dyslexia Test (NAMA) was administered, and 24 fifth graders and 19 sixth graders with an IQ above 85 were diagnosed with dyslexia. Among these students, 30 were randomly divided into experimental and control groups. After administering the pre-test to both groups, the experimental group received a group intervention based on academic buoyancy in twelve 70-minute sessions (twice a week), and the control group received no instruction. A post-test was conducted for both groups at the end. Ethical considerations such as confidentiality, anonymity, voluntary participation in the training sessions, and ensuring no financial or physical harm to the participants were communicated.

2.2. Measures

2.2.1. Reading and Dyslexia Test (NAMA)

This test was developed by Karami Nouri and Moradi (2005) to measure the reading ability level and identify dyslexic students. It was standardized on 1614 primary school students (770 boys and 844 girls) in Tehran, Sanandaj, and Tabriz. The test comprises 10 sub-scales, including reading words, reading comprehension, word chains, understanding words, rhyming, deleting phonemes, reading meaningless words, naming pictures, letter marking, and word marking. Two of these sub-scales are used to determine the presence or absence of dyslexia. The test is conducted individually, and scoring is based on the cut-off point of 157; students scoring 157 or less are identified as dyslexic. Ghabari Bonab et al. (2012) obtained a Cronbach's alpha reliability for the sub-scales ranging from 0.43 to 0.98 (28, 29). In this research, the calculated alpha coefficient for the Reading and Dyslexia Test was between 0.86 and 0.90.

2.2.2. Academic Burnout Questionnaire

This questionnaire was devised by Breso, Schaufeli, and Salanova in 1977. It includes 15 questions and measures three domains: academic exhaustion (questions 1, 4, 7, 10, and 13), academic disinterest (questions 2, 5, 11, and 14), and academic inefficacy (questions 3, 6, 8, 9, 12, and 15) (30). Scoring is based on a 7-point Likert scale from never (1) to always (7). According to the questionnaire's cut-off point, a score between 15 and 37 indicates low academic burnout, between 37 and 60 indicates moderate academic burnout, and above 60 indicates very high academic burnout. Naami (2009) calculated the reliability of this questionnaire as 0.79 for academic exhaustion, 0.82 for academic disinterest, and 0.75 for academic inefficacy (31,

32). In this study, the reliability of the questionnaire using Cronbach's alpha was 0.80.

2.2.3. *Academic Engagement Questionnaire*

Developed by Archambault et al. (2009), this questionnaire consists of 18 questions measuring three concepts of academic engagement: cognitive engagement (employing cognitive and metacognitive strategies in learning), motivational engagement (liking school and being interested in school activities), and behavioral engagement (active and enthusiastic attendance at school). Items are scored on a 5-point Likert scale. Archambault et al. (2009) confirmed the validity of this questionnaire using factor analysis and reported Cronbach's alpha reliability coefficients for cognitive engagement as 0.88, motivational engagement as 0.83, and behavioral engagement as 0.69. The overall reliability coefficient of the questionnaire was 0.80 (33). In this study, the reliability of the questionnaire using Cronbach's alpha was 0.78.

2.3. *Intervention*

2.3.1. *Academic Buoyancy Training Package*

This educational intervention was developed by Fouladi et al. (2018) based on the theory of Martin and Marsh (2008). It is delivered in 12 sessions focusing on the role of psychological factors, school factors, and family and peer factors in academic buoyancy. Fouladi et al. (2018) reported the validity of this training package as acceptable (23). A summary of the academic buoyancy training sessions' content is provided in Table 1.

Table 1

Summary of the educational sessions of intervention based on academic buoyancy

Session	Content
First	Stating rules and expectations, articulating the purpose of the research and a brief overview of educational content, administering the pre-test.
Second	Understanding the concept of academic resilience, its role and importance, cognitive reconstruction, and creating constructive and resilient academic thinking, awareness of academic capabilities, perceiving goal-oriented academic behaviors, adopting short-term and long-term academic goals.
Third	Familiarity with the concept of intrinsic and extrinsic motivation and their role in education, strategies to increase intrinsic motivation, the role of optimism and hope in education, having mastery goals.
Fourth	Understanding the concept and importance of self-regulation in education, using cognitive and metacognitive strategies, self-monitoring and self-reinforcement, managing study time and space and their role in improving education.
Fifth	Familiarity with the role and importance of self-efficacy and academic self-efficacy, improving self-efficacy through problem-solving.
Sixth	The role and importance of family and friends' support in education, strategies to attract their support, ways to solve academic cognitive problems with their help.
Seventh	The importance of their support in education, strategies to attract their support, ways to solve academic emotional problems.
Eighth	The role of communication with family and friends in education, patterns of conversational communication, recognizing communication barriers and how to deal with them, skills for constructive communication emphasizing self-awareness and empathy and effective intra-personal and inter-personal communication.
Ninth	Awareness and understanding of classroom structures and objectives and their role in education, the role of students and teachers in classroom structure and goals, and training to take a positive view of classroom structure and goals.
Tenth	How to manage the classroom before the teacher's entrance and the importance of this time in education, the importance of studying headlines before the teacher enters the classroom, managing the classroom in the last minutes of the class, the importance of studying the topics on the day of teaching and planning for spending time in class and at home.
Eleventh	Strategies for student participation in the classroom atmosphere and its role in education, finding puzzles or educational jokes with the participation of students and teachers to create diversity and educational interest, improving formal and informal communication networks of friends with the aim of perceiving a positive classroom atmosphere.
Twelfth	A general review of the educational content, administering the post-test.

2.4. *Data Analysis*

Data were analyzed using multivariate analysis of covariance and SPSS version 24.

3. Findings

Based on the findings, 47.5% of the participants were in the age group of 11 years (5th grade) and 52.5% were in the age group of 12 years (6th grade). The mean age for the experimental group was 11.65 years and for the control group was 11.40 years.

Table 2

Mean and Standard Deviation of Academic Burnout and Academic Engagement of Students by Groups

Variable	Group	Pre-test		Post-test	
		Mean	Std Dev	Mean	Std Dev
Academic Burnout	Experiment	45.26	4.76	38.46	3.66
	Control	44.91	4.71	73.66	3.84
Academic Exhaustion	Experiment	17.69	1.98	14.60	1.60
	Control	16.27	1.55	15.88	1.78
Academic Disinterest	Experiment	11.60	2.63	10.23	2.20
	Control	12.15	2.23	11.97	2.16
Academic Inefficiency	Experiment	15.99	2.93	13.55	2.15
	Control	16.65	3.33	16.55	2.78
Academic Engagement	Experiment	46.76	3.10	54.45	4.11
	Control	47.09	2.89	48.88	2.98
Cognitive Academic Engagement	Experiment	17.09	2.33	19.87	2.24
	Control	17.76	2.13	18.45	2.34
Motivational Academic Engagement	Experiment	13.87	1.87	16.34	1.80
	Control	14.28	1.87	15.04	1.98
Behavioral Academic Engagement	Experiment	15.86	2.45	18.23	2.34
	Control	15.12	1.78	15.66	1.68

Descriptive statistics (mean and standard deviation) of the research variables are presented in Table 2. According to the results, the scores of the experimental group in the variables of academic burnout and academic engagement showed significant differences from the post-test scores and the control group scores. Before employing the multivariate analysis of covariance, the normality of the data for academic burnout and academic engagement was confirmed through the Shapiro-Wilk test ($P > 0.05$), and homogeneity of variances through the Levene's test ($P > 0.05$). The results of the Levene's test ($F = 6.18$, $P = 0.004$) indicated the establishment of the homogeneity of variances assumption. Also, the assumptions of homogeneity of regression slopes and the existence of a linear relationship between the covariate and the dependent variable were met. Therefore, the assumptions for the statistical test of analysis of covariance are established, and the results are reported in Table 3.

Table 3

Results of the Analysis of Covariance of Between-Group Effects for Components of Academic Burnout

Components	Source	SS	Df	MS	F	p	Eta^2
Academic Exhaustion	Pre-test	35.65	1	35.65	19.35	0.001	0.356
	Group	31.85	1	31.85	17.29	0.001	0.331
	Error	64.48	35	1.84			
Academic Disinterest	Pre-test	57.74	1	57.74	16.60	0.001	0.322
	Group	16.95	1	16.95	4.87	0.034	0.122
	Error	121.76	35	3.48			
Academic Inefficiency	Pre-test	95.26	1	95.26	29.95	0.001	0.461
	Group	20.28	1	20.28	6.38	0.016	0.154
	Error	111.33	35	3.18			
Overall Academic Burnout	Pre-test	204.35	1	204.35	22.72	0.001	0.381
	Group	293.54	1	293.54	32.64	0.001	0.469
	Error	332.81	37	8.98			

The results of Table 3 indicate that, considering the pre-test scores as a covariate, the intervention based on academic buoyancy has led to a significant difference between the groups in the total score of academic burnout and its components. The eta squared coefficient is 0.47, indicating that the intervention based on academic buoyancy can explain 47% of the variance in academic burnout scores. Furthermore, the results of Table 3 show

that the intervention had the most significant effect, in descending order, on academic exhaustion, academic inefficiency, and finally, academic disinterest.

Table 4

Results of the Analysis of Covariance of Between-Group Effects for Components of Academic Engagement

Components	Source	SS	Df	MS	F	p	Eta^2
Cognitive Academic Engagement	Pre-test	79.30	1	79.30	25.48	0.001	0.421
	Group	29.63	1	29.63	9.53	0.004	0.214
	Error	108.93	35				
Motivational Academic Engagement	Pre-test	65.10	1	65.10	34.08	0.001	0.493
	Group	22.43	1	22.43	11.73	0.002	0.251
	Error	66.88	35	1.93			
Behavioral Academic Engagement	Pre-test	105.66	1	105.66	74.44	0.001	0.680
	Group	43.47	1	43.47	0.001	0.467	1
	Error	49.67	35	1.43			
Overall Academic Engagement	Pre-test	207.69	1	207.69	28.56	0.001	0.436
	Group	316.62	1	316.62	43.53	0.001	0.542
	Error	269.12	35	7.27			

The results of Table 4 show that considering the pre-test scores as a covariate, the intervention based on academic buoyancy has led to a significant difference between the groups in the total score of academic engagement and its components. The eta squared coefficient is 0.54, indicating that the intervention based on academic buoyancy can explain 54% of the variance in academic engagement scores. Additionally, the results of Table 4 demonstrate that the intervention had the most substantial effect, in descending order, on behavioral academic engagement, motivational academic engagement, and finally, cognitive academic engagement.

4. Discussion

This study aimed to investigate the effectiveness of academic buoyancy intervention on academic burnout and engagement among students with reading disorders. The results indicated that the intervention based on academic buoyancy significantly reduced academic burnout and increased academic engagement at the post-test stage. These findings indirectly align with the results of studies by Azarian et al. (2019) and Fouladi et al. (2018), which also confirmed the effectiveness of academic buoyancy-based interventions (23, 34).

The first finding of the study demonstrated that the intervention based on academic buoyancy effectively reduces academic burnout in students with reading disorders. Academic burnout is characterized by fatigue due to study-related demands, negative attitudes towards academic content, and failure due to learning disabilities and can cause similar symptoms in students with learning disorders. Given that these students receive less positive feedback and more failures than their peers without disabilities, it seems reasonable that students with learning disabilities would exhibit more academic burnout (35).

It should also be noted that students with specific learning disorders might lack awareness of their positive and negative emotions due to the physical and psychological problems associated with their learning disabilities (6). They might not effectively use their emotions in life situations as their issues can lead them to undervalue themselves, negatively affecting aspects of academic burnout. Since academic buoyancy refers to positive, constructive, and adaptive responses to various academic challenges and is a component of psychological well-being (25), the intervention helped participating dyslexic students feel less tired and hopeless about academic tasks, instead feeling increased energy and strength. This led to increased effort and persistence and ultimately reduced academic burnout.

Another interpretation of the findings suggests that in their daily academic lives, students with specific learning disorders face various academic challenges and barriers (36), threatening their self-esteem, motivation, and academic performance. Bean and Eaton (2001) believe that while some students succeed in the face of academic barriers and challenges, others do not (37). Students with specific learning disorders face various challenges, including harmful personal experiences and lack of academic readiness, affecting their responses to challenges. Here, academic buoyancy plays a vital role. Appropriate

responses and coping with academic challenges affect their level of motivation and perseverance and strengthen positive academic beliefs like self-efficacy and self-confidence, in turn reducing academic burnout (38-42).

Further, students with specific learning disorders encounter numerous academic challenges throughout their schooling; based on Martin and Marsh's theory (2008), facing these persistent realities of academic life requires attention, contemplation, and thought (26, 27). Teaching academic buoyancy enables students to show more resistance, attention, and contemplation towards solving their academic problems, which in turn reduces academic challenges like academic burnout. Mikaeli, Afrooz, and Gholizadeh (2012) demonstrated that disinterest, fatigue, and academic burnout, which are the opposites of academic buoyancy, inversely relate to academic performance (18). Moreover, academic buoyancy reflects academic resilience within the framework of positive psychology (27). Therefore, the academic buoyancy training provided to dyslexic students in this study led to the fruition of their competencies and abilities and impacted their successful learning.

Another finding of this study was that the intervention based on academic buoyancy is effective on academic engagement in students with reading disorders. To explain this finding, it should be noted that academic engagement consists of cognitive, motivational, and behavioral dimensions (21). Considering that the educational program used in this study emphasized teaching cognitive and metacognitive learning strategies to students, this intervention directly increased cognitive academic engagement. Watson et al. (2008) believe that low academic buoyancy is associated with decreased academic engagement in nursing students (17). Furthermore, studies have shown that teaching cognitive and metacognitive strategies significantly impacts the perception of competence (self-efficacy) (43). Also, by teaching time management, self-monitoring, self-reinforcement, and problem-solving skills, students increase their efforts and successfully deal with academic tasks, positively affecting behavioral academic engagement. In this regard, the research showed a significant relationship between communication skills and academic engagement (12, 21, 33).

Another interpretation based on Martin and Marsh's theory (2008) suggests that one of the antecedents of academic buoyancy is academic self-regulation. Students participating in this study, having received training in control and organizational skills termed academic self-regulation, gained the ability to guide their learning (26, 27). Consequently, academic buoyancy through teaching academic self-regulation impacts students' learning and academic decision-making. In other words, academic buoyancy increases the positive evaluation of students' academic skills and motivation, ultimately leading to increased academic engagement. In this context, Naami and Piriaei (2012) found a significant relationship between dimensions of intrinsic and extrinsic academic motivation and academic engagement (32).

5. Conclusion

Considering the findings obtained in this research, it can be said that interventions based on academic buoyancy can be a suitable operational and educational strategy to reduce academic burnout and increase academic engagement in students with reading disorders. Therefore, this intervention can be employed by counselors and psychologists working in this field. It is suggested that researchers investigate the effectiveness of interventions based on academic buoyancy on other academic variables and students with mathematical learning disorders and writing learning disorders. Comparing the effectiveness of interventions based on academic buoyancy with other interventions like self-regulation training is another research suggestion. Using long-term follow-ups can be an appropriate research suggestion to discuss the continuity of the impact of academic buoyancy with more certainty. The population of this study was limited to dyslexic girl students in Isfahan city, so caution should be exercised in generalizing the results. The absence of a follow-up period and the absence of another educational method for comparison with the intervention based on academic buoyancy are other limitations of this research.

Authors' Contributions

S. N.: Conceptualization, Methodology, Writing; M. G.: Formal analysis and investigation, Writing; P. S.: Data collection, Data curation, Writing. A. A.: Supervision, Project administration, Writing.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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