Adjustment to higher education among students with mental health disorders

Inbar Aharoni Zorach & Orly Lipka

Routledge
Taylor & Francis Group

Check for updates

Adjustment to higher education among students with mental health disorders

Inbar Aharoni Zorach[a] and Orly Lipka[a,b]

[a]Department of Learning Disabilities, University of Haifa, Haifa, Israel; [b] Edmond J. Safra Brain Research Center for the Study of Learning Disabilities, University of Haifa, Israel

ABSTRACT

The current study examined the adjustment to higher education among students with mental health disorders, focusing on adjustment to post-secondary education, emotional and metacognitive variables. The participants were 123 students who had already completed at least one year at an institution of higher education: 63 students who self-identified themselves with mental health disorders and 60 students who did not identify with any mental health disorders or disability. Students with mental health disorders reported on lower levels of adjustment (social, emotional, institutional, and academic) to post-secondary education than students with no mental health disorders. In addition, students with mental health disorders reported lower satisfaction with life, academic self-efficacy, and higher levels of test anxiety than students without mental health disorders. Furthermore, significant between-group differences were found in three meta-cognition subscales. Lastly, satisfaction with life, test anxiety, academic self-efficacy, and disability status and five metacognition subscales predicted 75% of the variability in adjustment to higher education in the entire sample. These findings suggest that following their first year in higher education, students with mental health disorders continue to experience difficulties in social, emotional, institutional, and academic adjustment. Implications of the results are discussed.

Introduction

Mental health disorders have a great influence on academic performance (Auerbach et al., 2018). In North America, a majority of university students report high levels of stress, anxiety, and feelings of sadness during the academic year, with anxiety (∼17%) and depression (∼14%) being the most common disorders (American College Health Association (ACHA), 2016a, 2016b).

In a survey among first year college students across eight countries, at least one-third of the participants reported a history of one or more of the six mental health disorders examined (major depression, mania/hypomania, generalized anxiety disorder, panic disorder, alcohol use disorder, and substance use disorder) (Auerbach et al., 2018). Major depressive disorder was the most common disorder (21.2% lifetime prevalence; 18.5%

12-month prevalence) followed by generalized anxiety disorder (18.6–16.7%). Major depression was also recognized by Ibrahim et al. (2013) as the most common mental health disorder among college students. In the American College Health Association systematic review of studies, it was estimated that 30.6% of college students meet the criteria for major depression. Moreover, students reported higher levels of depressive symptoms compared with the general population. Specifically, in Canada, six post-secondary institutions indicated that 15% of students had sought professional support for one or more mental health disorders (American College Health Association, 2013).

Mental health disorders affect an estimated of 9.2% of Israel's adult population (Neon et al., 2012). Onset often occurs between the ages of 18 and 25 years, a time when young adults are likely to be seeking post-secondary education (Collins, 2000; Sharpe et al., 2004). The post-secondary years are indeed considered a peak onset period, particularly for mood, anxiety, and substance use disorders (e.g., de Girolamo et al., 2012), and these disorders are more prevalent among post-secondary students (Ibrahim et al., 2013; Pedrelli et al., 2015).

Symptoms of mental health disorder, such as psychosis, can directly interfere with academic achievement (Kiuhara & Huefner, 2008) by making it difficult to perform tasks and participate in classes. Institutional requirements like completing admission forms or applications for financial assistance can also pose challenges. In some cases, even when their symptoms are under control, students with mental health disorders experience continual difficulties in concentration and information processing. Stress during test periods or while writing academic assignments can be a catalyst for symptom outbreaks (Shor, 2015). Some students with a mental health disorder must also cope with the fear of repeated hospitalization during the course of their studies. Kiuhara and Huefner (2008) identified two main challenges experienced by this population: limited career focus and difficulty achieving higher education goals and completing college (Collins, 2000). Additional barriers likely to stand in the way of students with mental health disorders include lack of understanding by academic faculty members and feelings of loneliness and ostracism, among other barriers (Lidor et al., 2008).

Another source of difficulty for students with mental health disorders is social stigma and negative opinions (Blacklock et al., 2003; Martin, 2010). Negative views can be expressed by family members and friends who doubt the students' ability to cope with academic tasks and tensions, as well as by professionals, who can be reluctant to support these students' academic aspirations (Mowbray et al., 1999). This type of stigma can negatively affect the self-esteem, psychological well-being, and self-efficacy of students with mental health disorders, potentially influencing their behavior and abilities (Corrigan et al., 2006).

Adjustment to post-secondary education

The terms "adjustment" and "adaptation" indicate the extent to which students are able to meet the demands of higher education. In the past, investigators viewed adjustment to post-secondary education as a single variable (Mooney et al., 1991). A current, multifaceted view suggests that adjustment comprises functioning in four distinct domains:(1) "academic achievement," includes motivation for learning, appropriateness of skills for academic requirements, and ability to earn satisfactory grades; (2) "social adjustment,"

encompasses involvement in the study environment, including the ability to establish social networks; (3) "personal emotional adjustment," is indicative of self-perception and represents the ability to cope with study-related challenges that can lead to stress and anxiety; (4) "institutional adjustment," reflects students' feelings about inclusion in academia in general, and in their own academic environment in particular (Baker & Siryk, 1984, 1989; Gerdes & Mallinckrodt, 1994).

Students with mental health disorders are at a higher risk for adjustment difficulties in post-secondary education, with approximately 86% of them withdrawing prior to completing their degree (Collins & Mowbray, 2005b). 5 A very limited number of studies have examined the adjustment to post-secondary education from a multicomponent perception among specific groups with disabilities. These results are in line with those of a similar study by Adams and Proctor (2010), in which students with mental health disorders constituted 33% of the disability group, which also included students with learning disabilities and physical/sensory disabilities. Their findings indicated that students with disabilities reported greater difficulty in adjusting to academic studies than a non-disability group, as well as demonstrating lower levels of adjustment to the college experience and lower social and institutional adjustment.

Several studies have compared students with and without disabilities with respect to college adaptation using the multicomponent Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1984). Students with disabilities were significantly less adapted than their peers without disabilities on all three of these psychosocial dimensions (Adams & Proctor, 2010). This finding, reported in two separate studies, indicates greater struggles with psychosocial aspects of adaptation to college among students with disabilities (Adams & Proctor, 2010). In addition, higher levels of self-reported visibility of disability to others and better self-advocacy skills were statistically significant positive predictors of adaptation to college (Adams & Proctor, 2010).

Tinto's interaction model (1975) of student adaptation to institutions of higher education addresses the relationship between the individual and the environment. According to his Theory of Student Development, students enter college with a variety of background characteristics, such as personal goals, motivation to study, and past repertoire of coping. They then interact with peers and teachers within the college environment. Academic persistence depends on the complex interplay between the student and his or her ability to integrate academically and socially (Tinto, 1993). Tinto's model explains the processes associated with remaining in versus dropping out of institutions of higher education based on a conceptual scheme comprised of five variables: personal background characteristics (experiences during high school, academic tendencies, and family background); initial commitment to the goal (of completing the degree); academic and social integration; commitment to the cause and institution (which develops during the course of studies); and academic performance at the end of the first year of studies (Tinto, 1975, 1993).

Students with mental health disorders are at a higher risk for adjustment difficulties in post-secondary education, with approximately 86% of them withdrawing prior to completing their degree (Collins & Mowbray, 2005b). Students who leave universities when their academic standing is poor, report anxiety, sleep disturbances, transition and adjustment difficulties, isolation, loneliness, and self-doubt (Anderson, 1985; Tinto, 1985).

Self-efficacy

"Self-efficacy" refers to a person's beliefs about his or her personal ability to organize and carry out the actions necessary to achieve desired results in various fields (Bandura, 1977, 1986, 1993; Klassen, 2010; Schunk & Pajares, 2002; Sharma & Nasa, 2014). The research literature suggests that academic achievement in higher education depends heavily on self-efficacy (Schunk & Pajares, 2002). The concept of self-efficacy is integral to cognitive learning theory, which posits that achievement depends on interactions between behavior, personal factors (beliefs, thoughts), and environmental conditions (Bandura, 1977; Schunk & Pajares, 2002).

Subjective well-being

The terms "life satisfaction", "morale", "happiness", "cognitive well-being", and "psychological well-being", among others, have been used in research on quality of life and mental well-being. Ya'acov and Amir (2001) perceived 'subjective mental well-being,' which is considered a dimension of quality of life (Yacobitz, 1997), as the absence of negative emotions, such as depression. Bradburn (1969) presented a broader view, in which subjective well-being comprises two independent factors, positive affect and negative effect, and the balance between them determines happiness. Other approaches have added a third factor to this model: "satisfaction", which expresses a person's general assessment of his or her life (De Haes & Van Knippenberg, 1985). Studies have examined long-term differences in subjective well-being at the individual and societal levels (Diener et al., 2003). The presence of positive factors such as subjective well-being is increasingly considered an integral component of mental health, alongside the absence of psychopathology (Suldo et al., 2016).

Students' well-being has been defined as a positive emotional state resulting from harmony between specific context factors on the one hand and personal needs and expectations from the educational institute on the other (Van Petegem et al., 2007). In recent decades, research has shown student well-being to be an important outcome of education, alongside cognitive abilities, and several studies have shown that it affects academic adjustment and academic self-efficacy.

Test anxiety

Another factor affecting academic performance and academic self-efficacy, albeit negatively, is test anxiety. Examinations at all stages of education, but especially in higher education, are a fundamental tool for decision-making in a competitive society. Andrews and Wilding (2004) and Zeidner (1998) have defined test anxiety as a physiological condition involving extreme stress, anxiety, and discomfort before and/or during test situations, creating a significant barrier for the examinee.

A significant negative relationship exists between test anxiety scores and achievement scores (Rana & Mahmood, 2010), supporting the link between anxiety and low academic performance among 12–13 years old students (Owens et al., 2012). Khalid and Hasan (2009) found that undergraduate students with higher achievements have lower test

anxiety. Similarly, test anxiety is associated with lower academic self-efficacy (Bembenutty, 2008).

Metacognition

Several studies have examined the relationship between metacognition and adjustment to academic study. Flavell (1979), one of the first researchers to discuss metacognition, defined it as "thinking about your thinking" or "knowledge and cognition about cognitive phenomena" (p. 906). More broadly, metacognition refers to higher-order mental processes involved in learning, including planning, using appropriate skills and strategies to solve a problem, making estimates of performance, and calibrating the extent of learning (Dunslosky & Thiede, 1998). Metacognitive strategies are methods used by learners to plan and monitor their learning activities and evaluate the results of these activities (Javanmard et al., 2012). Metacognition has two main components: metacognitive knowledge and metacognitive regulation (Brown, 1987; Flavell, 1987). The former refers to knowledge about cognition and the former to activities that control thinking and learning (Schraw & Dennison, 1994).

The current study

As described above, academic adjustment is associated with several factors, including academic self-efficacy, subjective well-being, test anxiety, and metacognition. Little research has examined how these factors relate specifically to academic adjustment of individuals with mental health disorders.

Tinto's interaction model (1975) of student adaptation to institutions of higher education addresses the relationship between the individual and the environment. According to his Theory of Student Development, while comprehensive, has not been tested in high-risk populations in general, or in individuals with mental health disorders in particular. In addition, studies examining adjustment have mostly focused on the first year of post-secondary education alone. In the present study, we aimed to learn more about adjustment among post-secondary students with mental health disorders by examining its relationships to academic self-efficacy, subjective well-being, test anxiety, and metacognition. To this end, we asked three questions:

(1) Are there differences in adjustment between students with and without mental health disorders?
(2) Are there differences in satisfaction with life, self-efficacy, learning style, and test anxiety between students with and without mental health disorders?
(3) Which factors predict adjustment to post-secondary education among students at the post-secondary education (with and without mental health disorders)?

We hypothesized, based on previous studies, that students with mental health disorders would have lower adjustment scores than students with no disabilities (Adams & Proctor, 2010). We also hypothesized that students with mental health disorders would have lower satisfaction with life, self-efficacy, and learning style than students with no disabilities. In addition, students with mental health disorders would have

higher test anxiety scores than students with no disabilities. We had no hypothesis regarding factors that would predict adjustment to post-secondary education.

This study took place in Israel, where the number of students with disabilities in higher education increased sharply following the enactment of the Equal Rights for People with Disabilities Law in 1998. The law defines the rights of individuals with disabilities and bases the state's obligation to these individuals on recognition of the principle of equality (Feldman, 2007). After this and other constitutional reforms led to changes in the integration of students with disabilities into institutions of higher education, it is now crucial to examine how these students cope with its challenges, and whether these challenges have generated additional needs.

Method

Participants

Participants comprised 123 students who had completed one year of study or more at universities and colleges throughout Israel. Overall, 63 students who had been diagnosed with a mental health disorder or treated over time for significant mental health disorders (51.2%) were self-identified as having mental health problems and were part of the mental health disorders group. Sixty students who had not been diagnosed with or treated for mental health disorders or any other disability (48.8%) comprised the control group. Demographic information on both groups is presented in Table 1. Participants with mental health disorders had a variety of diagnoses, including anxiety and depression, obsessive-compulsive disorder, bipolar disorder, schizophrenia, post-traumatic stress disorder, and others. The two groups did not differ with respect to gender, type of institution, or year of study. Of all participants, 91 were female (74%) and 32 were male (26%), 68 studied at universities (55.3%), and 55 in colleges (44.7%). Eight students were completing their first year of study (6.5%), 35 their second year (28.5%), 61 their third year (49.6%), and 13 their fourth year (10.6%). An additional six participants had graduated (4.9%). The average age of students entering post-secondary education in Israel is 24 years, a relatively older age compared to the OECD average age of 22 (Isreal Central Bureau of Education, 2017).

Table 1. Demographic information for both study groups.

Variable	Category	Mental health disorders group $n = 63$		Control group $n = 60$		χ^2
		N	%	N	%	
Gender	Male	19	30.2	13	21.7	1.15
	Female	44	69.8	47	78.3	
Institute Type	University	34	54.0	34	56.7	0.09
	College	28	44.4	25	41.7	
	College of Education	1	1.6	1	1.7	
Academic year	First Year	4	6.3	4	6.7	1.47
	Second Year	19	30.2	16	0.0	
	Third Year	30	47.6	31	51.7	
	Fourth Year	7	11.1	6	10.0	
	Graduated	3	4.8	3	5.0	

Measures

A number of different questionnaires were used to evaluate the students:

(1) Demographic Questionnaire

The questionnaire comprised 20 items addressing demographic information, including gender, native language, academic history, diagnosis, and types of support.

(1) Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1989, translated by Khalili, 2006) (short version).

The original SACQ is a 67-item self-report questionnaire that was developed in English and translated into Hebrew by Khalili (2006) using the standard back translation method. Participants respond to each item on a Likert scale ranging from 1 (doesn't apply to me at all) to 9 (applies to me very much), such that higher scores represented better adjustment.

A shortened Hebrew version of the original questionnaire was developed and the contents were adapted to better fit the experiences of Israeli students. The questionnaire comprises four subscales: academic adjustment (19 items. e.g., 'Lately I have been having doubts regarding the value of a college education'), Cronbach's alpha = 0.87; personal-emotional adjustment (9 items. e.g., 'I have been feeling tense or nervous lately'), Cronbach's alpha = 0.80; social adjustment (12 items. e.g., 'I am meeting as many people, and making as many friends as I would like to at the college'), Cronbach's alpha = 0.75; and institutional adjustment (6 items. e.g., 'I am happy with my decision to attend this college'), Cronbach's alpha = 0.71.

(1) College Academic Self-Efficacy Scale (CASES; Owen & Froman, 1988)

This questionnaire comprises 26 items scored on a Likert scale from 1 ("do not feel confident") to 5 ("feel very confident"). Each item is included in one of three subscales: technical skills (e.g., using computers and library resources); social situations (e.g., participating in a class discussion, asking a lecturer to repeat his/her explanation); and cognitive operations (e.g., listening carefully during a lecture on a difficult topic, understanding an examination question). In the present study, internal reliability for the entire questionnaire was .92.

(1) Satisfaction with Life Scale (SWLS; Diener et al., 1985, translated by Shmotkin, 1998)

The questionnaire examines the respondent's satisfaction with his or her life. Participants were asked to respond to five items on a Likert scale ranging from 1 ('strongly disagree') to 7 ('agree'). The reliability of the translated questionnaire was .82. In the present study, internal reliability for the entire questionnaire was .84.

(1) Test Anxiety Inventory (TAI; Spielberger, 1980, translated by Zeidner, 1998)

The TAI is a 20-item self-report questionnaire used to assess test-anxiety in student populations. Respondents are asked to report how often they experienced panic symptoms during and after exams using a 4-point Likert scale. The reliability of the translated questionnaire was between .41 and .72. In the present study, internal reliability for the entire questionnaire was .96.

(1) Inventory of Learning Styles (ILS; Vermunt, 1996, translated by Heiman, 2006)

The ILS is a self-report questionnaire that measures the use of metacognitive strategies and cognitive strategies in higher education. It has four components: cognitive processing strategies, metacognitive strategies, regulation, and mental models of learning. In this study, we focused on two areas (55 items). Cognitive processing strategies: 27 items ($\alpha = .89$), divided into three sub-topics: deep processing (11 items; $\alpha = .80$), stepwise processing (11 items; $\alpha = .90$), and concrete processing (5 items; $\alpha = .83$). Metacognitive strategies and regulation: 28 items ($\alpha = .81$) divided into three sub-categories: self-regulation (11 items; $\alpha = .84$); external regulation (11 items; $\alpha = .81$), and lack of regulation (11 items; $\alpha = .76$). Respondents ranked all items on a 5-point Likert scale ranging from never (1) to always (5). The internal reliability for the entire questionnaire was .91. Higher scores represent more use of that subcategory.

Procedure

Applications were sent to all the universities and several additional institutes of higher learning in Israel, asking that they be forwarded to students who had completed one or more years of study and had been diagnosed with a mental health disorder. In addition, information about the study was posted on social networks and students with mental health disorders were invited to contact the researchers if they wished to participate. All students who expressed willingness to participate in the study were contacted by phone or online and provided with information about the research objectives, significance, and process. After giving verbal consent, students were asked to sign informed consent forms confirming their willingness to participate in the study and to complete the questionnaires online (which was expected to take up to 40 minutes). After recruiting students who had been diagnosed with mental health disorders, we recruited students without disabilities who matched the experimental group as closely as possible with respect to gender, institution of higher education, field of study, and year of study. The recruiting took place from 2017 to 2019. The procedure for obtaining consent was identical in the control group. Students returned the questionnaires to the researcher via email and received $20 for their efforts. This research was supported by the Israeli National Insurance Institute (Social Security) and received the approval of the University of Haifa Faculty of Education Ethics Committee.

Data analyses

SPSS version 25 was used to analyze the data. To address the first research question regarding the differences in adjustment between the study and control groups, analyses were conducted using multivariate analysis of variance (MANOVA). To address the second research question regarding the differences in satisfaction with life, self-efficacy,

and test anxiety between students with and without mental health disorders, an independent samples t-test was conducted. Furthermore, we conducted a multivariate analysis to examine the relationship between the research and control groups and the subscales of ILS (6 subscales). In order to learn about the relationships between the variables a Pearson correlation was performed. Finally, to examine the factors predict adjustment to post-secondary education a stepwise regression was conducted.

Results

Differences in adjustment between students with and without mental health disorders

The first research question examined whether there were differences in adjustment between students with and without mental health disorders. Results of a multivariate analysis of variance (MANOVA) are presented in Figure 1.

We found a significant between-group differences in total adjustment ($F_{(1,121)} = 39.55$, $p < .001$; $\eta^2 = 0.25$) and in each of the adjustment subscales: academic adjustment, $F_{(1,121)} = 23.27$, $p < .001$, $\eta^2 = 0.16$; social adjustment, $F_{(1,121)} = 31.67$, $p < .001$, $\eta^2 = 0.21$; personal emotional adjustment, $F_{(1,121)} = 59.81$, $p < .001$, $\eta^2 = 0.33$; and institutional adjustment, $F_{(1,121)} = 11.14$, $p < .01$, $\eta^2 = 0.08$. In all cases, the adjustment scores of students with mental health disorders were lower than those of students without mental health disorders.

Differences in satisfaction with life, self-efficacy, test anxiety, and learning style between students with and without mental health disorders

Independent samples t-tests were conducted to examine the second research question: whether there were differences in satisfaction with life, self-efficacy and test anxiety between students with and without mental health disorders. Results are presented in Table 2.
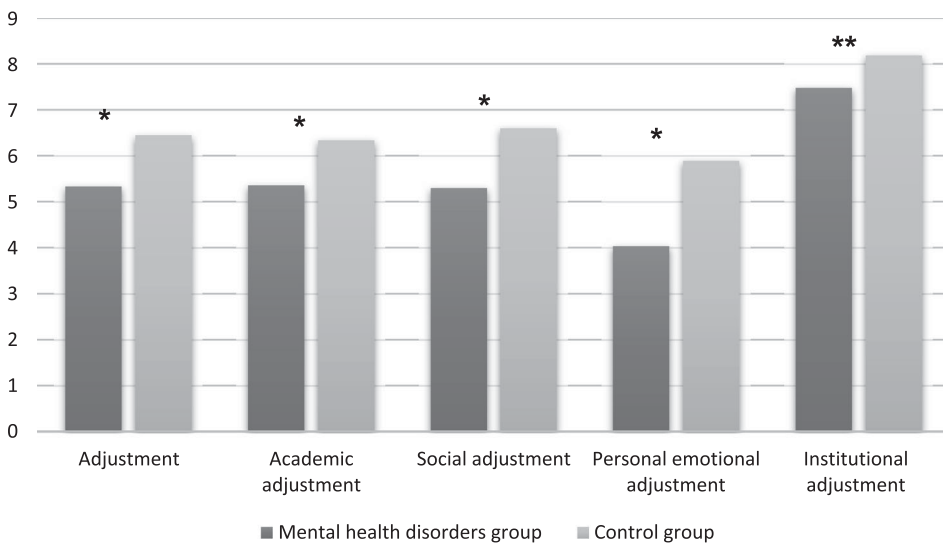

Figure 1. Means for adjustment total scores and subscales in each study group.
* $p < .001$; ** $p < .01$.

Students in the mental health disorders group reported on lower satisfaction with life than students in the control group. The mental disorders group also reported on lower self-efficacy and higher test anxiety scores than did students in the control group.

Furthermore, we conducted a multivariate analysis to examine the relationship between the research and control groups and the ILS subscales (6 subscales). Results revealed a significant main effect for group differences, $F(1,121) = 5.12$, $p < .001$; $\eta_p^2 = .21$. Table 3 presents the results.

ANOVA analyses for ILS measures demonstrated that students with mental health disorders reported less use of concrete processing and self-regulation strategies compared to the control group and greater lack of regulation compared to the control group.

We further conducted correlations in order to determine which variables should be entered in the regression model. The results are presented in Table 4. As can be seen, for both groups there were strong correlations between adjustment and test anxiety,

Table 2. Means and standard deviations for satisfaction with life, self-efficacy and test anxiety in the two study groups.

	Mental health disorder group (n = 63)		Control group (n = 60)				
	M	SD	M	SD	Cohen's d	P	T
Satisfaction with life	3.9	1.2	5.0	1.1	0.86	<0.001	4.79
Self-efficacy	3.2	0.7	3.6	0.5	0.78	<0.01	3.49
Test anxiety	2.6	0.8	2.1	0.6	0.73	<0.001	4.06

Table 3. Means and standard deviations and F scores for subscales learning style in the two study groups.

	Mental health disorder group (n = 63)		Control group (n = 60)				
	M	SD	M	SD	F(1, 121)	Sig	Partial eta squared
Learning style							
Deep processing	34.9	7.3	36.1	6.4	.97	.32	.00
Stepwise processing	34.1	10.3	35.8	9.1	.97	.32	.00
Concrete processing	17.4	4.8	19.2	3.3	5.15	.02	.04
Self-regulation	27.5	8.6	30.5	8.0	4.00	.04	.03
Lack of regulation	19.5	4.6	15.8	4.4	21.21	.00	.14
External regulation	35.9	8.0	36.6	5.8	.28	.59	.00

Table 4. Correlations between total adjustment to higher education and satisfaction, self-efficacy, test anxiety and learning style (subscales).

Correlated variables	Mental health disorders group n = 63	Control group n = 60	Total group
Satisfaction	.65**	.57**	.71**
Self-efficacy	.65**	.56**	.66**
Test anxiety	−.47**	−.53**	−.63**
Cognitive processing			
Deep processing	.24*	.23**	.22*
Stepwise processing	.27*	.22**	.23**
Concrete processing	.19	.26**	.25**
Metacognition strategies and regulation			
Self- regulation	.26*	.26**	.30**
External regulation	.17	.15*	.14
Lack of regulation	−.39**	−.58**	−.55**

Note. *p < .05; **p < .01.

satisfaction with life, self-efficacy and lack of regulation. In the control group and research groups there were similar low significant correlations between adjustment and deep processing, stepwise processing, concrete processing and self-regulation. As there were similar trends between the correlations of the two groups we examined what would predict adjustment to the entire sample.

Predictors of adjustment among students with and without mental health disorders

The third research question pertained to predictors of adjustment among students with and without mental health disorders. A multiple liner regression analysis using the enter method was conducted for the entire sample ($N = 123$). We entered mental health disorders status as the forced first step (Entered) and the rest of the independent variables that were significant correlated with adjustment as a second step. The results are presented in Table 5.

Mental health disorders status explained 23% of the adjustment. Satisfaction with life test anxiety, self-efficacy, stepwise processing, deep processing, concrete processing and lack of regulation explained another 51% of the variance. Together, disability status, satisfaction with life, test anxiety, self-efficacy, and the five subscale of learning style explained 75% of the variance in adjustment to higher education.

Discussion

Differences in adjustment between students with and without mental health disorders

The first goal of this study was to examine potential differences in adjustment to higher education between students with and without mental health disorders. Students that self-reported mental health disorders reported lower levels of adjustment compared to students without mental health disorders. The students with mental health disorders also had lower scores on all four adjustment subscales: academic, emotional-personal, social, and institutional. These results are in line with those of a similar study by Adams and Proctor (2010), in which students with mental health disorders constituted 33% of the disability group, which also included students with learning disabilities and physical/sensory disabilities. Their findings indicated that students with disabilities reported greater difficulty than a non-disability group in adjusting to academic studies, as well as lower levels of adjustment to the college experience, and lower social and institutional adjustment.

Table 5. Hierarchical linear regression predicting adjustment to higher education.

	Model 1			Model 2		
	B	SE B	β	B	SE B	β
Mental status	-1.09	.18	-.48*			
Deep processing				00	.01	-.04
Stepwise processing				.02	.00	.16
Concrete processing				.01	.02	.04
Self-regulation				00	.00	-.02
Lack of regulation				-.03	.01	-.15
Satisfaction				.33	.05	.38
Self-efficacy				.30	.11	.18.
Test anxiety				-.43	.09	-.29

Differences in satisfaction with life, self-efficacy, test anxiety, and learning style between students with and without mental health disorders

The second research question examined whether there were differences between students with and without mental health disorders in satisfaction with life, self-efficacy, and test-anxiety, and in the metacognitive variable learning style. Students with mental health disorders reported lower levels of satisfaction with life and academic self-efficacy, and higher levels of test-anxiety compared to students without mental health disorders. Previous work supports the impact of satisfaction with life and academic self-efficacy on adjustment (Corrigan et al., 2006; Feldt et al., 2011). The current findings indeed demonstrate that students with disabilities can experience lower adjustment, lower satisfaction and lower self-efficacy.

In accordance with the current results, a previous study on high school students without mental health disorders showed that participants who reported low levels of subjective well-being also reported lower adjustment and lower academic self-efficacy (Suldo et al., 2016). Another study showed that higher academic self-efficacy was associated with better academic performance and personal adjustment in a typical population (Robbins et al., 2004).

In the current study, self-reported test anxiety was higher in students with mental health disorders than in those without mental health disorders. Rana and Mahmood (2010) also examined the relationship between test-anxiety and academic achievement among students and found that higher test anxiety was associated with lower academic achievement. Students with mental health disorders often experience emotional difficulties, especially during exam periods (Lidor et al., 2008). These difficulties are likely to be associated with higher levels of anxiety in general, and test anxiety specifically, than those of students without mental health disorders. These emotional aspects result in difficulties in adjustment to higher education.

No significant differences were found between the two study groups with respect to total score on learning style. A closer examination of the six subscales demonstrated significant differences between the groups on three subscales. For example, examination of the questionnaire's subscales revealed a between-group difference in regulation, indicating that students with mental health disorders reported difficulties in monitoring their learning process. In a study by Heiman (2006), undergraduate students with learning disabilities reported greater need for self-regulation strategies, including controlling their learning process, self-orientation, planning, monitoring, and continuous evaluation of their learning process, along with difficulties in regulation.

Overall, these findings are consistent with the research literature, which indicates that mental health disorders and/or their treatments affect cognitive and metacognitive functioning, in turn impairing the academic performance of affected students (Kiuhara & Huefner, 2008; Mowbray & Megivern, 1999).

Predictors of adjustment among students with and without mental health disorders

The third goal of this study was to examine predictors of adjustment to higher education among students with and without mental health disorders. Together, satisfaction with

life, test anxiety, self-efficacy, stepwise processing, and the five subscales of learning style explained 75% of the variance in adjustment to higher education.

These findings are also supported by previous research. In the study conducted by Suldo et al. (2016) on a typical population, subjective well-being was found to be directly related to life satisfaction, adjustment, and proper academic functioning. Schunk and Pajares (2002) found that higher self-efficacy was associated with better academic performance and academic adjustment. Additional studies on typical populations have established that test anxiety negatively impacts academic adjustment and academic self-efficacy and is linked to low academic performance (Owens et al., 2012).

One advantage of the current study is that it included a comparatively large number of participants ($N = 123$), who were grouped into two targeted diagnostic groups and matched with respect to year of study, faculty, institution, and gender, while additional disabilities were grounds for exclusion (ADHD, learning disability, and physical or sensory difficulties). In addition, the mental health disorders group comprised students who self-reported a wide range of mental health disorders. Unlike most other studies conducted in this area, which only examined first-year students, the present study examined adjustment to higher education in students who had completed at least one year of study. This was done to advance our understanding of the adjustment of students with mental health disorders beyond this first-year stage.

Our results also support Tinto's (1975) model and suggest expanding the risk of adjusting to higher education beyond the first year. In addition, the study suggests that the model should take into consideration mental health risk status.

The study also had a number of limitations. First, the gender distribution of participants was skewed, with a sample that was 74% female. Gender can influence academic adjustment, which could potentially have affected findings. Second, it is possible that the range of mental health disorders in the experimental group affected the results, as different disorders can be expected to have different effects throughout the life span. In addition, it might be that symptoms of some psychological disorders can overlap with adjustment disorder and adjustment disorder can be comorbid with other disorders.

Our findings highlight the challenges in adjustment to higher education that students with mental health disorders at the postsecondary education experience. One implication of the current result is to try to provide emotional support within academic institutions, to help students with mental health disorders to better adjust to higher education and to increase their chances of successfully completing their studies.

Future studies in this field should include longitudinal research examining the development of adjustment to higher education among students with mental health disorders, by collecting data at various points throughout their studies. It would also be beneficial to examine the impact of various types of support for students with mental health disorders. Another line of study could explore differences in adjustment based on type of mental health disorders.

Acknowledgements

Disclosure statement

Funding

References

Adams, K. S., & Proctor, B. E. (2010). Adaptation to college for students with and without disabilities: Group differences and predictors. *Journal of Postsecondary Education and Disability*, *22*(3), 166–184.

American College Health Association. (2013). *American College Health Association–National College Health Assessment II: Reference group executive summary spring 2013*.

American College Health Association. (2016a). *American College Health Association–National College Health Assessment II: Canadian reference group executive summary spring 2016*. http:// www.acha-ncha.org/docs/NCHA-II%20SPRING%202016% 20CANADIAN% 20REFERENCE%20GROUP% 20EXECUTIVE%20SUMMARY.pdf

American College Health Association. (2016b). *American College Health Association–National College Health Assessment II: Undergraduate student reference group executive summary spring 2016*. http://www.acha-ncha.org/docs/NCHA-II_ FALL_2016_UNDERGRAD UATE_REFERENCE_GROUP_ EXECUTIVE_SUMMARY.pdf

Anderson, E. (1985). Forces influencing student persistence and achievement. *Increasing student retention* (pp. 44–61).

Andrews, B., & Wilding, J. M. (2004). The relation of depression and anxiety to life-stress and achievement in students. *British journal of psychology*, *95*(4), 509–521.

Auerbach, R. P., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., Demyttenaere, K., Ebert, D. D., Green, J. G., Hasking, P., Murray, E., Nock, M. K., Pinder-Amaker, S., Sampson, N. A., Stein, D. J., Vilagut, G., Zaslavsky, A. M., & Kessler, R. C. (2018). WHO world mental health surveys international college student project: Prevalence and distribution of mental disorders. *Journal of Abnormal Psychology*, *127*(7), 623–638. https://doi.org/10.1037/abn0000362

Baker, R. W., & Siryk, B. (1984). Measuring adjustment to college. *Journal of Counseling Psychology*, *31*(2), 179–189. https://doi.org/10.1037/0022-0167.31.2.179

Baker, R. W., & Siryk, B. (1989). *SACQ student adaptation to college questionnaire manual*. Western Psychological Services.

Bandura, A. (1977). Self-efficacy: Towards a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Bandura, A. (1986). *Social foundation of thought and action: A social cognitive theory*. Prentice-Hall.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, *28*(2), 117–148. https://doi.org/10.1207/s15326985ep2802_3

Bembenutty, H. (2008). Self-regulation of learning and test anxiety. *Psychology Journal*, *5*(3), 122–139.

Blacklock, B., Benson, B., & Johnson, D. (2003). *Needs assessment project: Exploring barriers and opportunities for college students with psychiatric disabilities*. University of Minnesota.

Bradburn, N. M. (1969). *The structure of psychological well-being*. Aldine Publishing Company.

Brown, A. (1987). Metacognition, executive control, self-regulation, and other more mysterious mechanisms. In F. Weinert, & R. Kluwe (Eds.), *Metacognition, motivation and understanding* (pp. 65–116). Hillsdale.

Collins, K. D. (2000). Coordination of rehabilitation services in higher education for students with psychiatric disabilities. *Journal of Applied Rehabilitation Counseling*, *31*(4), 36–39. https://doi. org/10.1891/0047-2220.31.4.36

Collins, M. E., & Mowbray, C. T. (2005b). Higher education and psychiatric disabilities: National survey of campus disability services. *American Journal of Orthopsychiatry*, *75*(2), 304–315. https://doi.org/10.1037/0002-9432.75.2.304

Corrigan, P. W., Watson, A. C., & Barr, L. (2006). The self–stigma of mental illness: Implications for self–esteem and self–efficacy. *Journal of Social and Clinical Psychology*, *25*(8), 875–884. https://doi.org/10.1521/jscp.2006.25.8.875

de Girolamo, G., Dagani, J., Purcell, R., Cocchi, A., & McGorry, P. D. (2012). Age of onset of mental disorders and use of mental health services: Needs, opportunities and obstacles. *Epidemiology and Psychiatric Sciences*, *21*(1), 47–57. https://doi.org/10.1017/S2045796011000746

De Haes, J. C., & Van Knippenberg, F. C. (1985). The quality of life of cancer patients: A review of the literature. In N. K. Aaronson, & J. Beckman (Eds.), *The quality of life of cancer patients* (pp. 167–182). Raven Press.

Diener, E., Oishi, S., & Lucas, R. E. (2003). Personality, culture, and subjective well-being: Emotional and cognitive evaluations of life. *Annual Review of Psychology*, *54*(1), 403–425. https://doi.org/10.1146/annurev.psych.54.101601.145056

Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of personality assessment*, *49*(1), 71–75.

Dunslosky, J., & Thiede, K. W. (1998). What makes people study more? An evaluation of factors that affect self-paced study. *Acta Psychologica*, *98*(1), 37–56. https://doi.org/10.1016/S0001-6918(97)00051-6

Feldman, D. (2007). "Environmental justice" and persons with disabilities in Israel. *Disability Studies Quarterly*, *27*(4), https://doi.org/10.18061/dsq.v27i4.50

Feldt, R. C., Graham, M., & Dew, D. (2011). Measuring adjustment to college: Construct validity of the student adaptation to college questionnaire. *Measurement and Evaluation in Counseling and Development*, *44*(2), 92–104. https://doi.org/10.1177/0748175611400291

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of psychological inquiry. *American Psychologist*, *34*(10), 906–911. https://doi.org/10.1037/0003-066X.34.10.906

Flavell, J. H. (1987). Speculations about the nature and development of metacognition. In F. Weinert, & R. Kluwe (Eds.), *Metacognition, motivation, and understanding* (pp. 21–29). Erlbaum.

Gerdes, H., & Mallinckrodt, B. (1994). Emotional, social and academic adjustment of college students: A longitudinal study of retention. *Journal of Counseling and Development*, *72*(3), 281–288. https://doi.org/10.1002/j.1556-6676.1994.tb00935.x

Heiman, T. (2006). Assessing learning styles among students with and without learning disabilities at a distance-learning university. *Learning Disability Quarterly*, *29*(1), 55–63. https://doi.org/10.2307/30035532

Herrick, S. J. (2011). *Postsecondary students with disabilities: Predictors of adaptation to college* [Doctoral dissertation, The Pennsylvania State University].

Ibrahim, A. K., Kelly, S. J., Adams, C. E., & Glazebrook, C. (2013). A systematic review of studies of depression prevalence in university students. *Journal of Psychiatric Research*, *47*(3), 391–400. https://doi.org/10.1016/j.jpsychires.2012.11.015

Israel Central Bureau of Education. (2017). Higher education over the years 2016–2017. In Hebrew.

Javanmard, A., Hoshmandja, M., & Ahmadzade, L. (2012). Investigating the relationship between self-efficacy, cognitive and metacognitive strategies, and academic self-handicapping with academic achievement in male high school students in the Tribes of Fars Province. *Journal of Life Science & Biomedicine*, *3*(1), 27–34.

Khalid, R., & Hasan, S. S. (2009). Test anxiety in high and low achievers. *Pakistan Journal of Psychological Research*, *24*(3–4), 97–114.

Khalili, L. (2006). *The Relationships Between Differentiation, Collectivism and Adjustment to University Life among Arab students.* . Ph.D. Unpublished Master's thesis, University of Haifa, Israel. Available online at: http://nprimofe.haifa.ac.il/primo_library/libweb/action/search.do?vid=NHAU.

Kiuhara, S. A., & Huefner, D. S. (2008). Students with psychiatric disabilities in higher education settings: The Americans with disabilities act and beyond. *Journal of Disability Policy Studies*, *19*(2), 103–113. https://doi.org/10.1177/1044207308315277

Klassen, R. M. (2010). Confidence to manage learning: The self-efficacy for self-regulated learning of early adolescents with learning disabilities. *Learning Disability Quarterly*, *33*(1), 19–30. https://doi.org/10.1177/073194871003300102

Lidor, N. H., Dahan, O., Tabakman, M., & Cassif-Weissberg, L. (2008). Supportive education program for people with psychiatric disabilities in the universities: Program support for people with psychiatric disabilities at universities. *Israeli Journal of Occupational Therapy*, H9–H22. (Hebrew).

Martin, J. M. (2010). Stigma and student mental health in higher education. *Higher Education Research & Development*, *29*(3), 259–274. https://doi.org/10.1080/07294360903470969

Mooney, S. P., Sherman, M. F., & Lopresto, C. T. (1991). Academic locus of control, self-esteem, and perceived distance from home as predictors of college adjustment. *Journal of Counseling & Development*, *69*(5), 445–448. https://doi.org/10.1002/j.1556-6676.1991.tb01542.x

Mowbray, C. T., Collins, M., & Bybee, D. (1999). Supported education for individuals with psychiatric disabilities: Long-term outcomes from an experimental study. *Social Work Research*, *23*(2), 89–100. https://doi.org/10.1093/swr/23.2.89

Mowbray, C. T., & Megivern, D. (1999). Higher education and rehabilitation for people with psychiatric disabilities. *Journal of Rehabilitation*, *65*(4), 31–38. https://doi.org/10.1093/swr/23.2.89

Neon, D., Strosberg, N., Ben-Shoham, A., Haran, D., Prior, R., & Gealia, D. A. (2012). *People with disabilities in Israel's working-age population: Prevalence, characteristics and employment status*. National insurance Institute. In Hebrew.

Owen, S. V., & Froman, R. D. (1988). *Development of a College Academic Self-Efficacy Scale*.

Owens, M., Stevenson, J., Hadwin, J. A., & Norgate, R. (2012). Anxiety and depression in academic performance: An exploration of the mediating factors of worry and working memory. *School Psychology International*, *33*(4), 433–449. https://doi.org/10.1177/0143034311427433

Pedrelli, P., Nyer, M., Yeung, A., Zulauf, C., & Wilens, T. (2015). College students: Mental health problems and treatment considerations. *Academic Psychiatry*, *39*(5), 503–511. https://doi.org/10.1007/s40596-014-0205-9

Rana, R. A., & Mahmood, N. (2010). The relationship between test anxiety and academic achievement. *Bulletin of Education & Research*, *32*(2), 63–74.

Robbins, S. B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin*, *130*(2), 261–288. https://doi.org/10.1037/0033-2909.130.2.261

Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, *19*(4), 460–475. https://doi.org/10.1006/ceps.1994.1033

Schunk, D. H., & Pajares, F. (2002). The development of academic self-efficacy. In A. Wigfield, & J. Eccles (Eds.), *Development of achievement motivation* (pp. 1–27). Academic Press.

Sharma, H. L., & Nasa, G. (2014). Academic self-efficacy: A reliable predictor of educational performances. *British Journal of Education*, *2*(3), 57–64.

Sharpe, M. N., Bruininks, B. D., Blacklock, B. A., Benson, B., & Johnson, D. M. (2004). The emergence of psychiatric disabilities in postsecondary education. *Examining Current Challenges in Secondary Education and Transition*, *3*(1), http://www.ncset.org/publications/viewdesc.asp?id-1688

Shmotkin, D., & Lomranz, J. (1998). Subjective well-being among Holocaust survivors: An examination of overlooked differentiations. *Journal of Personality and Social Psychology*, *75*(1), 141.

Shor, R. (2015). *Evaluation of the program of academic mentoring in institutions of higher education passed people who are facing mental handicap*. National Insurance Institute, Research Fund. (Hebrew).

Spielberger, C. D. (1980). *Test anxiety inventory: Preliminary professional manual*. Consulting Psychologist Press.

Suldo, S. M., Thalji-Raitano, A., Kiefer, S. M., & Ferron, J. M. (2016). Conceptualizing high school students' mental health through a dual-factor model. *School Psychology Review*, *45*(4), 434–457. https://doi.org/10.17105/SPR45-4.434-457

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research*, *45*(1), 89–125. https://doi.org/10.3102/00346543045001089

Tinto, V. (1985). Dropping out and other forms of withdrawal from college. *Increasing student retention*, *2*, 28–43.

Tinto, V. (1993). Building community. *Liberal Education*, *79*(4), 16–21.

Van Petegem, K., Aelterman, A., Rosseel, Y., & Creemers, B. (2007). Student perception as moderator for student wellbeing. *Social Indicators Research*, *83*(3), 447–463. https://doi.org/10.1007/s11205-006-9055-5

Vermunt, J. D. (1996). Metacognitive, cognitive and affective aspects of learning styles and strategies: A phenomenographic analysis. *Higher education*, *31*, 25–50.

Ya'acov, Y. B., & Amir, M. (2001). Subjective Quality of Life: Definition and measurement according to the World Health Organization. *Gerontology*, 169–185. (Hebrew).

Yacobitz, E. (1997). Subjective well-being of female residents in old age home. *Gerontology*, 74–85. (Hebrew). http://www.jstor.org/stable/23482193

Zeidner, M. (1998). *Test anxiety: The state of the art*. Plenum.