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Rates of Mental Illness and Associated Academic Impacts in Ontario's College Students

Alana Holmes[1] and Robert Silvestri[1]

Abstract

Staff at campus-based counselling and disability centres in 15 of Ontario's 24 community colleges completed 3,536 surveys on 1,964 individual students querying the presence of mental illness and academic challenges as reported by students accessing these services. Survey data were analyzed to determine prevalence rates of mental disorders and investigate for the presence of a relationship between specific mental illnesses and any associated academic impacts. More than half of these students had diagnoses with mood and anxiety disorders being the most common individual and comorbid diagnoses. The academic challenges reported by students with mental illnesses occurred in particular patterns relative to specific diagnoses; alertness/attention challenges were associated with mood disorders, whereas memory/executive function problems were linked to anxiety disorders. Implications for training and service practices of counselling and disability staff are reviewed as are future research directions for accommodating the academic needs of students with mental illnesses.

Keywords

postsecondary students, postsecondary support services, mental illness, academic challenges

In recent years, American and Canadian postsecondary counselling centre directors and support personnel have consistently indicated that the number of students with diagnosed mental illnesses seeking counselling is sharply rising (Gallagher, 2008;

[1]Cambrian College, Sudbury, Ontario, Canada

Corresponding Author:
Alana Holmes, Northern Ontario Assessment and Resource Centre, Cambrian College, 1400 Barrydowne Road, Sudbury, Ontario, Canada P3A 3V8.
Email: alana.holmes@cambriancollege.ca

Lees & Dietsche, 2012; Watkins, Hunt, & Eisenberg, 2012). American college mental health support workers have also spoken about an increase in the complexity of the student cases accessing counselling services (Buchanan, 2012; Gallagher, 2008; Mowbray et al., 2006; Wyatt & Oswalt, 2013). The sole Canadian study in this area, the 2004/2005 Canadian Counselling Centre Survey (Crozier & Willihnganz, 2006), found that 92% of postsecondary counselling centre directors believed there to be an increase in the number of students seeking counselling and presenting with more severe psychological issues (e.g., comorbid mental illness conditions).

The dearth of research examining mental illness in Canadian postsecondary students compared with that of the American postsecondary population is disconcerting and substantiates the need to further study this issue. American research indicates that approximately 25% of the general American population experiences a diagnosable mental illness (National Institute of Mental Health, 2006; Salzer, 2012); however, the prevalence of mental illness in the American postsecondary population may be considerably higher with estimates ranging from 12% to 50% (American College Health Association, 2012; Blanco et al., 2008; Eisenberg, Golberstein, & Gollust, 2007; Mowbray et al., 2006). The most frequent types of mental illnesses affecting American postsecondary students are mood (e.g., depression) and anxiety disorders (American College Health Association, 2012; Keyes et al., 2012). Canadian research, although limited, cites similar prevalence rates with Hanlon (2012) stating that approximately 20% of Canadians suffer from a mental illness at one point in their life and the 2013 American College Health Association–National College Health Assessment survey reporting that approximately 19.8% of Canadian postsecondary students self-report having a mental illness. Also similar to the American research, mood and anxiety diagnoses are the most frequent classifications of mental illness in Canadian postsecondary students (American College Health Association, 2013).

Little systematic investigation of the link between student mental illness and academic performance in postsecondary settings has been done in either America or Canada. This is despite the fact that mental illnesses are defined in part by their impact on the daily functioning of affected individuals. The few existing studies have operationalized mental illnesses as a single entity, that is, any and all mental illnesses were grouped together without consideration of their unique symptom patterns. This means that the academic performance ramifications associated with a specific mental illness, such as anxiety disorders that occur frequently in a postsecondary population, have not been explicitly studied.

Yet there is reason to consider that individuals with clinically significant levels of anxiety may experience academic struggles that stem specifically from their symptomatology. For example, Eysenck's processing efficiency theory (Eysenck & Calvo, 1992) and its subsequent model, the attentional control theory (Eysenck, Derakshan, Santos, & Calvo, 2007), state that anxiety could reduce the efficiency of the executive functioning component of Baddeley and Hitch's (1974) working memory model (affecting associated inhibition, shifting, and updating cognitive functions) in conditions of stress or on complex, multistep tasks. Extending this line of reasoning, a reduced efficiency in executive functions would be more apparent in evaluative settings (tests/exams) and on

more difficult cognitive tasks that demand more processing resources (Owens, Stevenson, Hadwin, & Norgate, 2012). There is, however, little in the way of substantiating research for this hypothesis as it pertains to postsecondary students. One study was found indicating that clinically diagnosed anxious college students displayed poorer performance on examinations when compared with nonclinically anxious college students (Andrews & Wilding, 2004).

Research examining the impact of mood disorders on academic performance in postsecondary environments is also limited. Ellis and Ashbrook (1989) contended that depressed mood reduces the ability to allocate attentional resources (e.g., specifically alerting components of attention) commensurate with task demands (see also Greaves-Lord et al., 2007; Han et al., 2012; Heller, Nitschke, & Miller, 1998; Hertel, 1994; Koetsier et al., 2002; Liotti & Tucker, 1992; Lyche, Jonassen, Stiles, Ulleberg, & Landro, 2011; van der Meere, Borger, & van Os, 2007; Weiland-Fiedler et al., 2004). Thus, it is plausible that these attention deficits can lead to more distal academic difficulties, as reported by Frojd et al. (2008) and Heiligenstein, Guenther, Hsu, and Herman (1996), such as frequent absences from class, lack of energy, and lethargy related to academic output and difficulties in initiating and sustaining social relationships.

As noted previously, postsecondary counselling centre directors and support staff have observed an increase in the complexity of mental illnesses in students accessing college counselling centres and they have identified the comorbidity of mental illnesses as one reason for the increasingly challenging nature of their caseloads (Crozier & Willihnganz, 2006). Mood and anxiety disorders have been found to frequently co-occur in both American and Canadian postsecondary settings (American College Health Association, 2012, 2013). The academic ramifications of comorbid diagnoses might be additive such that students with comorbid conditions will have more severe academic performance deficits than students with a single diagnosis. One study provides preliminary support for this notion: Eisenberg, Golberstein, and Hunt (2009) found that college students with comorbid depression and anxiety had a lower grade point average (GPA) than college students with depression but no anxiety.

The current study sought to contribute to the scant Canadian literature related to mental illness in postsecondary students, first, by determining the prevalence of self-reported mental illnesses of students accessing counselling and disability services in a sample of Ontario's colleges and, second, by examining self-reported academic performance challenges for those postsecondary students with the most prevalent illnesses accessing counselling and disability services.

Method

Participants

Directors of counselling and disability services departments in Ontario's 24 colleges were informed of the study through Ontario-wide college committee meetings and an email inviting them to participate in this study. Participation was entirely voluntary, and thus 15 of Ontario's 24 colleges chose to contribute to the study. The participants

completed surveys to tabulate the prevalence of mental illness and mental health problems and types of academic performance challenges among part-time and full-time students who accessed their support services during the 2009-2010 academic year.

A total of 3,536 surveys were returned for 1,964 students who accessed counselling and disability services departments; multiple surveys were collected for some students who accessed support services on more than one occasion. The majority of returned surveys (52.7%) contributed by five central Ontario colleges represented the region with the greatest population density and highest student enrollment demographics (Colleges Ontario, 2012; Statistics Canada, 2011). Of the remaining colleges, two colleges representing Eastern Ontario, five colleges from Northern Ontario, and three colleges from Western Ontario returned 20.1%, 19.5%, and 7.8% of the surveys, respectively.

Measure

The survey utilized in this study (see the appendix) consisted of three sections. Section A was composed of specific *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000) Axis 1 clinical and Axis 2 personality diagnoses. Section B, not reported in this study, contained a list of mental health problems adapted from the American College Health Association Health Assessment survey (American College Health Association, 2008) and modified through consultations with counsellors working in the Ontario counselling system.

With respect to subjective measures of academic performance difficulties, Mowbray et al. (2006) contended that the positive, negative, and cognitive symptoms associated with mental illness provide the parameters for delineating a range of academic skills that might be affected. For example, positive symptoms of mental illness (e.g., an excess of behavior such as worrying or perseverative thoughts) can interfere with the ability to manage attention. And, negative symptoms of mental illness (absence of a behavior such as anhedonia) can lead to learning and social interaction engagement difficulties. Finally, Mowbray et al. stated that the cognitive symptoms of mental illness primarily affect memory and executive functions (ability to plan and execute goal directed activity). Accordingly, items from the Student Self-Assessment of College Classroom Difficulties Questionnaire (Legere, Furlong-Norman, Gayler, & St. Pierre, 2009), a questionnaire for postsecondary students with psychiatric disabilities, were selected and adapted for use in this study. Items from its thinking and learning and psychosocial skills subscales corresponding to broad conceptualizations of attention (based on Posner & Rothbart's, 2007, overview of attention), peer engagement, and cognitive memory and executive functions (based on Miyake et al.'s, 2000, analyses of executive functions) were chosen to create Section C.

For the current sample, the dimensionality of the 11 items that compose Section C was analyzed using principal components analysis. Based on the scree plot and Kaiser's Criterion (Eigenvalues > 1), three factors were rotated using a Varimax rotation. The rotated solution as shown in Table 1 yielded three interpretable factors, which are similar to Mowbray et al.'s (2006) academic challenges: alertness/attention,

Table 1. Factor Loadings for Principal Components Analysis With Varimax Rotation of Survey Section C.

	Factors		
Factor/items	Alertness/ attention	Memory/executive functions	Peer relationships
Alertness/attention factor			
It is difficult for the student to maintain concentration.	**.69**	.19	−.02
Student is easily distracted.	**.63**	.26	.01
Student is disorganized.	**.59**	.17	.03
Student does not have enough energy to complete work.	**.59**	−.07	.22
Student is absent from classes frequently.	**.55**	−.22	.39
Memory/executive functions factor			
Student comments that he or she goes blank when called upon in class/exams.	.07	**.72**	−.02
Student panics when he or she had deadlines or exams.	.10	**.62**	.09
When faced with a novel task, student is easily confused.	.03	**.54**	.10
Student experiences a lot of memory problems.	.40	**.52**	−.06
Peer relationship factor			
Student has poor peer relations.	−.01	.15	**.81**
Student tends to stay away from people at school.	.19	.06	**.80**
Eigenvalue	2.745	1.465	1.143
% of total variance	18.72	16.23	13.71
Total variance			**48.67%**

Note. Factor loadings >.40 are in boldface.

memory/executive functions, and peer relationships. The alertness/attention factor accounted for 18.7% of the item variance, the memory/executive function factor represented 16.2%, and the peer relationship factor contributed 13.7% of the item variance. Theta coefficient was calculated as a measure of internal consistency due to heterogeneous factors uncovered in the survey via principal components analysis. Values for theta were .79 and .84 for the alertness/attention and memory/executive functions factors, respectively. Theta was not calculated for the peer relationship factor as it had too few items. However, corrected item-total correlations for this factor were greater than .3 indicating acceptable commonality (Nunnally & Bernstein, 1994).

Theta coefficient for the total measure was .70. All reported theta coefficients for this study indicated acceptable research reliability for a scale (Nunnally, 1978).

This survey was not piloted as the study's objectives were to primarily tabulate frequencies of mental illnesses and academic challenges. However, counselling and disability services personnel at the researchers' institution reviewed the content of Survey Sections A, B, and C, and their suggestions were incorporated into the survey.

Procedure

The surveys were distributed by mail to the lead contacts, as designated by each participating college, who in turn forwarded this material to their college counselling/disability service providers. The lead contact collected completed surveys on a monthly basis and mailed them in a sealed envelope to the principal researchers for coding. Counselling and disability service providers were instructed to complete a survey for each student seen in their offices from October through April of one school year. They were specifically requested to complete the survey after the session ended. Multiple surveys were collected for some students who accessed support services on more than one occasion. A unique identifier code was assigned to each student, and in cases where multiple surveys were completed with a student, the data from Sections A, B, and C of the survey were merged by the researchers to reduce redundancy and ensure accurate reporting of varying mental illness classifications and academic challenges.

De-identified data were used along with a college identifier code to ensure that the data were anonymous to the researchers but linked to individual colleges. Consent for this data collection process was granted by the Research Ethics Committee of the researchers' institution, and additional Research Ethics Board approval was garnered from participating colleges when requested.

Section A of the survey asked college service providers to checkmark all applicable diagnoses that students reported having been conveyed to them by a regulated health professional such as a psychiatrist, family physician, or psychologist/psychological associate. Although not reported in this study, Section A also asked service providers to enter the type of treatment provided to students (e.g., medication, psychotherapy). Section C of the survey required college service providers to consult the list of academic challenges, and to indicate which, if any, students had commented on directly, or affirmed, as being a main issue during the counselling session.

Statistical Analysis

Descriptive analyses were conducted relating to participant demographics and frequency of mental illnesses and academic challenges to address the research questions of prevalence of self-reported mental illnesses and frequency of self-reported academic performance challenges for postsecondary students accessing counselling and disability services. To further examine the research question of academic challenges associated with the most prevalent mental illnesses affecting students, two-way

contingency analyses with follow-up comparisons were computed utilizing chi-square statistics and phi for statistical inference. Phi ranges in value from −1 to + 1 with convention dictating that phi's of .10, .30, and .50 represent small, medium, and large effect sizes, respectively (Cohen, 1988). Holm's (1979) sequential Bonferroni method was utilized to control for Type I errors at the .05 level for all pairwise comparisons pertaining to academic performance challenges.

Results

College counselling and disability services support personnel from all participating colleges returned 3,536 surveys for 1,964 students who accessed their services. There were significantly more surveys completed for female (65.2%) than for male students (see Table 2). This trend is similar to college demographics for 2009 to 2010, which indicate that more females (55%) than males attended college (Colleges Ontario, 2011). The age range of the students was broad spanning from 17 to 63 years of age with the average age of students being 27.62 years (SD = 9.51 years) and the median age, 24 years. Chi-square analyses indicated that the 17 to 25 years of age classification was the most frequent age classification for students compared with all other age classifications (i.e., 26-35, 36-45, 46-55, and above 55 years; see Table 2). The high numbers in the 17 to 25 years of age classification are congruent with college age demographics for 2009 to 2010 that reported this age range to account for approximately 77% of all students attending college in Ontario (Colleges Ontario, 2011). With respect to the types of educational programs in which the students were enrolled at the time of survey, the four most prevalent programs—community services (e.g., social services, early child education, child and youth worker programs), health and emergency services, business, and art/design (see Table 2)—were similar to the college programs with the highest enrollment rates according to Statistics Canada (2012). The sample of this study is therefore considered to be representative of Ontario's colleges in terms of gender, age, and program enrollment.

Correlations/Covariates

Spearman's rank correlation coefficients for age, gender, and academic performance challenges indicated that gender exhibited a higher frequency of significant correlations to academic performance challenges than age. All contingency table analyses and follow-up comparisons related to academic performance challenges were subjected to additional chi-square analyses utilizing the covariates of gender (separate tables for males and females) and age (separate tables for the age classifications of 17-25 years and 26-35 years) based on significant correlation coefficients. Only two of the five age range classifications in this study were used as covariates as these two classifications accounted for 92% of the 2009 to 2010 student ages for Ontario colleges (Colleges Ontario, 2011). Due to the high number of follow-up comparisons related to academic performance challenges, Holm's sequential Bonferroni method was used to control for Type I error.

Table 2. Student Demographics.

Category	*n*	%	Contrasts	*p* (χ^2 tests)
Sex				
Males	670	34.8		
Females	1,258	65.2		
			Females > males	<.01
Age (years)				
17-25	1,104	58.4		
26-35	415	22.0		
36-45	213	11.3		
46-55	141	7.2		
>56	17	0.9		
			17-25 > 26-35	<.01
			>36-45	<.01
			>46-55	<.01
			>56+	<.01
College program				
Community services	438	22.3		
Health/emergency services	280	14.3		
Business	278	14.2		
Art and design	184	9.4		
Other programs	783	39.8		

Prevalence of Mental Illness in Students Accessing Postsecondary Counselling and Disability Services

In total, 60.8% (n = 1,195) of the 1,964 students who accessed counselling and disability services and surveyed for this study reported having a *DSM-IV-TR* mental illness diagnosis or diagnoses. Of these students, 45.5% were found to have one mental illness diagnosis and 15.3% indicated a comorbid diagnosis (i.e., having two or more *DSM-IV-TR* diagnoses concurrently). Table 3 displays the most frequently reported classifications of *DSM-IV-TR* mental illnesses for the students who reported having a diagnosis. Mood disorders were the most prevalent diagnosis (37.2%) followed by anxiety disorders (24.5%). Further examination indicated that of all students reporting diagnoses, 25.2% had two or more diagnoses with the most common combination being a mood and anxiety disorder (51.8%).

Academic Performance Challenges for Postsecondary Students With Mental Illnesses

Controlling for the effects of gender and age revealed that students who were reported to have a single or comorbid mental illness diagnosis self-reported more academic

Table 3. Specific *DSM-IV-TR* Axis 1 and Axis 2 Mental Illness Diagnoses.

Mental illness diagnoses	Frequency among surveyed students	Percentage of surveyed students
Mood disorder	444	37.2
Anxiety disorder	293	24.5
Substance abuse disorder	59	4.9
Psychotic disorder	58	4.9
Eating disorder	21	1.8
Personality disorder	19	1.6
Total	1,195	74.9[a]

Note. DSM-IV-TR = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000).
[a]25.2% (n = 301) of students were reported to have a comorbid diagnosis. Of these students, 51.8% had an anxiety and mood disorder comorbidity.

performance challenges on 7 of 11 items related to alertness/attention, memory/executive functions, and peer relationships as compared with those students without a mental illness diagnosis (Table 4). For example, a small–medium effect size discrimination (average effect size across all items = .20) was found between students with a comorbid diagnosis as compared with students with no diagnosis on the majority of academic performance items associated with alertness/attention, memory/executive functions, and peer relationship factors. A small effect size discrimination (average effect size across all items, φ = .14) was found when students with a single mental illness diagnosis were compared with students with no mental illness on these same academic performance items. Furthermore, Table 4 shows that students with a comorbid mental illness diagnosis were reported to have a greater frequency (not statistically significant) of academic performance challenges as compared with students with a single diagnosis.

Table 5 shows the specificity of academic performance challenges for the most prevalent mental illnesses (i.e., mood and anxiety diagnoses) reported in this study after controlling for the effects of gender and age. The academic challenges reported by students with mood and anxiety diagnoses formed two distinct patterns related to alertness/attention and memory/executive functions factors. Students with a mood diagnosis were reported to have significantly more academic performance challenges related to the alertness/attention factor items "lack of energy" and "frequent absences" (1.9 and 2.2 times more likely, respectively) as compared with students with an anxiety diagnosis. Conversely, students with an anxiety diagnosis were reported to have significantly greater academic performance challenges related to the memory/executive function factor items "blank on tests" and "panics regarding deadlines/tests" (2.0 and 2.1 times more likely, respectively) than students with a mood diagnosis. Finally, Table 5 shows that students with a mood diagnosis experienced more pervasive peer relationship challenges than students with an anxiety diagnosis.

Table 4. Chi-Square Analyses of Academic Performance Challenges per Disorder Classification (Adjusted for Gender and Age Effects).

	No disorder	Single disorder	Comorbid disorders	Contrasts	Pearson χ^2	*p* value (α)	Phi
Alertness and attention factor items							
Concentration difficulties	34.1[a]	43.2[a]	51.5[a]	C > N	27.62	≤.01 (.017)	.16
				S > N	14.42	≤.01 (.025)	.09
Lack of energy	12.0	22.9	26.9	C > N	35.66	≤.01 (.017)	.18
				S > N	33.90	≤.01 (.025)	.14
Frequent absences	11.4	23.6	32.6	C > N	67.16	≤.01 (.017)	.25
				S > N	41.44	≤.01 (.025)	.16
Distracted	16.8	21.1	25.9	*ns*			
Disorganized	14.4	20.2	23.6	*ns*			
Memory and executive function factor items							
Blank on tests	5.3	7.8	11.6	C > N	13.00	≤.01 (.017)	.11
Panics deadlines/tests	9.2	20.6	29.9	C > N	72.29	≤.01 (.017)	.26
				S > N	41.01	≤.01 (.025)	.16
Novel task difficulties	6.4	8.3	10.0	*ns*			
Memory problems	12.0	15.9	21.3	*ns*			
Peer relationship factor items							
Poor peer relations	7.7	16.4	21.6	C > N	40.93	≤.01 (.017)	.20
				S > N	29.30	≤.01 (.025)	.13
Socially isolated	7.4	17.6	23.9	C > N	55.60	≤01 (.017)	.23
				S > N	37.98	≤.01 (.025)	.15

Note. For all chi-square tests, *df* = 1. Phi measures of relationship: .10 small effect, .30 medium effect, and .50 large effect size. C = comorbid disorder; N = no disorder; S = single disorder; *ns* = nonsignificant.

[a]Percentage of students experiencing academic problems.

Table 5. Chi-Square Analyses of Academic Performance Challenges per Specific Mental Health Diagnoses (Adjusted for Gender and Age Effects).

	No disorder	Anxiety disorder	Mood disorder	Contrasts	Pearson χ^2	*p* value (α)	Phi
Alertness and attention factor items							
Concentration difficulties	34.1[a]	38.0[a]	47.3[a]	MD > N	20.72	≤.001 (.017)	.13
Lack of energy	12.0	15.8	30.4	MD > N	69.93	≤.001 (.017)	.23
				MD > AD	20.39	≤.001 (.025)	.17
Frequent absences	11.4	12.7	28.2	MD > N	54.29	≤.001 (.017)	.21
				MD > AD	24.60	≤.001 (.025)	.18
Distracted	16.8	18.5	21.6	*ns*			
Disorganized	14.4	15.8	21.2	*ns*			
Memory and executive function factor items							
Blank on tests	5.3	13.4	6.8	AD > N	19.55	≤.001 (.017)	.14
				AD > MD	9.03	≤.01 (.025)	.11
Panics deadlines/tests	9.2	32.5	15.3	AD > N	87.07	≤001 (.017)	.29
				AD > MD	30.29	≤.001 (.025)	.20
Novel task difficulty	6.4	7.9	7.9	*ns*			
Memory problems	12.0	16.8	15.1	*ns*			
Peer relationship factor items							
Poor peer relations	7.7	13.7	16.2	MD > N	21.33	≤.001 (.017)	.13
Socially isolated	7.4	14.7	17.3	MD > N	28.25	≤001 (.017)	.15
				AD > N	13.26	≤.001 (.025)	.11

Note. For all chi-square tests, *df* = 1. Phi measures of relationship: .10 small effect, .30 medium effect, and .50 large effect size. MD = mood disorder; N = no disorder; AD = anxiety disorder; *ns* = nonsignificant.

[a]Percentage of students experiencing academic problems.

Discussion

The current study found mood and anxiety disorders to be the two most common diagnoses reported by students accessing Ontario's college counselling and disability service offices. Combined, mood and anxiety disorders represented 61.7% of all reported diagnoses. These findings are consistent with two recent studies conducted with American and Canadian postsecondary student samples, which showed mood and anxiety disorders to be the top two disorders affecting the general postsecondary student population and a subgroup which was deemed to be languishing (American College Health Association, 2012, 2013; Keyes et al., 2012). American and Canadian college and university counsellors have asserted that the severity and complexity of problems exhibited by students seeking counselling services have risen dramatically in recent years (Buchanan, 2012; Gallagher, 2008; MacKean, 2011; Mowbray et al., 2006; Wyatt & Oswalt, 2013). The present study lends credence to such observations because one quarter (25.2%) of all students with a diagnosis accessing postsecondary counselling/disability services had a comorbid diagnosis. In addition, analyses indicate that concurrent mood and anxiety disorders represented the majority (51.8%) of all comorbid diagnoses in this college student sample.

Examination of the relationship between academic performance challenges and mental illness diagnoses in general showed that among students accessing counselling and disability services, those with a mental illness diagnosis (either a single or comorbid mental illness diagnosis) experience significantly more academic performance challenges as related to alertness/attention, memory/executive functions, and peer relationship factors than do those without a diagnosis, after controlling for the effects of gender and age. Eisenberg et al. (2009) posited that the academic performance challenges of students with a comorbid mental illness diagnosis is additive or of a greater severity than that experienced by students presenting with a single mental illness diagnosis. Findings from the current study provide partial support for the Eisenberg et al. hypothesis as a trend was apparent wherein students with dual diagnoses reported more academic performance challenges than students with a single diagnosis.

Academic performance difficulties when considered as a function of specific mental illnesses were found to form particular configurations. Postsecondary students with a mood diagnosis were found to be approximately 2 times more likely to experience alertness/attention academic challenges than postsecondary students with an anxiety diagnosis. On the contrary, students with anxiety disorders presented with a different set of academic challenges in that they were approximately 2 times more likely than students with a mood diagnosis to have memory/executive functions challenges. These differentiated sets of academic performance challenges offer evidence in support of theories postulating that the foundational academic performance difficulty for students with a mood diagnosis may be the inability to allocate attentional resources (e.g., alertness, attention) to match academic task demands (Ellis & Ashbrook, 1989). This finding also supports the thinking of Weiland-Fiedler et al. (2004) who argued that deficits in alerting attention (i.e., vigilance) are a vulnerability marker for the diagnosis of depression. The specific memory/executive functions

difficulties occurring under conditions of stress and academic demand (tests/examinations), as reported by students with an anxiety diagnosis within this study, lend support to Eysenck's processing efficiency theory (Eysenck & Calvo, 1992) and his attentional control theory (Eysenck et al., 2007). Finally, consistent with limited research, which found that adolescents with depression have poorer peer relationships than adolescents with anxiety (Gaspar de Matos, Barrett, Dadds, & Shortt, 2003), the results from the current study also found that students with a mood diagnosis experience more pervasive peer relationship difficulties than students with an anxiety diagnosis.

Clinical Implications

Results from this study documented high rates of single and comorbid mental illness diagnoses in Ontario's college students seeking counselling support services. Therefore, the profile of current day students accessing counselling services represents quite a departure from the student problems college counselling centres were called upon to support when they first appeared on the postsecondary scene; relationship problems, homesickness and worries about academic course loads are no longer the main fare (Mowbray et al., 2006). This finding has implications for the allocation and structuring of counselling services across Ontario's college campuses. For example, counselling centres would benefit from reviewing the credentialing and educational preparedness of their staff to work with the more challenging issues of today's student. Indeed, such an approach is being considered within the Canadian postsecondary education system, as a recent document released by Queen's University (2012), outlining a framework and recommendations for a comprehensive student mental health and wellness strategy, emphasizes the need for staff with significant expertise in mental health. Their Health, Counselling and Disability Services centre provides counselling, in-house psychiatry, and a mental health nurse and is considering a revised triage model to be spearheaded by an experienced nurse whose role will be pivotal in situations related to determining the urgency surrounding a student's mental distress. Similarly, MacKean (2011), after conducting a literature review and environmental scan regarding supports for the mental health and wellness within postsecondary schools, identified high-quality counselling, medical, and accommodation services as a necessary step forward.

Counselling centres might also alleviate some of the burden associated with the higher volume and more complex caseloads by strengthening their ties with local service providers such as hospitals, outpatient programs, and private practice practitioners, all of whom have licensed mental health professionals capable of offering longer term and more specialized treatment approaches than can be offered by college-based counsellors. This recommendation too has been suggested by recent Canadian and United Kingdom investigations into how to strengthen postsecondary education services for students' mental health and well-being (MacKean, 2011; Queen's University, 2012; Warwick, Maxwell, Statham, Aggleton, & Simon, 2008). The implementation of broad-based educational and preventive measures geared toward faculty, staff, and

students is another strategy for enhancing awareness of mental illnesses and making the process for connection to services transparent and common knowledge for all who are part of the college environment, not just those with immediate needs. Mental Health First Aid is one such program that meets this type of need with its provision of workshops that educate participants on the signs and symptoms of mental illnesses (Kitchener & Jorm, 2002).

This study delineated particular configurations of academic challenges as being related to specific mental illnesses, such as memory/executive functions challenges in students with anxiety-based disorders. It may therefore be worthwhile to increase the level of collaboration that occurs between academic advisors and mental health counsellors. This might be achieved through co-location of counselling services with academic/learning skills advisors, which would have the added benefit of reducing the number of visits students need to make to obtain their needed supports. A recent Canadian study by Lees and Dietsche (2012) analyzing the state of counselling services offered in Ontario colleges identified a separation within the system whereby one third of colleges used a "blended" model of services, meaning that counsellors engage in both disability counselling (where academic accommodations are facilitated for students with mental illnesses, learning disabilities, and physical disabilities) and general counselling. The remaining two thirds of colleges have adopted a "non-blended" service model wherein the two counselling functions (disability vs. general) are assigned to two different sets of counselling staff. Strengths and weakness were associated with both models and neither "side" evidenced a likelihood of modifying their practices in the immediate future. Thus, our recommendation of co-location of services would allow the combined counselling expertise to be housed within one physical setting while still engaging in distinct counselling activities. This cohabitation would help to destigmatize disability services by having it housed with counselling services that are available to all students. Ideally, co-location would also lend to more professional crossover and a better understanding of when to refer a student to general counselling from disability counselling and vice versa.

Finally, psychological practitioners, the authors of psychoeducational and psychological reports which often contain diagnoses and recommendations designed to assist students in their postsecondary careers, would benefit from knowing the unique academic challenges experienced by students with different types of mental illnesses as it will aid in the tailoring and specificity of recommendations. Academic service providers could also benefit from learning more about the unique academic challenges of students with specific mental disorders as it can guide them to use differential academic accommodations and learning strategies. For example, to circumvent alertness and attention challenges specific to mood disorders, the use of note takers or the provision of copies of lecture notes would help compensate for frequent absences from class while extra time for examinations/tests and breaking down examinations/tests into manageable parts accompanied by rest breaks could mitigate the fluctuating energy resources that often accompany depression. Conversely, students with anxiety disorders who exhibit memory/executive functions challenges would benefit from the utilization of academic coaches to help with time management difficulties with respect

to meeting deadlines and the use of memory retrieval learning strategies that are more resistant to stress (e.g., mnemonics, method of loci) to address difficulties with executive functions in evaluative settings.

Limitations and Directions for Future Research

The number of students with mental illnesses and academic performance challenges as found within this study may be an underestimate. Although participating college counselling and disability services were asked to provide full data, not all counselling and disability services personnel at each participating college contributed data, and some services were unable to provide data for all 7 months of the academic year. Also, past work has shown that the number of students seeking treatment is much less than the number who might benefit from it (Bergeron, Poirier, Fournier, Roberge, & Barrette, 2005; Zivin, Eisenberg, Gollust & Golberstein, 2009). In addition, there is a sampling bias as the data in this study represent only those students who chose to access counselling and disability services, and it is unclear how this group might differ from college students with mental illnesses who did not access these services. The method of data collection utilized in the present study was secondhand self-reports (service providers tabulated student statements postsession), which suffers from lack of verification of student statements with other more objective measures. Poor recall and social desirability biases are also associated with self-report measures, which may also have served to reduce the reported rates of mental illness within this study. Indeed, Mawani and Gilmour (2010) have found that self-report yields lower rates of mental illness than those gained through structured clinical interviews. Finally, in relation to the correction method used in data analysis to correct for Type I error, Holm's sequential Bonferroni adjustments may have yielded conservative results compared with other correction methods.

The results from this study are representative of Ontario postsecondary students enrolled in community colleges and who accessed counselling and disability services. Application of this research methodology to a sample of university students would allow for the comparison of mental illnesses and academic performance challenges across two types of postsecondary settings. Support from postsecondary faculty and staff is critical for improving the academic outcomes of students with mental illnesses (Carroll & Johnson-Brown, 1997; Cook & Solomon, 1993; Lieberman, Goldberg, & Jed, 1993). Consequently, given the high rate of mental illness documented in this study, surveying faculty and staff at postsecondary settings to determine their knowledge, beliefs/attitudes, and practices in relation to working with students who have these mental illnesses is another relevant line of investigation. In addition, in the absence of a uniform definition of academic performance challenges (i.e., academic impairment) and the possibility that academic performance challenges may have been inflated on survey responses, replication of the finding that students with mood and anxiety disorders have particular patterns of academic impairments with more objective measures—for example, GPA or classroom performance indices such as attendance and participation rates—is recommended. Finally, fine-grain analysis with respect to which symptoms of mood and anxiety disorders affect both subjective and objective measures of academic impairment is another potential area of research.

Appendix

Date: _____ **College Program** _____

Unique Student Identifier: _____ Age: _____

Male ☐ Female ☐

(A) Diagnoses	✓	Check ✓ if reason for visit	Treatment Type if known (e.g. meds, psychotherapy)	(B) Symptoms of Mental Illness/Mental Health Problems	✓
Eating Disorder Anxiety Disorder Mood Disorder Substance–Related Disorder Personality Disorder Psychotic Disorder Other (Specify):				Feels things are hopeless Feels overwhelmed by all h/she has to do Feels exhausted (not from physical activity) Feels very lonely Feels very sad Feels overwhelming anxiety Feels overwhelming anger	
(C) Academic Challenges	✓			Intentionally cut, burned, bruised, or otherwise injured him/her self.	
It is difficult for the student to maintain concentration Student tends to stay away from people at school Student is disorganized Student panics when s/he has deadlines or exams Student experiences a lot of memory problems Student is easily distracted When faced with a novel task, student is easily confused Often student does not have enough energy to complete work Student comments that s/he 'goes blank' when called upon in class/exams Student is absent from classes frequently Student has poor peer relations Other (Specify):				Voiced suicidal ideation without suicidal plan Voiced suicidal ideation with suicidal plan Past history of suicide attempt Social withdrawal Relationship issues Substance abuse issues Grief issues: Other (Specify):	

The following descriptions concern your students' **mental health problems, academic challenges, diagnoses, and treatment**. Please complete the charts with a (✓) beside all of the areas that appear to be relevant to the student you have seen.

Authors' Note

The opinions, findings, conclusions, and recommendations expressed are those of the authors and do not necessarily reflect the views of the Higher Education Quality Council of Ontario.

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Author Biographies

Alana Holmes, PhD, is the staff psychologist and manager of the Northern Ontario Assessment and Resource Centre. Her current research initiatives are designed to improve the assessment and accommodation of adults with learning disabilities and associated disorders.

Robert Silvestri, PhD, is currently a researcher with the Northern Ontario Assessment and Resource Centre. His research interests include studying the impaired cognitive mechanisms associated with learning disabilities and attention deficit/hyperactivity disorder.