Catastrophising thoughts and anxiety among University students: comparison of psychology undergraduates and medical students.

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Abstract

This study investigated whether catastrophising thoughts (cognitive dysfunction) and anxiety would be more pronounced in medical students compared with psychology undergraduates. The total participants were 528 consisting of 430 psychology undergraduate students and 98 medical students. The Zocco scale designed by Lisa Zocco (1984) and Beck Anxiety Inventory were used first to determine their reliability among this particular population. For the 16 items on the Zocco scale, Cronbach alpha of .88 was achieved but when item 4 was deleted .90 was obtained making the scale useful for clinical purposes. Similarly, the 21 item BAI scale achieved Cronbach alpha of.92 without any item deletion. On both scales, there was a statistically significant difference between the psychology students and the medical students with the psychology students reporting more catastrophising thoughts and anxiety compared with the medical students. For the BAI, there was a statistically significant difference between the males and females as a group ($t(469) = -1.98$; $p < .05$) but not on the Zocco Scale ($t(476) = -1.92$; $p > .05$). On both scales, the means for the Level 100 students were higher compared to other year groups.

Key words: Catastrophising, Cognitive dysfunction, Anxiety, Worry.

Introduction

Tertiary education is exciting but full of challenges. The desire to succeed in life and to make meaningful contribution to national and personal issues is great. This also means one has to be responsible to self and be disciplined enough to commit self to independent and group work. All this comes with worry and anxiety as the demands on time, resources, family issues and other social factors are concerned. Making new friends and maintaining those relationships can be stressful. University students are exposed to a myriad of issues in academia and social life all of which involve worry and anxiety. Students come from all levels of the socio-economic stratum but

programme of study may be perceived differently in terms of difficulty level as well as expectations from parents and the university itself. The relationship between worry and anxiety has been studied by many researchers (Eysenck & Berkum, 1992). For example, Borkovec, Robinson, Pruzinsky and DePree (1983) proposed the following definition: "Worry is a chain of thoughts and images, negatively affect-laden and relatively uncontrollable" (p. 9). If this becomes the case, then it could be seen as catastrophic thinking. In more general terms, some theorists (e.g. Eysenck, 1992; Steptoe & Kearnsley, 1990) have posited that worry is a predominant cognitive component of anxiety especially when high correlations have been found between trait anxiety and amount of time spent worrying (Borkovec et al, 1983; Tallis, Eysenck & Matthews, 1992). An important element of general anxiety disorder as indicated by the DSM-IV (1994) is excessive worry for over a period of 6 months. Excessive worry may be related to catastrophising which has been referred to as amplification of and worry about any life events with a focus on the negative aspect (Chaves & Brown, 1987).

There is a widespread concern that university and college students tend to be vulnerable to mental health problems when compared with the general population. Previous studies suggest high rates of psychological morbidity, especially depression and anxiety, among university students all over the world (Adewuya et al., 2006; Nerdrum et al., 2006; Ovuga et al., 2006; Voelker, 2003).

Medical training has been known for its expectations and rigorousness as it exacts a lot of energy from trainees aside the financial and other social pressures that it may impose. Studies conducted in the 1970s showed that medical students exhibited a lot of trait anxiety scores compared with the general population (Vontver, Irby, Rakestraw, Haddock, Prince & Stenchever, 1978; Lloyd & Miller, 1984). A medical career can be particularly stressful due to the combination of involvement with life and death and the high expectations of medicine and of doctors held by both the public and doctors themselves. Partly as a result of these pressures and the need to acquire a substantial body of knowledge and skills, medical students experience considerable anxiety at various stages in the curriculum (Arndt et al., 1986; Firth, 1986; Firth-Cozens, 1987; Kidson & Hornblow, 1982; Moss & McManus, 1992; Tooth et al., 1989). Such anxieties may result in, for example, reduced examination performance (Tooth et al., 1989), increased alcohol consumption (Firth, 1986) and attempted suicide (Warren & Wakeford, 1990). However, medical students are not the only students who are faced with academic pressures. A study conducted in South Carolina College of Medicine and comparing medical, dental, pharmacy and nursing students on the Brief Symptom Inventory (BSI) found the pharmacy students to be experiencing more psychological distress compared with the medical students (Henning, Ey & Shaw, 1998). Similarly, graduate students compared with medical students have been found to exhibit more psychological distress when assessed on the Symptom Check List- 90- Revised (SCL-90-R) (Toews, Lockyer, Dobson & Brownell, 1993). It is to be noted, however, that Toews et al's study did not indicate which programmes the graduate students were pursuing. Another study comparing medical students and law students using the Hopkins Symptom Check List (HSCL) found medical students scoring lower on the depression subscale (Kellner, Wiggins & Pathak, 1986). There is little done to ascertain whether psychology students are subject to the same mental health issues as medical students. Superficially, one would

expect psychology undergraduates to be more relaxed compared with their peers doing medicine. This study investigated whether catastrophising thoughts (cognitive dysfunction) and anxiety would be more pronounced in medical students compared with psychology undergraduates. It also investigated at which level of their programmes the cognitive distortions and anxiety be experienced the most. Males and females were also compared for counselling purposes. Lastly, the study also sought to validate the Zocco scale using the Beck Anxiety Inventory (BAI).

Methodology

Participants

The total participants were 528 made up of 430 psychology undergraduate students and 98 medical students. Of the psychology students there were 219 males and 134 females while the medical students consisted of 66 males and 66 females. All the students were selected at random and they were stratified to meet the conditions for each programme.

Instruments and procedures

The Zocco scale designed by Lisa Zocco (1984) was used. The scale was designed to assess cognitive dysfunction among phobics. It is a 5-point Likert type scale and consists of 16 questions. Response anchors ranged from "strongly disagree = 1" to "strongly agree = 5." Item 4 on the scale is reversed scored. Examples of items on the scale include "I often think about awful things that might happen to me" and "I worry about my whole life falling apart." A score of 40 or more is considered high and catastrophing (Wickramasekera) For the anxiety scale, The Beck Anxiety Inventory which is also made up of 21 items was used. Responses range from "not at all = 0" to "severely = 3." Examples of items on the scale include "fear of the worst happening" and "feeling of choking." The Zocco Scale is reported to have a coefficient alpha of 0.92.

Data analysis

The relationship between the 2 scales with respect to programme of study was determined using Pearson's correlation coefficient. Differences between the two groups of students on both scales as well as differences between males and females were determined using the independent t-test. One-way analysis of variance was used to determine the differences with respect to programme levels.

Design of study

The study involved undergraduate psychology students and medical students from Level 100 to Level 400. The total undergraduate psychology student population was 847 consisting of 578 males and 269 females. The medical student population was 198 and consisted of 132 males and 101 females. Thus our target population was 1045 students. Based on Krecjie and Morgan (1970) sampling guidelines, a sample of 545 students was required for the study. Table 1 describes the representations of students according to programme of study, programme level and sex.

Insert Table 1 about here

Proportionally, there is about 2:1 male to female ratio as a target population. The ratio of psychology students to medical students is about 4:1. From these characteristics of the population,

the sample was drawn using proportional representation for each level of study programme. The ratio for psychology students is 2:1 male to female, while for the medical students is 1:1. In Table 2, we present the sample used based on programme, level of programme and sex using their ratios.

Insert Table 2 about here

Total sample required for the study was 545 and proportionally distributed for all levels and by sex and programme to ensure equal representation.
Five hundred and twenty eight (96.88%) of the instruments were returned and the ages ranged between 18 and 47years with a mean of 23.73 (SD = 3.87). However, some of the items were either not filled in properly or not responded to at all. For example the Zocco scale had 479 appropriate responses while the BAI had 471.

Results

Internal consistency

For the 16 items on the Zocco scale, Cronbach alpha of .88 was achieved but when item 4 was deleted .90 was obtained making the scale useful for clinical purposes. Similarly, the 21 item BAI scale achieved alpha of.92 without any item deletion.
Table 3 presents the mean, standard deviations as well as median scores for the Zocco scale and BAI with respect to sex. Some of the items on both the Zocco scale and BAI were not properly filled and therefore not included in the analyses, thus reducing the total number of respondents.

Insert Table about 3 here

Using a cutoff score of $\geq$40 for catastrophising as measured by the Zocco scale, the participants appeared to perform within the normal range as suggested by Zocco (1984) (M = 31.56; SD = 8.34). On the BAI, however, the participants exceeded the cutoff point of 7 as suggested by Beck (1994) to be normal or minimal anxiety.
For the BAI, there was a statistically significant difference between the males and females as a group ($t(469) = - 1.98$; $p < .05$) but not on the Zocco Scale ($t(476) = - 1.92$; $p > .05$).

Table 4 presents the responses of BAI and the Zocco scale by programme and for all participants.

Insert Table 4 about here

On both scales, there was a statistically significant difference between the psychology students and the medical students with the psychology students reporting more catastrophising thoughts and anxiety compared with the medical students.

Using cut off scores, degrees of catastrophising (dysfunctional) thoughts by gender were computed and are represented in Table 5.

Insert Table 5 about here

Close to 43% of the participants reported catastrophising thoughts with more than a quarter of the males reporting higher scores compared to females.

Cut off scores for the BAI based on Beck's screening categories were computed and are represented in Table 6.

Insert Table 6 about here

About 47.62% (180) of psychology students compared with 35.48% (33) of the medical students reported anxiety in the moderate to severe range. For all participants, 45.23 % were reporting in the moderate to severe range of anxiety that would require further professional assessment and intervention.

Mean scores of the BAI and the Zocco were compared by programme levels and are reported in Table 7.

Insert Table 7 about here

On both scales, the means for the Level 100 students were higher compared to the other levels suggesting higher levels of anxiety and dysfunctional thoughts. However, post hoc one-way analysis of variance did not show any significant statistical difference among the groups ($F(3) = 1.480$, $p = .219$; $F(3) = 1.445$, $p = 229$) for the BAI and Zocco respectively.
Correlations between sex, age, programme, BAI and Zocco are reported in Table 8.

Insert Table 8 about here

Statistically significant but weak negative correlations were found between age and programme of study as well as levels of anxiety. The correlation between sex and age was statistically significant and fair although in the negative direction. There was a weak but significant negative correlation between the Zocco scale and the programme of study. The correlation between BAI and Zocco was moderate and significant suggesting there is a relationship between catastrophising and anxiety.

Discussion

The study investigated and compared dysfunctional thoughts (catastrophising) and anxiety among undergraduate medical and psychology students. The results indicated that the mean score for the Zocco scale for the whole group of students (combined) was within normal range by Zocco ($M = 31.56$; $SD =$

8.34) with no significant difference between males and females. However, on the BAI and as a group, their mean score was also comparable to others reported in the literature but not within the normal range as suggested by Beck (1987). In previous studies, the reported mean full scale score for the BAI for non clinical samples has ranged between 8.83 (SD = 6.92) and 18.14 (SD = 12.88) (Beck et al., 1988; Hewitt and Norton, 1993) respectively. However, Novy, Stanley, Averill and Daza (2001) reported a mean of 23 (SD =14.8) among a non-clinical sample of Hispanics. Pillay, Sargent and Dhlomo (2001) had also reported that 17.8 % of their undergraduate sample also scored in the severe range. Previous studies have indicated that females tend to score higher on the scale than males (Beck & Steer, 1993; Hewitt & Norton, 1993; Osman, et al., 1993). In a nonclinical sample study sex differences were observed with females showing more cognitive misinterpretations about the symptoms of anxiety (Armstrong & Khawaja, 2002).

With regard to programme of study, the psychology students reported higher and significant symptoms on the Zocco scale and the BAI when compared with the medical students. Thus our hypotheses were rejected and the findings support other studies that have shown greater symptom reports (Henning, Ey & Shaw, 1998; Toews, Lockyer, Dobson & Brownell, 1993; and Kellner, Wiggins & Pathak, 1986) by other students compared to medical students. Thus contrary to the perception that medical school is stressful, it may well be that other programmes are equally stressful if not more stressful than medical training. On the other hand, it could well be that medical school students are tough-minded or hardy and do not express their feelings. Gender differences with regard to cutoff points showed that more men than women were indicating catastrophising thoughts (27% vrs 16%). Thus the cultural image that men are tougher than women and have the capacity to be resilient in the face of stressful situations may not be tenable. In respect of level of programme of study, First year students were more likely to have catastrophising thoughts and anxiety symptoms compared to others. This may be expected as they are new to the university system and they have to prove their status. But it also suggests that more attention should be paid to this group of students. The study has shown that there is a good correlation between catastrophising thoughts and anxiety as suggested by many authors and thus buttressing the fact that worry could be a component of anxiety.

In conclusion, the hypothesis that psychology students may not exhibit more dysfunctional thoughts and anxiety compared to their peers in medical school was not supported. The study supports other researches that have indicated that other students from other disciplines tend to report more distressing psychological symptoms. For counselling purposes, first year university students may require more counselling input compared to others. The study has also shown that more females compared to males require anxiety intervention whereas more males are prone to catastrophising thoughts which if not dealt with appropriately may also manifest in other mental health problems.

The study should in future be more cross-sectional considering all faculties, schools and institutes within the university. It should also consider all medical schools and psychology departments within the public schools. To this extent, the outcome should cautiously be interpreted with respect to generalisability.

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Table 1

Population of students for both Psychology and Medicine

Programme	**Level**				**Sex**		
	100	**200**	**300**	**400**	**Male**	**Female**	**N**
Psychology	175	199	174	299	578	269	847
Medicine	45	54	51	48	101	97	198
Total	**220**	**253**	**225**	**374**	**679**	**366**	**1045**

Table 2

Sample of students by Sex, Level and Programme

Level	**Programme**	**Sex**		**Programme**	**Sex**	
	Psychology	**Male**	**Female**	**Medicine**	**Male**	**Female**
100	175	129 (65)	46 (23)	45	25 (16)	20 (14)
200	199	136 (68)	63 (31)	54	20 (14)	34 (22)
300	174	120 (60)	54 (27)	51	32 (20)	19 (14)
400	299	193 (96)	106 (53)	48	24 (16)	24 (16)

Note: figures in parenthesis indicate proportion sampled.

Table 3

Mean, standard deviation and median scores of All participants on the Zocco scale and the BAI

Sex	Zocco Scale			N	BAI			N
	Mean	SD	Median		Mean	SD	Median	
Male	36.05	12.56	35.0	314	15.65	11.62	14.00	308
Female	38.38	13.51	36.00	165	17.89	11.82	16.00	163
Total	**36.85**	**12.93**	**35.00**	**479**	**16.42**	**11.72**	**14.00**	**471**

Table 4

Mean scores of all participants on the Zocco and BAI according to programme of study

	BAI						ZOCCO					
Programme	Mean	SD	N	t	df	p	Mean	SD	N	t	df	p
Psychology	17.29	11.76	378				37.70	13.08	385			
Medicine	12.90	10.96	93				33.36	11.69	94			
Total	**16.42**	**11.72**	**471**	**3.26**	**469**	**.001**	**36.85**	**12.93**	**479**	**2.94**	**477**	**003**

Table 5

Mean and cut off scores for the Cognitive Dysfunctional Inventory (Zocco scale) for all the participants according to gender.

Gender	Mean	SD	Min	Max	% ≥ 40	N
Male	36.05	12.56	16	72	26.72	314
Female	38.38	13.51	16	73	15.87	165
Total	**36.85**	**12.93**	**16**	**73**	**42.59**	**479**

Table 6

Frequency and percentages of participants in the BAI classification by programme

	Minimal 0 – 7	Mild 8-15	Moderate 16-25	Severe 26-63	Total
Psychology	88	110	95	85	378
Medical	38	22	24	9	93
Frequency	126	132	119	94	471
Percent (%)	26.75	28.03	25.27	19.96	**100**

Table 7

Comparison of mean scores for the BAI and Zocco scale for all participants and by level of programme.

	BAI			ZOCCO		
Level	Mean	SD	N	Mean	SD	N
100	18.61	12.29	100	39.08	14.46	92
200	15.88	12.37	110	36.23	13.27	117
300	15.76	11.12	108	37.22	13.14	120
400	15.85	11.22	153	35.68	11.33	150
Total	16.42	11.72	471	36.86	12.93	479

Table 8

Correlations between sex, age, programme, BAI and Zocco

	Age	Sex	Programme	BAI	Zocco
Age	-				
Sex	-.21**	-			
Programme	.05	.08	-		
BAI	-.15**	.09*	-.15*	-	
Zocco	-.06	.08	.13*	.56**	-

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).