Title

Predictors of psychological distress amongst nursing students: A multicenter cross-sectional study

ABSTRACT

Undergraduate nursing students show high-stress levels. In students, stress has been linked to adverse physical and psychological health outcomes and academic and clinical demands. To date, there are few studies dealing with psychological predictors of stress amongst nursing students. This study aimed to assess psychological distress in a sample of Italian nursing students and to explore its relationship with sociodemographic and psychological factors, specifically dispositional mindfulness, emotional regulation difficulties, and empathy. A multicenter cross-sectional survey design was employed. Participants were recruited from five teaching hospitals associated with a public university in northern Italy. A sample of 622 undergraduate nursing students was recruited. Participants were recruited on campus and completed a paper-and-pencil survey. More than 70% of nursing students reported meaningful levels of psychological distress. Students with higher dispositional mindfulness scores had lower psychological distress, whereas emotional regulation difficulties and empathic personal distress were positively associated with perceived stress. No gender differences were found in stress levels, but senior students showed lower psychological distress than more junior students. Interventions aimed at increasing mindfulness facets and improving emotional regulation strategies may help to reduce perceived psychological stress in nursing students.

Key Words

Nursing students' stress; dispositional mindfulness; emotion regulation; empathy.

1. Introduction

College students exhibit high levels of stress (Leppink et al., 2016), and several studies have shown that nursing students experience higher stress than the general student population (Labrague et al., 2018a). Chronic exposure to stress has a negative impact on students' learning, and it is associated with mental and physical problems (Labrague, 2013; Strepparava et al., 2017a). High levels of stress amongst nursing students and professionals have been linked to alcoholism, drug dependence, use of illegal substances, eating and sleep disorders, suicide, and absenteeism (Deary et al., 2003; Hawton et al., 2002; Timmins and Kaliszer, 2002; Watson et al., 2008). It has been noted that stress is ubiquitous amongst nursing students regardless of their personal and sociodemographic characteristics (Labrague et al., 2017).

A recent review (Labrague et al., 2018a) reported that the two primary sources of stress for nursing students are academic (e.g., workload and study problems) and clinical problems (e.g., communication with patients and ward staff, caring for dying patients and the theory-practice gap). Clinical stressors are perceived to be more severe than academic stressors (Wolf et al., 2015) and experienced students perceived more academic stressors than novices (Jimenez et al., 2010). However, data on changes in stress levels during nursing training are inconsistent: some authors (Jimenez et al., 2010) found that stress levels did not change during nursing training, others (Edwards et al., 2010) showed that stress was highest at the beginning of the third year, still others found that stress levels decreased during nursing education (Fornés-Vives et al., 2016; Kumar, 2011). Further studies are needed to understand the trajectory of stress during nursing training. Considering gender differences, female nursing students report higher levels of stress than males (Senturk and Dogan, 2018). Male students' lower stress has been associated with their tendency to underestimate and hide their negative feelings because they perceive the expression of their emotions as evidence of weakness (Acharya, 2003).

Several studies (Pulido-Martos et al., 2012 for a review) have investigated variables that affect nursing students' stress levels. However, the psychological and dispositional characteristics of nursing students are not frequently included in the pattern of predictors of their stress levels, with the exception of personality traits (Fornés-Vives et al., 2016). In the general population, personal characteristics such as dispositional mindfulness (Coffey and Hartman, 2008), emotional regulation (Wang and Saudino, 2011), and empathic attitude (Omdahl and O'Donnell, 1999; Park et al., 2015) were reported to be associated with stress levels.

Dispositional mindfulness – defined by Kabat-Zinn (2003a; p. 143) as the capability of "paying attention on purpose in the present moment, and non-judgmentally, to the unfolding of experience moment-by-moment" – was negatively associated with daily stress levels in a sample of adolescents (Ciesla et al., 2012) and with perceived stress in a sample of adults (Prakash et al., 2015). In the healthcare context, it was found that mindfulness practices can enable nurses to cope more effectively with work-related stress and reduce the risk of burnout (Salvarani et al., 2019; Zeller and Levin, 2013), and many universities have introduced mindfulness programs to reduce students' stress levels (Burger and Lockhart, 2017). However, there is still a widespread lack of theoretical inquiry about the relationship between dispositional mindfulness and stress in nursing students.

Emotion regulation is a concept frequently involved in the study of stress. This concept underlines the individuals' ability to modulate automatically or intentionally their own emotions (Gross, 2008), and is an indicator of their capacity to cope with internal and external stressors (Compas et al., 2001). The literature reports a significant relationship between emotion regulation and coping strategies (Monteiro et al., 2014). Ehring and colleagues (2010) observed that college students who had more difficulties in emotion regulation were more prone to depression. Considering the nursing students, little is known about the relationship between difficulties in emotion regulation and psychological distress.

Another crucial aspect of work-related stress and job satisfaction in the healthcare context is empathy (Ekman and Halpern, 2015), conceptualized as the "reactions of one individual to the

observed experiences of another" (Davis, 1983; p. 113). However, the relationship between empathy and stress is controversial: empathy is considered a protective factor from burnout (Ferri et al., 2015; Thirioux et al., 2016), but also high levels of empathy have been suggested to lead to an excessive emotional involvement (Baron-Cohen, 2011; Omdahl and O'Donnell, 1999). Empathy in nursing students has been studied (for a systematic review: Levett-Jones et al., 2019), but less is known about its relationship with psychological distress. Considering medical students, cognitive empathy was found to be negatively correlated with stress levels (Park et al., 2015), whereas emotional empathy was positively associated with anxiety in interpersonal relationships (Ardenghi et al., 2019).

2. Objectives

This study investigated dispositional mindfulness facets, emotional regulation difficulties, empathy, and stress in a sample of Italian nursing students in order to: (1) assess their psychological distress, (2) explore if there were gender or experience-related differences in psychological distress, and (3) assess associations between dispositional mindfulness, emotional regulation difficulties, empathy and stress.

Accordingly, the study hypotheses were: (1) nursing students show high levels of psychological distress; (2a) female nursing students experience greater psychological distress than their male counterparts and (2b) senior nursing students have higher stress levels than junior nursing students; (3) higher scores for dispositional mindfulness are associated with lower perceived stress scores, whereas higher emotion regulation difficulties and emotional domain of empathy are associated with higher stress levels.

3. Methods

3.1 Design

This study is a multi-center cross-sectional study involving five teaching hospitals associated with the same large public university in northern Italy.

A battery of questionnaires was administered to nursing students at the beginning of the academic year. Constructs of interest were measured with paper-and-pencil versions of four reliable,

validated, widely-used instruments. A demographic questionnaire was used to collect information about nationality, gender, age, and stage of academic training. It took nearly 30 minutes to complete all questionnaires, and a researcher was always on hand while questionnaires were being completed to answer questions.

3.2 Participants and data collection

The participants were a convenience sample of undergraduate nursing students at various stages of the three-year program. 722 students were approached after a scheduled class and invited to participate in the study. The response rate was 86.15%, and the answers of 622 participants were included in the study analysis.

3.3 Ethical Considerations

The purpose, risks, and benefits concerning the research were explained to potential participants, who were also informed that their responses would be confidential and anonymous, that participation was voluntary and that they could withdraw at any point. The Ethical Committee of Milano-Bicocca University, before data collection began, approved the study. All participants signed a consent form. Participants did not receive any compensation. Researchers who administrated the questionnaires had no teaching connection with the student participants. At the end of the administration, independently by their responses, participants were informed of the availability of a free psychological counseling service for university students.

3.4 Measures

Dispositional mindfulness was measured using the Italian validated version (Giovannini et al., 2014) of the Five-Facet Mindfulness Questionnaire (FFMQ) (Baer et al., 2006), a 39 item self-report questionnaire designed to assess the five facets of dispositional mindfulness: (1) Observing (8 items); (2) Describing (8 items); (3) Acting with Awareness (8 items); (4) Non-reactivity to inner experience (7 items); (5) Non-judgment of experience (8 items). Responses to all items are given using a five-point Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true), with higher scores in each facet indicating higher levels of dispositional mindfulness. In the present study,

the five facets demonstrated good internal consistency (Observing, $\alpha = .74$; Describing, $\alpha = .88$; Acting with Awareness, $\alpha = .85$; Nonjudging, $\alpha = .80$; Nonreactivity, $\alpha = .71$).

The ability to regulate emotions was measured using the Italian validated version (Giromini et al., 2012) of the Difficulties in Emotion Regulation Scale (DERS) (Gratz and Roamer, 2004), a multi-dimensional self-report instrument composed of 36 items. Responses are given using a five-point Likert scale ranging from 1 (almost never) to 5 (almost always), with higher scores in each subscale indicating greater difficulty in regulating emotions. The measure yields six subscale scores: (1) non-*acceptance* of emotional responses (6 items); (2) difficulties engaging in *goal*-directed behavior; (5 items); (3) *impulse control* difficulties (6 items); (4) lack of emotional *awareness* (6 items); (5) limited *access* to emotional regulation strategies (8 items); (6) lack of emotional *clarity* (5 items). In this study, the DERS subscales demonstrated good Cronbach's alpha values, ranging from .73 for "lack of emotional awareness" scale to .88 for "limited access to emotional regulation strategies" scale.

The Interpersonal Reactivity Index (IRI) (Davis, 1980; Italian validated version: Albiero et al., 2006) is a multi-dimensional measure with 28 items. The questionnaire was adopted to assess the emotional and cognitive domains of empathy in terms of four factors: (1) Empathic Concern (EC) (7 items), (2) Personal Distress (PD) (7 items), (3) Fantasy (F) (7 items) and (4) Perspective Taking (PT) (7 items). Items are rated using a five-point Likert scale ranging from 0 (does not describe me well) to 4 (describes me very well), with higher scores in each dimension indicating higher empathic disposition. The four IRI dimensions' total scores demonstrated good internal consistency in our sample (EC, $\alpha = .70$; PD, $\alpha = .77$; F, $\alpha = .78$; PT, $\alpha = .77$).

Psychological distress was measured using the Italian validated version (Politi et al., 1994) of General Health Questionnaire-12 (GHQ-12) (Goldberg and Williams, 1988). The GHQ-12 consists of six positively-worded items and six negatively-worded items. Participants used a four-point Likert scale ranging from 0 (less than usual) to 3 (much more than usual) to indicate the extent to which they had experienced each stress symptom over the last month. The total score of the GHQ-12 can be

calculated by summing the 12 items. The theoretical minimum for the GHQ-12 is 0 and the maximum possible score is 36. Higher scores indicate higher perceived stress. As suggested by Goldberg and colleagues (1997), we set the clinical cut-off score at ≥ 12. In our study, the reliability coefficient for GHQ-12 total score was .79.

3.5 Data Analysis

Quantitative data were analyzed using IBM SPSS Statistics version 24 for Mac. Descriptive statistics were calculated for sample characteristics. The normality of the distributions of variables was confirmed, so parametric analyses were used to explore the data. T-test and analysis of variance (ANOVA) were run to test putative sociodemographic predictors (gender and year of study) of psychological distress. We ran three separate hierarchical multiple regression models to explore the extent to which FFMQ, DERS, and IRI scores (the predictor variables) explained the total GHQ-12 score (outcome variable; our index of psychological distress), using a two-block strategy (enter method). At Step 1 we entered the variables gender, age and year of study as a single block to control for their potential confounding effects. At Step 2, we added all of the subscale scores for the construct being examined (FFMQ, DERS or IRI). An increase in total GHQ-12 variance explained at Step 2 (ΔR^2) would mean that the inclusion of the predictor variables improved prediction of GHQ-12 score. We calculated variance in the coefficients of determination and standardized beta weights (β). Findings were considered significant at $p < .05$. Effect sizes were computed as Cohen's d and Cohen's f^2 (Cohen, 1988).

4. Results

4.1 Descriptive Statistics

The sample was evenly distributed across cohorts: 33% ($n = 205$) first years, 33.4% ($n = 208$) second years and 33.6% ($n = 209$) third years. The sample was 82.2% ($n = 511$) female and had mean age of 21.41 years ($SD = 2.91$). More than 70% of students reported a level of distress above the clinical cut-off (≥ 12) (**Table 1**).

Table 2 shows mean, standard deviation (SD), Cronbach's alpha, and Pearson's zero-order correlation coefficient between questionnaires' dimensions. Each measure was related to the others in the hypothesized direction.
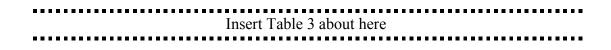
4.2 Socio-demographic comparison

For the overall sample, there was no statistically significant difference between male (M = 14.09; SD = 5.27) and female (M = 14.70; SD = 5.80) undergraduate nursing students with regard to GHQ-12 total score [$t(619) = -1.02$, $p = .307$; $d = .11$].

ANOVA showed that the effect of Year of Study was significant [$F(3,618) = 4.410$; $p = .013$; $f^2 = .02$]. Post hoc analyses using the Bonferroni post hoc criterion for significance indicated that psychological distress was significantly higher ($p = .009$, $d = .29$) in the first-year students (M = 15.46; SD = 5.54) than in the third-year students (M = 13.81; SD = 5.56).

4.3. Multiple regression analyses

The results of the regression analysis for GHQ-12 are reported in **Tables 3**, **4**, and **5**. For each regression model, Step 1 was statistically significant, but only Year of Study variable showed a significant effect on GHQ-12.

Concerning the dispositional mindfulness predictor, the entry of the FFMQ subscales scores at Step 2 yielded 19.1% of the explained GHQ-12 variance accounted for by the five predictors. Participants with higher levels of Describing ($p = .016$), Act with Awareness ($p < .001$), Nonjudging ($p < .001$) and Nonreactivity ($p < .001$) had lower levels of psychological distress (**Table 3**).

Regarding students' difficulties in emotion regulation, the entry of the DERS subscales scores at Step 2 yielded 28.8% of the explained GHQ-12 variance accounted for by the six predictors. Participants with higher levels of Goals ($p < .001$), Awareness ($p = .008$), Strategies ($p < .001$), and Clarity ($p < .001$) had higher levels of psychological distress (**Table 4**).

Insert Table 4 about here

Finally, regarding empathy and the GHQ-12, the entry of the IRI subscales scores at Step 2 yielded 8.1% of the explained GHQ-12 variance accounted for by the four predictors. Participants with higher levels of F ($p = .020$) and PD ($p < .001$) had higher levels of psychological distress (**Table 5**).

Insert Table 5 about here

5. Discussion

This study is one of the few focusing on predictors of psychological distress in undergraduate nursing students. Although students' wellbeing is related to clinical and academic performances (Labrague, 2014), little is known about the protective and risk dispositional factors that could be taken into consideration during nursing education.

5.1 Assessment of psychological distress

High levels of psychological distress were prevalent in our sample of Italian nursing students (70.9% of students reported levels above the clinical cut-off), which is consistent with international reports (McCarthy et al., 2018). A recent literature review (Turner and McCarthy, 2017) indicated

that some interventions aimed at promoting emotion regulation strategies have some significant support; however, more research is required in this area.

Other studies have shown a positive effect of psychological counseling interventions aimed at reducing students' psychological distress and improving emotion regulation skills (Murray et al., 2016; Strepparava et al., 2016), but they are not specific to the nursing students. A better knowledge of the relationship between psychological distress and emotion regulation is needed and can be acquired through studies on the efficacy of stress management intervention.

5.2 Gender and experience-related differences in psychological distress

Our results showed no difference between male and female nursing students' stress levels. This suggests that male and female Italian nursing students respond similarly to psychological distress during a nursing degree. These results appear congruent with those provided by Hamaideh and colleagues (2017). However, they are inconsistent with most of the literature: in general, females show higher levels of both academic and clinical stress than males (Senturk and Dogan, 2018). While most of the studies relied on questionnaires specifically detecting clinical and academic stress, in our study, we assessed a general level of psychological distress using a more comprehensive measure. Comparing nursing students' gender differences in stress and wellbeing using both types of measures probably could be useful to disambiguate the results. Furthermore, cultural differences may also be present (Labrague et al., 2018b).

In our study, third-year nursing students' reported lower stress than the first years. This result is in line with those found in some previous studies (Fornés-Vives et al., 2016; Kumar, 2011): nursing practice and social experiences enhance students' adaptability and their strategies to cope with the stress during the years of nursing education (Benner, 1984; Lo, 2002). Further mixed-method studies are needed to improve our understanding of how nursing students' stress evolves during their training and to explore potential differences in the trajectory of the impact of clinical and academic stressors.

5.3 Associations between dispositional mindfulness, emotional regulation difficulties, empathy and stress

We found that dispositional mindfulness, emotional regulation difficulties, and empathy contributed to variance in nursing students' stress levels, controlling for the effect of gender, age, and year of study.

The dispositional mindfulness dimensions which predicted nursing students' psychological distress were "describe", "act with awareness", "non-judgment", and "non-reactivity" facets. Our results corroborate the previous findings of a negative correlation between dispositional mindfulness and perceived stress (Ciesla et al., 2012), and show the same pattern also in a sample of nursing students. These results suggest that including evidence-based interventions grounded on mindfulness skills in academic majors could be beneficial (van der Riet et al., 2018). Mindfulness-based interventions, such as Mindfulness-Based Stress Reduction (MBSR) (Kabat-Zinn et al., 2003b), have been proposed to reduce stress, depression, fatigue and burnout in medical students (Daya and Hearn, 2018).

Another predictor of nursing students' stress was their difficulties in emotion regulation. In particular, nursing students who had difficulty in accepting their own emotions, lack of emotional awareness and clarity, and poor coping strategies, were exposed to higher levels of stress. Our results corroborate the evidence that emotion regulation is a valuable personal characteristic that plays a key role in well-being during nursing education as well as in the nursing profession (Donoso et al., 2015; Salvarani et al., 2019).

Finally, regarding the relationship between empathy and stress, our data show that among nursing students, those who were deeply involved in fictional stories, identifying themselves with fictional characters (fantasy scale), or those who described a strong feeling of uneasiness and tension in interpersonal settings (personal distress scale), were also those with higher level of stress. The positive relationship between one of the non-cognitive dimensions of empathy (personal distress scale) and the level of psychological stress, is in line with a recent study which showed that the

affective domain of empathy predicted the levels of distress in a sample of academic students (Powell, 2018). In our study, unlike previous research (Lee et al., 2003; Park et al., 2015), there was no negative relationship between the cognitive domain of empathy and stress level. However, these studies are not methodologically homogeneous with ours. Nevertheless, the debate concerning the relationship between empathy and work-related stress is heated: while some studies on professional nurses found a positive association between nurses' emotional empathy and burnout (Omdahl and O'Donnell, 1999), others have reported a negative correlation (Ferri et al., 2015).

Limitations and strengths

Some limitations of the study should be recognized. First of all, our sample was drawn from a single university and was not representative of all Italian nursing students. Secondly, this study relied exclusively on self-report measures and used a cross-sectional design; a longitudinal study would be needed to monitor the trajectory of stress during training and to assess the clinical and academic variables that contribute to psychological distress. However, our sample was recruited from five teaching hospitals in different provinces in northern Italy, and the main study variables were measured with strong, valid, reliable, and widely used tools to facilitate comparisons with other contexts where the culture, language, and nursing education curriculum are different.

6. Conclusions

Although our results showed that third-year nursing students have lower stress than first-year students, the percentage of third-year students with GHQ-12 scores above the clinical cut-off was still high (69.4%; **Table 2**). It is, therefore, necessary to reduce nursing students' stress levels. Many universities have already introduced mindfulness programs (Burger and Lockhart, 2017) to reduce students' stress levels, but there is less evidence on stress prevention in the specific context of nursing programs. Our results suggest that introducing a student-tailored program of mindfulness training could protect nursing students from stress. In view of the relatively high contribution of emotional regulation difficulties to stress, interventions such as psychological counseling (Strepparava et al.,

2016), and counseling skills training (Strepparava et al., 2017b), or narrative practices (Artioli et al., 2016) should be implemented to improve students' emotional regulation skills.

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Table 1 – Prevalence of psychological distress among nursing students (GHQ-12 scores ≥ 12)

	Female (N = 511)	Male (N = 111)	Total (N = 622)
1st year (N = 205)	124 (60.5%)	26 (12.7%)	150 (73.2%)
2nd year (N = 208)	121 (58.2%)	25 (12.0%)	146 (70.2%)
3rd year (N = 209)	121 (57.9%)	24 (11.5%)	145 (69.4%)
Total (N = 622)	366 (58.8%)	75 (12.1%)	441 (70.9%)

Table 2 – Mean, SD, and correlations between variables

	Mean	SD	1	2	3	4	5
GHQ-12	14.60	5.70	1				
Obs	25.76	5.93	-.231**	1			
Descr	31.91	5.05	-.310**	.269**	1		
ActAwa	29.92	5.57	-.350**	.320**	.450**	1	
Nonjud	27.03	5.79	-.233**	.271**	.212**	.093*	1
Nonrea	18.93	4.07	.389**	.205**	.271**	-.117**	.138**
NonAcc	13.15	5.53	.389**	.104*	-.179**	-.393**	-.309**
Goals	12.44	4.29	.411**	-.139**	-.472**	-.366**	-.542**
Imp	12.11	4.61	.390**	-.201**	-.441**	-.117**	-.307**
Awa	16.23	4.05	.125**	-.379**	....	-.124**	-.366**
Strat	16.53	6.41	.496**	-.239**	-.405**	-.507**	-.507**
Cla	13.66	1.59	.136**	-.206**	-.124**	-.084*	
F	16.03	5.44	.099*	.304**	-.129**	-.135**	
EC	19.86	4.30	.209**	.216**	.142**		
PT	18.55	4.54	-.108**	.234**	.255**	.180**	
PD	9.54	4.31	.248**	-.251**	-.356**	-.333**	

	6	7	8	9	10	11	12	13	14	15	16
6	1										
7		1									
8	-.197**		1								
9	-.258**			1							
10	-.333**	.435**			1						
11	-.111**	.536**				1					
12	-.284**	-.084*	.661**				1				
13	-.124**	.704**	.643**		.215**	.111**		1			
14	-.099*	.104*	.137**	.692**	-.182**	.096*		.406**	1		
15	.265**	.176**	-.136**	-.236**	-.273**	-.170**		.176**	.413**	1	
16	-.260**	.329**	.384**	.359**	-.297**	.403**	-.112**	.209**	.142**		1

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

GHQ-12 GHQ Total score; *Obs* Observing, *Descr* Describing, *ActAwa* Acting with Awareness, *Nonjud* Nonjudging, *Nonrea* Nonreactivity; *NonAcc* Non Acceptance, *Goals* Goal-directed behavior,

Imp Impulse Control, *Awa* Emotional Awareness, *Strat* Emotion Regulation Strategies, *Cla* Clarity;

F Fantasy, *EC* Empathic Concern, *PT* Perspective Taking, *PD* Personal Distress.

Table 3 – Hierarchical multiple regression analysis summary for dispositional mindfulness variables predicting stress levels

Steps	Variables	GHQ-12			
		$R^2 = .016*$	$R^2 = .207***$ $\Delta R^2 = .191$	95% Confidence Interval	
		β	β	Lower	Upper
1	Gender	.040		-.037	.122
	Age	-.019		-.100	.066
	Year	-.112**		-.198	-.033
2	Gender		.064	-.009	.142
	Age		.016	-.059	.092
	Year		-.102**	-.182	-.032
	Obs		.058	-.020	.135
	Descr		-.099*	-.179	-.018
	Act awa		-.186***	-.271	-.102
	Nonjud		-.214***	-.299	-.133
	Nonrea		-.156***	-.235	-.078

$F(8,613) = 19.792$; $p < .001$; $f^2 = .27$

GHQ-12 GHQ Total score; *Obs* Observing, *Descr* Describing, *ActAwa* Acting with Awareness, *Nonjud* Nonjudging, *Nonrea* Nonreactivity; *p < .05, **p < .01, p < .001***

Table 4 – Hierarchical multiple regression analysis summary for emotion dysregulation variables predicting stress levels

Steps	Variables	GHQ-12			
		$R^2 = 0.16*$	$R^2 = .304***$ $\Delta R^2 = .288$	95% Confidence Interval	
		β	β	Lower	Upper
1	Gender	.040		-.037	.122
	Age	-.019		-.100	.066
	Year	-.112**		-.198	-.033
2	Gender		.097**	.031	.165
	Age		.018	-.053	.087
	Year		-.088*	-.155	-.016
	NonAcc		.088	-.006	.184
	Goals		.186***	.092	.281
	Imp		-.046	-.150	.054
	Awa		.100**	.027	.173
	Strat		.280***	.161	.400
	Cla		.156***	.072	.237

$F(9,612) = 31.236; p < .001; f^2 = .43$

GHQ-12 GHQ Total score; *NonAcc* Non Acceptance, *Goals* Goal directed behavior, *Imp* Impulse Control, *Awa* Emotional Awareness, *Strat* Emotion Regulation Strategies, *Cla* Clarity; *p < .05, **p < .01, p < .001***

Table 5 – Hierarchical multiple regression analysis summary for empathy variables predicting stress levels

Steps	Variables	GHQ-12		
		$R^2 = .016*$	$R^2 = .097***$	95% Confidence Interval

		$\Delta R^2 = .081$			
		β	β	Lower	Upper
1	Gender	.040		-.037	.122
	Age	-.019		-.100	.066
	Year	-.112**		-.198	-.033
2	Gender		.023	-.055	.105
	Age		.022	-.057	.104
	Year		-.137**	-.224	-.066
	EC		-.087	-.180	.003
	PD		.239***	.163	.321
	F		.100*	.017	.185
	PT		-.077	-.161	.008

F(7,614) = 9.371; p < .001; f^2 = .11

GHQ-12 GHQ Total score; *EC* Empathic Concern, *PD* Personal Distress, *F* Fantasy, *PT* Perspective Taking; *p < .05, **p < .01, p < .001***