

## Studi sperimentali

# Psychopathology, personality and theory of mind in a sample of university students

## *Tratti psicopatologici, personalità e teoria della mente in un campione di studenti universitari*

PATRIZIA ZEPPEGNO<sup>1,2</sup>, CARLA GRAMAGLIA<sup>1</sup>, MARIA ANTONA<sup>1</sup>, SABRINA GILI<sup>1</sup>, SARA MARCHISIO<sup>3</sup>,  
ANDREA GOGLIANI<sup>2</sup>, DANIELA PONZETTI<sup>2</sup>, EUGENIO TORRE<sup>1,2</sup>  
E-mail: patrizia.zeppegno@med.unipmn.it

<sup>1</sup>Department of Translational Medicine, Institute of Psychiatry, Università del Piemonte Orientale Amedeo Avogadro, Novara

<sup>2</sup>Counseling Service, Università del Piemonte Orientale Amedeo Avogadro, Novara

<sup>3</sup>Quality and Appropriateness Unit, Azienda Sanitaria Locale VC, Vercelli

**SUMMARY. Objective.** To assess psychopathology, personality and theory of mind in a sample of university students, and to analyse their correlation with socio-demographic and academic factors. **Materials and methods.** Socio-demographic and academic data were collected from 228 students. They completed the Eysenck Personality Questionnaire-R, Symptom Checklist-90-R (SCL-90-R) and Theory of Mind (ToM) test. **Results.** Elevated psychological distress was found in 38.6% of students; 30.3% had an abnormal ToM score. Students with an abnormal ToM score had a significantly lower probability than those with normal ToM test to repeat an exam three times or more. Not being married and receiving psychiatric care significantly influenced the probability of repeating an exam. Abnormal ToM students had specific features as far as major and SCL-90-R scores are concerned. **Conclusions.** A correlation was found among ToM performance and some indicators of academic performance. Students with ToM scores under the cut-off reported more psychopathological symptoms and distress. Implications are discussed.

**KEY WORDS:** university, college, students, psychopathology, personality, theory of mind.

**RIASSUNTO. Scopo.** Valutare i tratti psicopatologici, la personalità e la teoria della mente in un campione di studenti universitari e analizzarne le correlazioni con variabili socio-demografiche e accademiche. **Materiali e metodi.** Sono stati raccolti i dati socio-demografici e accademici di 228 studenti del secondo anno afferenti all'Università del Piemonte Orientale Amedeo Avogadro. Gli studenti hanno completato l'Eysenck Personality Questionnaire-R, la Symptom Checklist-90-R (SCL-90-R) e il test di Teoria della Mente (ToM). **Risultati.** Il 38,6% degli studenti presentava un elevato distress psicologico; il 30,3% aveva un punteggio anomalo al test ToM. Gli studenti con un punteggio del test ToM al di sotto del cut-off avevano una probabilità significativamente inferiore di avere ripetuto un esame per 3 o più volte rispetto a quelli con una normale performance al test. Non essere sposati ed essere in cura da uno psichiatra erano fattori che influenzavano significativamente la probabilità di ripetere un esame. Gli studenti con punteggio anomalo al test ToM mostravano inoltre caratteristiche specifiche per quanto concerne facoltà frequentata e punteggi all'SCL-90-R. **Conclusioni.** Si è trovata una correlazione tra performance al test ToM e alcuni indicatori di performance accademica. Gli studenti con un punteggio del test ToM inferiore al cut-off riportavano più sintomi psicopatologici e maggiore distress. Si discutono le implicazioni cliniche.

**PAROLE CHIAVE:** università, college, studenti, psicopatologia, personalità, teoria della mente.

## INTRODUCTION

Several factors related to college life – including academic workload, competition, financial hardship, pressure to succeed and worries about the future – may represent stressors potentially leading to psychopathology<sup>1,2</sup> or to a negative impact on academic (and later) achievement and satisfaction<sup>3,4</sup>. Since healthier students are better learners<sup>5</sup> in the last years psychopathological distress and mental health problems in college students (especially anxiety, depression, self-esteem related problems) have been the focus of increasing atten-

tion<sup>6-13</sup>. Recent studies of predictors of college outcome<sup>14,15</sup> found educational constructs (academic self-efficacy, grade goal, achievement motivation and effort regulation) being the strongest predictors of college retention, compared to demographic and psychosocial contextual factors.

From a general perspective, a study performed with the Global Health Questionnaire (GHQ) to assess current mental health and recent experiences of particular symptoms or behaviours, found GHQ “cases” being less likely to complete their courses on time<sup>16</sup>. Another research has identified four stressing factors in a sample of veterinary medical students:

*Psychopathology, personality and theory of mind in a sample of university students*

academic stress, transitional stress, family-health stress, and relationship stress. All these factors impact either on students' well-being or in the areas of depression and anxiety and may be the target of mental health interventions to help increase students' resistance to environmental stressors<sup>17</sup>.

The role of personality in academic performance has been investigated<sup>18</sup> and suggestions have been made about the need to integrate research on personality and psychopathology into educational psychology<sup>19</sup>. Dispositional personality traits are assumed to exert a constant influence over performance across situations, since some of these traits are at least in part genetically mediated and relatively stable over time<sup>20-22</sup>. A recent meta-analysis found the correlation between conscientiousness and academic performance having a similar strength to that between intelligence and academic performance<sup>18</sup>. On the other hand, suggestions have been raised about the identification of two distinct sets of skills, cognitive and non-cognitive. The first are described for example by academic tests and grade point average, while the latter depend on personality variables. The overlap between the types of performance these skills can predict was minimal in a study performed in a sample of medical students, which found personality variables (conscientiousness, extraversion, empathy) predicting non-cognitive indicators (clinical evaluations, humanism nominations), but not exam performance<sup>23</sup>.

Moreover, a retrospective cohort study found that poor educational attainment predicted the onset of schizophrenia spectrum disorders and therefore suggested it could be a possible predictor for these mental disorders<sup>24</sup>. Another study classified students into four distinct groups: high/low psychopathology; high/low subjective well-being. Low psychopathology was not sufficient per se to ensure optimal school engagement, academic grades, and environmental support. To facilitate optimal educational functioning in all students, the Authors suggested that interventions should address not only significant psychopathological symptoms but also low subjective well-being<sup>25</sup>.

Except for psychological distress and personality, other psychological features of college students have not yet received as much attention, despite the evidence indicates that a more accurate prediction of academic performance may be achieved accounting for individual differences beyond past achievement and cognitive capacity. The construct of Theory of Mind (ToM) places itself in a complex and still uncertain context, halfway between cognitive skills and personal variables. ToM is variously referred to as mental state understanding, social understanding, or mentalizing; it is a hallmark ability underlying social interaction, which allows the representation of the mental states of others in terms of thinking, believing, or pretending<sup>26</sup>. There is still no definite answer to the question whether ToM is a specialized module or a combination of other cognitive skills that happen to give rise to the emergent property of understanding other minds. Therefore, it is still unclear whether ToM deficits are primary deficits, independent of deficits in intellectual/cognitive ability and executive function. Anyway, the current evidence suggests that traditional ToM tasks that use stories as stimuli are at least partially predicated on abilities in working memory, executive functioning and processing speed<sup>27</sup> and that intact neurocognitive and general intellectual ability are necessary to pass successfully ToM tasks<sup>28</sup>. To further increase

the complexity of ToM issues, independent of cognitive skills, alexithymic individuals have shown impairment in mentalizing associated with an inability to take the perspective of others<sup>29,30</sup>. The investigation of the possible correlation between ToM and academic factors may help to shed light on these questions.

Briefly, anxiety, depression or other mental health problems may be the cause or also the result of academic struggling. The early detection of vulnerable students and the identification of possible predictors of this vulnerability may be helpful directing care and support interventions. Therefore, the aim of this study was: first, to assess socio-demographic features, psychopathology, personality and theory of mind in a mixed sample of university students; and second, to analyse these variables in relation to academic factors in order to identify possible predictors of academic performance. The possible identification of correlations among the variables we investigated and of predictors of academic performance may suggest new targets for interventions to improve students' health, well-being and academic retention.

## MATERIALS AND METHODS

Participants were students attending the second year of the majors of the Università del Piemonte Orientale, recruited via intra-departmental advertisement from February 2010 to October 2010. Apart from attending the second year, no inclusion/exclusion criteria were adopted, and all the students who volunteered to participate were accepted. The project was approved by the Institutional Review Board of our University as a part of the research duties of the Counseling Service of the University. The Counseling Service of the Università del Piemonte Orientale "Amedeo Avogadro" began its activity in 1998. It was designed and structured by Eugenio Torre according to the belief about the importance of taking care of the difficulty of orientation, re-orientation and of students' psychological problems<sup>31-33</sup>.

University majors can be roughly grouped as social and human sciences (including law, economy, political sciences, liberal arts), health sciences (medicine, nursing, dental hygienist), experimental sciences (mathematics, physics, biology, pharmaceuticals). An appointment for questionnaires administration was provided in the advertisement. Participation was voluntary and did not result in any academic, monetary or other compensation. Confidentiality and anonymity of questionnaires were guaranteed. Students received instructions for each test and then were allowed about two hours to fill in the questionnaires. The researchers supervised test administration and collected the personal data sheet and the questionnaires after completion.

## Assessment

Participants were assessed with the following:

### *Personal data sheet*

Socio-demographic data were collected about gender, age, marital status, living accommodation. Information was asked about academic issues: change of major, being "out of course", having failed an exam three times or more. By "out of course" we refer to those students who have not passed all the exams within

the prescribed period of time (in our case, in their second year of university attendance). Students were also asked about referral to psychiatrists/psychologists, and about the use of psychotropic drugs.

Having not passed all the exams within the prescribed period of time and having failed an exam at least three times (or more) were considered indicators of worse academic performance.

#### *Eysenck Personality Questionnaire-Revised*

The EPQ-R<sup>34,35</sup> includes three scales that measure three major dimensions of personality: Extraversion vs. Introversion (E), Neuroticism or Emotionality (N) and Psychoticism or Tough Mindedness (P); furthermore, it includes a Lie, Dependence and Crime scale. High E individuals tend to be outgoing, impulsive, uninhibited, have many social contacts, and often take part in group activities. High N individuals show strong emotional lability and overactivity. High P individuals display tendencies to developing psychotic disorders and show a propensity towards lacking in empathy. The term psychoticism is psychiatric in nature, and to avoid the immediate conclusion that high scorers are psychologically disturbed, the more euphemistic term, tough-mindedness, is generally preferred. Pathological scores were determined according to the cut-offs (psychoticism  $\geq 9.03$ ; extraversion  $\geq 14.26$ ; neuroticism  $\geq 12.66$ ). The EPQ-R has a long tradition of application to the study of academic performance and there are theoretical and empirical reasons for proposing that each EPQ dimension is associated with academic performance<sup>36</sup>.

A recent study supported the factorial structure of the EPQ-R<sup>37</sup>. Factor loadings were all significant; correlations between latent variables were in the expected direction. All EPQ-R subscales showed satisfactory internal consistency; Cronbach's alpha for each dimension ranged from satisfactory to good. Test re-test reliability showed satisfactory coefficients<sup>37</sup>.

#### *Symptom Checklist 90-Revised*

The SCL-90-R<sup>38,39</sup> is a 90 items questionnaire rated on a five-point Likert scale. It evaluates a broad range of psychological problems and symptoms of psychopathology and includes 9 primary symptom dimensions (somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism) and 3 Global Indices. The latter include: Global Severity Index (GSI), designed to measure overall psychological distress; Positive Symptom Distress Index (PSDI), measuring the intensity of symptoms; Positive Symptom Total (PST), i.e. number of self-reported symptoms. The test is normed on 4 groups, and we considered the adult non-patient group for normative scores. The Italian version of the questionnaire showed good internal coherence for all subscales (Cronbach alpha values between 0.70 and 0.96)<sup>40</sup>.

#### *Test of Theory of Mind - Strange Stories*

The ToM - Strange Stories<sup>41,42</sup> consists of thirteen short stories describing social and family situations. For each short story, the participant is asked to describe why the protagonist behaved in a certain manner. The test measures the participants' ability to put themselves in another one's shoes and to understand and describe the other's mental state. The cut-off score (ToM= 11) was used to discriminate abnormal ( $<11$ ) and normal ( $>11$ ) ToM. The test shows good internal consistency (Cronbach's alpha= .85)<sup>43</sup>.

#### **Statistical analysis**

Data analyses were performed with STATA 11 software<sup>44</sup>.

The possible association between academic performance and self-administered questionnaires was investigated with the Chi-square test. A value of  $p < 0.05$  was considered significant. Statistically significant results were further analyzed with a stepwise forward logistic regression. Confounding variables (gender, marital status, psychotropic drugs use, psychiatric support, change of major) were accounted for and included in the model. To assess the validity of the statistical model used, the standard diagnostic tests were performed, including the Hosmer-Lemeshow test and C statistics. Statistical significance was defined by a p value  $< 0.05$  (two-tailed).

#### **RESULTS**

Two-hundred and twenty-eight students out of the 431 attending the second year volunteered to participate. Details about the major attended can be found in Figure 1.

Mean age of participants was 21.4 years ( $\pm 3.5$ ), with a minimum age of participants of 19 and a maximum of 48 years. Most participants were females (75.9%), unmarried (97.4%;  $p = 0.049$ ), living with their families (86%). See Table 1 for socio-demographic data.

As far as psychological/psychopathological issues as described in the data sheet are concerned, 7.5% of the sample ( $N = 17$ ) were taking psychotropic medication (mainly anxiolytics), and 10.1% ( $N = 23$ ) were receiving psychiatric support. As far as academic variables are concerned, only 7 out of the 228 students assessed (3.1%) reported having not passed all the exams within the prescribed period of time and 62 (27.2%) had failed an exam at least three times. Table 2 reports the rate of subjects with "abnormal" scores on the self-administered questionnaires, i.e. scoring above the cut-off on the EPQ-R and SCL-90-R and under the cut-off of the test of ToM, as described above.

The analysis of the possible association between academic performance and self-administered questionnaires yielded no statistically significant result as far as having not passed all the exams within the prescribed period of time is concerned, while a correlation was found between having failed an exam at least three times and ToM test ( $p = .012$ ).

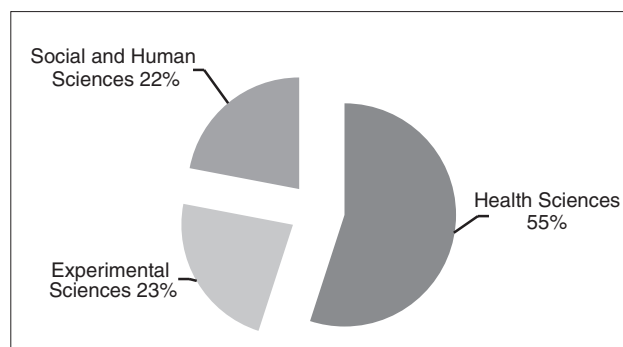


Figure 1. Sample description: major attended by participants.

*Psychopathology, personality and theory of mind in a sample of university students***Table 1. Sample description: socio-demographic variables in study by number and percentage**

	Variable	N	%
Gender	Male	55	24.1
	Female	173	75.9
Age (categorical)	<20 years	120	52.6
	20-25 years	96	42.1
	26-30 years	5	2.2
	31-35 years	2	0.9
	>36 years	5	2.2
Marital status	Single	222	97.4
	Married	6	2.6
Living accommodation	Family	196	86
	Alone	4	1.7
	Boarding	2	0.9
	Cohabitation with other students	20	8.8
	Husband/wife	6	2.6

**Table 2. Questionnaire scores: mean scores obtained on EPQ-R, SCL-90-R, and ToM**

Questionnaire	N	%
<b>EPQ-R</b>		
Psychoticism $\geq 9.03$	55	24.1
Extraversion $\geq 14.26$	111	48.7
Neuroticism $\geq 12.66$	103	45.2
<b>SCL-90-R</b>		
GSI $\geq 0.31$ (mean)	169	74.1
GSI $\geq 0.62$ (mean+SD)	88	38.6
PSDI $\geq 1.32$ (mean)	115	50.4
PSDI $\geq 1.74$ (mean+SD)	46	20.2
PST $\geq 19.29$ (mean)	180	78.9
PST $\geq 34.77$ (mean+SD)	110	48.2
<b>ToM</b>		
<11	69	30.3

The statistical significance of this correlation was further tested with a univariate analysis (OR=.40; standard error=.15;  $z=-2.46$ ; CI95%= 0.19-0.83;  $p=.0093$ ), suggesting that students with an abnormal ToM test score have a significantly lower probability than those with ToM test scores within the normal range to try an exam three times or more.

The multivariate analysis including possible confounding factors as described in the methods section is statistically significant ( $p=.0042$ ) (Table 3). The association between ToM test score and having failed an exam more than three times which emerged from the univariate analysis is confirmed (OR=0.46; CI95%=0.22-0.97;  $p=.042$ ). Moreover, other variables were found to significantly influence the probability of repeating an exam, including: not being married, as a protec-

tive factor (OR=0.17; CI95%=0.03-0.99;  $p=.049$ ); receiving psychiatric care, as a risk factor (OR=3.97; CI95%=1.54-10.26;  $p=.004$ ).

According to the results concerning ToM, we further analyzed the population of students with an abnormal ToM test score. Students in the abnormal ToM group were mainly females (71% vs 29% males). Their mean age was 21.14 years ( $\pm 3.9$ ); most of them were <20 years (65.22%) or aged between 21 and 25 years (31.88%). All except one student were single. The great majority was living with their family of origin (87%). 34.8% of these students were attending health sciences majors, 37.7% were attending experimental sciences majors, and the remaining 27.5% human sciences majors.

Four of them (5.8%) were taking anxiolytic medication and 5 of them (7.2%) had received psychiatric support. 95.6% of these students passed the exams within the prescribed period of time. Table 4 describes the subgroup of students scoring under the ToM cut-off (<11) as regards "abnormal" scores on the other self-administered questionnaires, i.e. scoring above the cut-off on the EPQ-R and SCL-90-R.

The Chi-square comparison of students with a pathologic and a normal ToM test score, respectively, highlighted differences as far as major, SCL-90-R GSI (mean + DS) and PST (mean + DS) are concerned. With more detail, students with an abnormal ToM test score are more likely to attend social/human sciences (26.1% vs. 17.6%) and experimental sciences majors (39.1% vs. 18.2%) and less likely to attend health sciences majors (34.8% vs. 64.2%) ( $p<.000$ ). Students with an abnormal ToM test had a GSI score above the cut-off in 50.7% of cases vs. 33.3% of students with a normal ToM ( $p=.013$ ). Moreover, differences were found between the two groups of abnormal/normal ToM students concerning a PST score above the cut-off: 59.4% vs. 43.4% ( $p=.026$ ).

## DISCUSSION

Two-hundred and twenty-eight students volunteered to participate, out of the 431 attending the second year. Despite the advertisement was directed to all second year students of the Università del Piemonte Orientale, a significant rate of respondents were students from health sciences majors (55%). The remaining 45% of students were almost equally distributed between experimental (23%) and social/human sciences (22%). Although this consideration is exclusively based on our empirical experience, this is likely due to the fact that students from health science majors are more used and cooperative to surveys like the one we performed. Moreover, while students from health science majors usually attend lessons regularly because of compulsory attendance, students from other majors may be less regular in university attendance and less available to come specifically to take part in a research project.

Socio-demographic and marital status data are in line with our expectations considering the mean age of the sample. Concerning living accommodation, 86% of students were living with their families; it should be considered that in Italy (and in other European Countries, e.g. Spain)<sup>9</sup> it is more usual for university students to be financially dependent and to live with their parents than in college facilities, differently from the United States.



Zeppegno P et al.

Table 3. Multivariate analysis. Risk factors for having failed an exam more than 3 times: ToM test score and related factors (p=0.0042)

Variables	Crude OR	95% CI	p	Adjusted OR	95% CI	p
ToM test						
≥11	Ref	—	—	Ref	—	—
<11	0.40	(0.19- 0.83)	0.014	0.46	(0.22-0.97)	0.042
Gender						
Female	—	—	—	Ref	—	—
Male	—	—	—	0.89	(0.41-1.90)	0.758
Marital status						
Married	—	—	—	Ref	—	—
Single	—	—	—	0.17	(0.03-0.99)	0.049
Faculty change						
No	—	—	—	Ref	—	—
Yes	—	—	—	0.87	(0.37-2.00)	0.740
Psychiatric support						
No	—	—	—	Ref	—	—
Yes	—	—	—	3.97	(1.54-10.26)	0.004
Psychotropic drugs						
No	—	—	—	Ref	—	—
Yes	—	—	—	0.85	(0.27-2.70)	0.787

Table 4. Questionnaire scores of the students scoring above ToM cut-off (N=69)

Questionnaire	N	%
EPQ-R		
Psychoticism ≥9.03	17	24.6
Extraversion ≥14.26	36	52.2
Neuroticism ≥12.66	32	46.4
SCL-90-R		
GSI ≥0.31 (mean)	55	79.7
GSI ≥0.62 (mean+SD)	35	50.7
PSDI ≥1.32 (mean)	40	57.9
PSDI ≥1.74 (mean+SD)	17	24.6
PST ≥19.29 (mean)	55	79.7
PST ≥34.77 (mean+SD)	41	59.4

Concerning psychotropic drug use and psychiatric support, our results are consistent with data in literature. McCabe et al.<sup>45</sup> found undergraduate students reporting rates of

medically prescribed use of sedative or anxiety medication and sleeping medication both of 3%; a recent investigation of mental health service utilization among college students in the United States<sup>4</sup> found that of those students with an apparent mental health problem (32% of the weighted sample), 36% received any treatment in the previous year (i.e. about 11% of the overall sample).

The self-administered questionnaires yielded the following results. As far as the SCL-90-R is concerned, 38.6% of students scored above the cut-off (mean + SD) of the GSI, suggesting an elevated overall psychological distress. This result is consistent with studies performed in other Countries<sup>7-9</sup>. Students with a number of self-reported symptoms (PST) and a PSDI above the cut-off (mean + SD) were 48.2% and 20.2% of the sample, respectively.

The EPQ-R yielded the following results: the rate of scorers above the cut-off was 24.1% for psychoticism, 48.7% for extraversion and 45.2% for neuroticism. There is a long tradition of applying the EPQ in academic settings. High neuroticism can negatively affect performance on examinations because of its association with higher anxiety and test anxiety<sup>46</sup>. Students high in neuroticism may be more likely not to attend examinations<sup>47</sup>. On the other hand, high extraversion may lead to premature cognitive decision or to greater distraction from learning, since more extravert students show greater sociability and activity levels<sup>15,48</sup>, and this may influ-

*Psychopathology, personality and theory of mind in a sample of university students*

ence students' efforts as far as academic tasks are concerned<sup>49</sup>.

Last, as far as the ToM test is concerned, in this sample it is not surprising to find students with different performances (30.3% score <11), reflecting the ToM abilities observed in the community<sup>50</sup>.

In this study we were unable to find any significant correlation among EPQ scales and the academic indicators we assessed. Moreover, we did not find any association between academic performance and the other self-administered questionnaires (SCL-90-R, ToM Test) as far as having not passed all the exams within the prescribed period of time is concerned. Some issues should be considered to understand this lack of significant associations between self-administered questionnaires and academic indicators. First, the number of students who had not passed all the exams within the prescribed period of time is very small. Second, self-administered questionnaires can underestimate psychopathology. Thirdly, the academic indicators we adopted do not allow the comparison with other indicators of academic performance as the Grade Point Average, for example. Moreover, concerning the Eysenckian scales, it has recently been argued that although there are theoretical and empirical reasons for proposing that each dimension of the Eysenckian model of personality is associated with academic performance, these scales prove only modest statistical predictors<sup>36</sup>.

On the other hand, interestingly, a correlation was found between the academic indicator of having failed an exam at least three times and ToM test ( $p=.012$ ). With more detail, the univariate and multivariate analyses testing this correlation found students with an abnormal ToM test score (<11) having a significantly lower probability than those with ToM test scores within the normal range to repeat an exam three times or more; other variables significantly influencing the probability to repeat an exam at least three times included not being married (protective factor) and receiving psychiatric care (risk factor, three-fold increase in the probability of failing an exam three times or more).

Not being married emerged from the multivariate analysis as protective factor; despite the small number of married students limits the generalizability of findings, it is likely that married students have more problems, duties and responsibility in their everyday lives, which impact on their academic achievement. On the contrary, receiving psychiatric care was found to be a risk factor for repeating an exam at least three times. We hypothesize that if a student is currently receiving psychiatric care he is likely to have clinically relevant psychiatric symptoms. Anxiety, depression, hopelessness are widely acknowledged to impact on academic satisfaction and performance. For example, moderate or severe levels of hopelessness have been found in 13.9% of a sample of Spanish university students<sup>51</sup>, with an impact on students' satisfaction with university life and on their likelihood to go to examinations. It should be considered that in our sample, 38.6% of students had GSI scores which suggested an elevated overall psychological distress, despite no significant association was found between academic performance indicators and the SCL-90-R.

Concerning the result about ToM test, it is new and intriguing, considering also the many questions which still surround ToM issues, including that it is still unclear whether ToM deficits are primary or depend somehow on deficits in intellectual/cognitive ability and executive function. Since

the test measures the participants' ability to put themselves in another one's shoes and to understand others' mental state, our results suggest that the more a student is able to do these, the more likely he is to have to repeat an exam. On the contrary, the more a student has difficulties in understanding others' mental states, the more he is likely to be academically performing, as far as the indicator we used is concerned.

With more detail, the analyses performed on the subgroup of abnormal ToM students did not show significant differences with the overall sample and the subgroup of students with a normal ToM performance in socio-demographic variables. Students with a ToM test score <11 are mainly females, living with their families of origin, single. Anyway, differences were found between students with an abnormal and normal ToM performance concerning major and SCL-90-R scores. A subgroup of students emerged, with some specific features beyond an abnormal ToM score. These students were more likely to attend social/human and experimental sciences majors and less likely to attend health sciences majors. Moreover, they were more likely to report overall psychological distress (SCL-90-R GSI score) and self-report symptoms (SCL-90-R PST score). Therefore it is likely that, although not struggling academically, these students may be at risk of struggling for their psychological well-being.

To our knowledge, this is the first study using the ToM test this way, therefore our results can not be compared with similar findings. Anyway, some preliminary hypotheses can be suggested. A good performance on the ToM may be helpful as far as empathic skills are concerned, but may render students more distracted from their academic goals and duties. This is similar to what described for extraversion, which may lead to greater distraction from learning, as a consequence of the greater sociability and activity levels shown by more extravert students<sup>48,49</sup>. On the contrary, less ToM skills may allow students to be more focused on study, less distracted or emotionally involved by what/who surrounds them. According to our results, which are preliminary and should be considered with caution, ToM deficits seem to be primary and independent of cognitive ability. Further studies should investigate whether they are more likely to be related to an alexithymic dimension.

## LIMITATIONS

Some limitations need to be underscored. Concerning sample selection, we recruited students from just one University and did not use a stratified random sampling, but included all the second year students who volunteered to participate. On the other hand, we tried to involve students from a wide range of fields, including social and human sciences, health sciences and experimental sciences. Despite this effort, the sample is unbalanced concerning majors (more than half of participants are attending health sciences majors). Moreover, as this study included only volunteers, data from students who did not accept to take part in the research were not available to us. Anyway, it should be underscored that participation rate was high (more than half of second year students volunteered to participate).

The generalization and comparability of the results is limited, first of all because of the features of the existing literature – most studies have been performed in samples recruit-

ed from just one university, or from a restricted range of fields (mostly medicine). Second, to our knowledge this is the first study assessing ToM specifically in a sample of university students, with the aim of investigating its possible association with academic performance. Thirdly, indicators as cumulative grade point average and number of exams were not available to us.

## CONCLUSIONS

Consistently with the current literature, we found an elevated overall psychological distress in the sample we studied (38.6% scoring above the cut-off [mean + SD] of the GSI; this rate rises to 74.1% when considering the mean value of the GSI as cut-off). A significant discrepancy emerges, consistently with other studies<sup>52</sup> between the rate of students with elevated psychological distress and that of students actually receiving psychiatric support.

On the contrary, in the studied sample we failed to find significant correlations between psychopathological (SCL-90-R) and personality (EPQ) features and indicators of academic performance (having passed or not all the exams within the prescribed period of time; having failed an exam three times or more).

Evidence indicates that a more accurate prediction of academic performance may be achieved accounting for a variety of individual differences, and not just past achievement and cognitive capacity. From this point of view, our choice to assess ToM is innovative and may add to the current literature. Our findings suggest that students performing worse on the ToM test have a decreased probability to fail an exam three times or more. Although these findings should be considered preliminary and further studies are needed to support them, it is likely that a good performance on the ToM may be helpful as far as empathy and relational skills are concerned, but may distract students from learning<sup>15,48,49</sup>. Although students with an abnormal ToM test perform better on one of the academic indicators we considered, it is more likely that they report an overall psychological distress or psychopathological symptoms than those with a normal ToM test.

Suggestions have been made about the importance to ascertain how developmentally prepared students are when they arrive on the college campus<sup>53</sup>, both as learners and individuals. As a consequence, two target populations who might benefit from counseling interventions can be distinguished<sup>54</sup>, which is confirmed by the clinical experience of our Counseling Service as well: students who are struggling academically and those who are not in academic difficulty but are more psychologically distressed and concerned about issues related to the “existential” changes due to their role as university students<sup>33,55-58</sup>.

The abnormal ToM subgroup of students we identified belongs to this second category. Our findings, although preliminary, highlight the existence of a population of students whose good academic performance is significantly correlated with potential emotional difficulties (as suggested by an abnormal ToM score) and psychological distress (as suggested by SCL-90-R GSI and PST scores). If these results were further supported, a subgroup of students might be identified, who lack achievement difficulties but are at risk of psycho-

logical distress and coping difficulties and should benefit from a specific, targeted intervention.

## REFERENCES

1. Hunt J, Eisenberg D. Mental health problems and help-seeking behaviour among college students. *J Adolesc Health* 2010; 46: 3-10.
2. Tosevski DL, Milovancevic MP, Gajic SD. Personality and psychopathology of university students. *Curr Opin Psychiatry* 2010; 23: 48-52.
3. Patel V, Flisher AJ, Hetrick S, McGorry P. Mental health of young people: a global public-health challenge. *Lancet* 2007; 369: 1302-13.
4. Eisenberg D, Golberstein E, Gollust SE. Help-seeking and access to mental health care in a university student population. *Med Care* 2007; 45: 594-601.
5. Basch CE. Healthier students are better learners: a missing link in school reforms to close the achievement gap. *J Sch Health* 2011; 81: 593-8.
6. Verger P, Combes JB, Kovess-Masfety V, et al. Psychological distress in first year university students: socioeconomic and academic stressors, mastery and social support in young men and women. *Soc Psychiatry and Psychiatr Epidemiol* 2009; 44: 643-50.
7. Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among US and Canadian medical students. *Acad Med* 2006; 81: 354-73.
8. Dahlin M, Joneborg N, Runeson B. Stress and depression among medical students: a cross sectional study. *Med Educ* 2005; 39: 594-604.
9. Vázquez FL, Otero P, Diaz O. Psychological distress and related factors in female college students. *J Am Coll Health* 2012; 60: 219-25.
10. Reyes-Rodríguez ML, Rivera-Medina CL, Cámara-Fuentes L, Suárez-Torres A, Bernal G. Depression symptoms and stressful life events among college students in Puerto Rico. *J Affect Disord* 2013; 145: 324-30.
11. Jafari N, Loghmani A, Montazeri A. Mental health of medical students in different levels of training. *Int J Prev Med* 2012; 3: S107-12.
12. Dix KL, Slee PT, Lawson MJ, Keeves JP. Implementation quality of whole-school mental health promotion and students' academic performance. *Child Adolesc Ment Health* 2012; 17: 45-51.
13. Zepegno P, Chieppa N, Gogliani A, Usai C, Torre E. Il Servizio di Counseling dell'Università del Piemonte Orientale A. Avogadro: sei anni di attività. IV Convegno Nazionale Counseling Universitario, Varese 2005.
14. Robbins SB, Lauver K, Le H, Davis D, Langley R, Carlstrom A. Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychol Bull* 2004; 130: 261-88.
15. Richardson M, Abraham C, Bond R. Psychological correlates of university students' academic performance: a systematic review and meta-analysis. *Psychol Bull* 2012; 138: 353-87.
16. James D, Yates J, Ferguson E. Can the 12-item general health questionnaire be used to identify medical students who might 'struggle' on the medical course? A prospective study on two cohorts. *BMC Med Educ* 2013; 13: 48.
17. Reisbig AM, Danielson JA, Wu TF, et al. A study of depression and anxiety, general health, and academic performance in three cohorts of veterinary medical students across the first three semesters of veterinary school. *J Vet Med Educ* 2012; 39: 341-58.
18. Poropat AE. A meta-analysis of the five-factor model of personality and academic performance. *Psychol Bull* 2009; 135: 322-38.

*Psychopathology, personality and theory of mind in a sample of university students*

19. Shahar G, Henrich CC, Winokur A, Blatt SJ, Kuperminc GP, Leadbeater BJ. Self-criticism and depressive symptomatology interact to predict middle school academic achievement. *J Clin Psychol* 2006; 62: 147-55.
20. Cloninger CR. A unified biosocial theory of personality and its role in the development of anxiety-states. *Psychiatr Dev* 1986; 4: 167-226.
21. Cloninger CR, Svrakic DM, Przybeck TR. A psychobiological model of temperament and character. *Arch Gen Psychiatry* 1993; 50: 975-90.
22. Verweij KJH, Zietsch BP, Medland ES, et al. A genome-wide association study of Cloninger's Temperament scales: implications for the evolutionary genetics of personality. *Biol Psychol* 2010; 85: 306-17.
23. Haight SJ, Chibnall JT, Schindler DL, Slavin SJ. Associations of medical student personality and health/wellness characteristics with their medical school performance across the curriculum. *Acad Med* 2012; 87: 476-85.
24. Chong SA, Subramaniam M, Lee IM, et al. Academic attainment: a predictor of psychiatric disorders? *Soc Psychiatry and Psychiatr Epidemiol* 2009; 44: 999-1004.
25. Antaramian SP, Scott Huebner E, Hills KJ, Valois RF. A dual-factor model of mental health: toward a more comprehensive understanding of youth functioning. *Am J Orthopsychiatry* 2010; 80: 462-72.
26. Brüne M, Brüne-Cohrs U. Theory of mind-evolution, ontogeny, brain mechanisms and psychopathology. *Neurosci Biobehav Rev* 2006; 30: 437-55.
27. Moran JM. Lifespan development: the effects of typical aging on theory of mind. *Behav Brain Res* 2013; 237: 32-40.
28. Pentaraki AD, Stefanis NC, Stahl D, et al. Theory of Mind as a potential trait marker of schizophrenia: a family study. *Cogn Neuropsychiatry* 2012; 17: 64-89.
29. Moriguchi Y, Ohnishi T, Lane RD, et al. Impaired self-awareness and theory of mind: and fMRI study of mentalizing in alexithymia. *Neuroimage* 2006; 32: 1472-82.
30. Mazza M, Pollice R, Pacitti F, et al. New evidence in theory of mind deficits in subjects with chronic schizophrenia and first episode: correlation with symptoms, neurocognition and social function. *Riv Psichiatr* 2012; 47: 327-36.
31. Torre E. Un anno di attività del Servizio di Counseling: struttura, premesse e primi risultati. Giornata di studio "Servizi di Consultazione Psicologica per gli Studenti Universitari: esperienze a confronto", L'Aquila 1999.
32. Torre E, Artioli F, Ponzetti D, Rudoni M, Usai C, Zeppegno P. Il Counseling come modalità di intervento nelle relazioni d'aiuto. *Giornale Italiano di Psicopatologia* 1999; 5: 201.
33. Torre E, Gogliani A, Chieppa N, Zeppegno P. Il Servizio di Counseling dell'UPO. Dalle problematiche psicologiche all'orientamento e al riorientamento. XI Congresso Nazionale "Orientamento alla scelta: ricerche formazione applicazioni", Padova 2010.
34. Eysenck HJ, Eysenck SBG. Manual of the Eysenck Personality Questionnaire. London: Hodder and Stoughton, 1975.
35. Dazzi C, Pedrabissi L, Santinello M (eds). EPQ-R. Eysenck Personality Questionnaire-Riveduto. La nuova versione per adulti del test di Eysenck. Firenze: Giunti Organizzazioni Speciali, 2004.
36. Poropat AE. The Eysenckian personality factors and their correlations with academic performance. *Br J Educ Psychol* 2011; 81: 41-58.
37. Dazzi C. The Eysenck personality questionnaire-revised (EPQ-R): a confirmation of the factorial structure in the Italian context. *Pers Individ Dif* 2011; 50: 790-4.
38. Derogatis LR. The SCL-90-R: Administration, Scoring and Procedures manual (3rd edition). Minneapolis, MN: National Computer Systems, 1994.
39. Sarno I, Preti E, Prunas A, Madeddu F (eds). SCL-90-R. Symptom Checklist-90-R. Firenze: Giunti Organizzazioni Speciali, 2011.
40. Prunas A, Sarno I, Preti E, Madeddu F, Perugini M. Psychometric properties of the Italian version of the SCL 90-R: a study on a large community sample. *Eur Psychiatry* 2012; 27: 591-7.
41. Happé FG. An advanced test of theory of mind: understanding of story characters' thoughts and feelings by able autistic, mentally handicapped, and normal children and adults. *J Autism Dev Disord* 1994; 24: 129-54.
42. Mazzola V, Camaioni L (eds). Strane Storie: versione italiana. Roma: Università "La Sapienza", 2002.
43. Dyck M, Ferguson K, Shochet I. Do autism spectrum disorders differ from each other and from non-spectrum disorders on emotion recognition tests? *Eur Child Adolesc Psychiatry* 2001; 10: 105-16.
44. StataCorp. Stata Statistical Software: Release 11. College Station, TX: StataCorp LP, 2009.
45. McCabe SE, Boyd CJ, Teter CJ. Medical use, illicit use, and diversion of abuseable prescription drugs. *J Am Coll Health* 2006; 54: 269-78.
46. Steel P, Brothen T, Wambach C. Procrastination and personality, performance, and mood. *Pers Individ Dif* 2001; 30: 95-106.
47. Chamorro-Premuzic T, Furnham A. Neuroticism and "special treatment" in examinations. *Soc Behav Personal* 2002; 30: 807-11.
48. Rolfhus EL, Ackerman PL. Assessing individual differences in knowledge: knowledge structures and traits. *J Educ Psychol* 1999; 91: 511-26.
49. Bidjerano T, Dai DY. The relationship between the Big-Five model of personality and self-regulated learning strategies. *Learn Individ Differ* 2007; 17: 69-81.
50. Baron-Cohen S, Wheelwright S, Skinner R, Martin J, Clubley E. The autism-spectrum quotient (AQ): evidence from Asperger syndrome/high-functioning autism, males and females, scientists and mathematicians. *J Autism Dev Disord* 2001; 31: 5-17.
51. Viñas Poch F, Villar E, Caparros B, Juan J, Cornella M, Perez I. Feelings of hopelessness in a Spanish university population – descriptive analysis and its relationship to adapting to university, depressive symptomatology and suicidal ideation. *Soc Psychiatry and Psychiatr Epidemiol* 2004; 39: 326-34.
52. Eisenberg D, Hunt J, Speer N, Zivin K. Mental health service utilization among college students in the United States. *J Nerv Ment Dis* 2011; 199: 301-8.
53. Kelly JT, Kendrick MM, Newgent RA, Lucas CJ. Strategies for student transition to college: a proactive approach. *College Student Journal* 2007; 41: 1021-35.
54. Gerdes H, Mallinckrodt B. Emotional, social, and academic adjustment of college students: a longitudinal study of retention. *J Couns Dev* 1994; 72: 281-8.
55. Torre E, Chieppa N, Gogliani A, Usai C, Zeppegno P. La motivazione della richiesta di aiuto rivolta al Servizio di Counseling. II Congresso Nazionale sul Counseling Universitario "Counseling, Tutorato, Formazione: la complessità degli interventi nelle relazioni d'aiuto", Novara 2003.
56. Torre E, Chieppa N, Crini F, Usai C, Zeppegno P. Counseling o psicoterapia? Tra le pieghe dell'intervento di counseling: riflessioni teoriche a partire dall'analisi di alcuni casi. Convegno "Ridefinirsi nell'esperienza: lo psicologo clinico nel counseling con studenti universitari", Milano 2002.
57. Zeppegno P, Crini F, Imperatori F, Torre E. Riflessioni sul concetto di normalità all'interno del processo di valutazione in un Servizio di Counseling universitario. VI Congresso SOPSI "Psichiatria: il suo presente, il suo futuro", Roma 2001.
58. Lia C, Lai E, Gallo V, Cavaggioni G. Characteristics of a population of medical students reported to the University Student Counseling Service "Fatti vivo!". *Riv Psichiatr* 2013; 48: 162-8.