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3 **Emotional Intelligence, A predictor of undergraduate student's**
4 **academic achievement in altered living conditions**

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6 **Sundus Tariq¹, Saba Tariq², Komal Atta³, Rehana Rehman⁴, Zaima Ali⁵**

7 **1** Department of Physiology, University Medical Dental College, The University of
8 Faisalabad, Pakistan; **2** Department of Pharmacology and Therapeutics, University Medical
9 Dental College, The University of Faisalabad, Pakistan; **3** Department of Optometry, The
10 University of Faisalabad, Pakistan; **4** Department of Biological Biomedical Sciences, Aga
11 Khan University, Karachi, Pakistan; **5** Department of Physiology, Lahore Medical and Dental
12 College, Lahore, Pakistan

13 **Correspondence:** Sundus Tariq. **Email:** dr.sundustariq@gmail.com

14
15 **Abstract**

16 **Objective:** To compare the impact of trait emotional intelligence between
17 students of different faculties and associated factors.

18 **Methods:** the cross-sectional analytical study was conducted from August 2016
19 to March 2017 at the University of Faisalabad, Faisalabad, Pakistan, and
20 comprised trait undergraduate students, both boarders and day scholars, from
21 seven different faculties. Data was collected using the trait emotional
22 intelligence questionnaire–short form. Student's yearly test scores were
23 obtained as a measure of academic achievement. Data was analysed using SPSS
24 20.

25 **Results:** Of the 498 students, 109(21.9%) were studying medicine, 56(11.2%)
26 dental sciences, 76(15.2%) optometry, 83(16.6%) nutrition and dietetics,
27 109(21.9%) physiotherapy, 35(7%) pharmacy, and 30(6%) social sciences. The
28 overall mean age was 19.84±1.30 years. There were 210(42.2%) boarders

29 compared to 288(57.8%) day scholars. There was significant difference in
30 emotional intelligence based on student's faculty ($p<0.0001$). Significant impact
31 was seen on test scores of faculty residing status ($p<0.05$). Significant relation
32 of emotional quotient and residing status with student's test scores ($p<0.05$).

33 **Conclusion:** Emotional intelligence was found to be an important factor in
34 academic achievement and important variable in different faculties and different
35 living conditions.

36 **Key Words:** Achievement, Emotional intelligence, Faculty, Medical students,
37 Social conditions.

38

39 **Introduction**

40 Emotional intelligence (EI) is individuals' ability to perceive and process the
41 emotional aspects of their own selves as well as other individuals that may alter
42 their behaviour.¹ Our actions are mainly dependent upon our emotions.² When
43 we measure a person's WI level, we call it their emotional quotient (EQ).³
44 Initially, scientists only focussed on intelligence quotient (IQ), but after a study
45 in one of the leading universities of the world it was found that graduates in
46 different disciplines, such as medicine, business and teaching, showed no
47 association between their IQ indicators and subsequent success in careers.⁴ They
48 were also of the view that IQ helped initially, but self-control had academically
49 unique long-term benefits.⁵ These researches enabled psychologists to come to a
50 common point that success was mainly dependent on EI.⁶ The five major
51 categories of EI are self-awareness, self-regulation, motivation, empathy and
52 social skills. These five categories are not static or fixed as these can be up-
53 skilled or improved.^{2,7}

54 People with high EI tend to be more optimistic, satisfied, empathetic, have high
55 self-efficacy and more leadership skills.^{8,9} Researchers elaborated the role of Ei
56 on education and concluded that teachers with high EI have good control over
57 class compared to those with low EI. Also, leadership skills require high EQ.⁸

58 Medical and allied health undergraduates are expected to develop these
59 leadership qualities, especially as they move from basic sciences towards
60 clinical sciences where they are expected to emerge as true leaders who can take
61 correct decisions in difficult situations in order to save lives.¹⁰ Students with
62 higher EQ are more confident and possessed higher ability to solve problem-
63 based questions in day-to-day life and during their medical education, and such
64 students also have inner motivation and the ability to lead a better life.¹¹
65 Similarly, medical students with higher EI perceive less stress compared to
66 those with lower EI, and it is, therefore, important to train medical students to
67 increase their EI in order to improve their overall wellbeing so that they can
68 bear the stress of medical studies.^{12,13}

69 EQ involves complex behavioural sciences. Students with different academic
70 background at different faculties do not share same personality traits and EI
71 may have an important impact on their behaviour and performance in academics
72 owing to different social and living conditions. Research has shown no
73 relationship between EQ and academic achievement alone¹⁴ or a negative
74 relationship between EI and academic achievement.¹⁵

75 The current study was planned to compare trait EI and EI factors between
76 students of different faculties and their residing status and compare their test
77 scores.

78

79 **Subjects and Methods**

80 the cross-sectional analytical study was conducted from August 2016 to March
81 2017 at the University of Faisalabad, Faisalabad, Pakistan. The university offers
82 various courses in seven different faculties, including medical sciences
83 (MBBS), dental sciences (BDS), optometry (OD), nutrition and dietetics
84 (DND), physiotherapy (DPT), pharmacy (DPH), and social sciences (BSCS).

85 After approval from the institutional ethics review committee, the sample size
86 was calculated using the proportions of boarders (33.9) and non-boarders (66.1)

87 in the light of literature.⁹ The formula¹⁶ used for the comparison of proportions
88 was: $n = (Z_{\alpha/2} + Z_{\beta})^2 * (p_1(1-p_1) + p_2(1-p_2)) / (p_1 - p_2)^2$, where $Z_{\alpha/2}$ was the critical
89 value of the normal distribution at $\alpha/2$ (for a confidence level of 95%, α is 0.05
90 and the critical value is 1.96), Z_{β} was the critical value of the normal
91 distribution at β (for a power of 80%, β is 0.2 and the critical value is 0.84) and
92 p_1 and p_2 were the expected sample proportions of the two groups.

93 The sample was raised using stratified random sampling. The total number of
94 students enrolled in the university undergraduate programmes was calculated
95 based on various faculties. A list of these students was collected from students'
96 record. The total number of students in the seven faculties was 2,118, and a list
97 of these students was entered into Microsoft Excel 2016. The generated random
98 numbers were sorted in ascending order. Students from each strata were
99 selected by simple random sampling technique.

100 After taking informed consent, general information of the student was taken
101 regarding age and residing status. Students residing in the hostels of the
102 university were termed boarders. Hostels are supervised by hostel wardens and
103 consist of hundreds of students and have students from different social,
104 geographical and economical background. Students who go back to their homes
105 after the university time were termed day scholars. Student assessment scores in
106 percentage (performance of the student in their particular subjects during the
107 year 2016) were taken from the examination department of the university after
108 due approval. EI of the selected population was assessed using the self-reported
109 Trait emotional intelligence questionnaire–short form (TEIQue-SF). It is 30-
110 item scale that is particularly designed to measure global trait EI, consisting of
111 15 different facets organised into four factors: wellbeing, self-control,
112 emotionality and sociability.¹⁷ The Cronbach's alpha showing the internal
113 reliability of the data for all the 30 items was 0.88. Responses were made on a
114 seven-point Likert scale, ranging from 1-completely disagree to 7-completely
115 agree. Global trait EI was calculated by summing the responses of the 30 items.

116 Reverse scoring was done for negative items. Mean value was calculated for
117 trait EI and the four factors, higher values representing higher EI and lower
118 values representing lower EI.

119 Data was analysed using SPSS 20 and R for Windows Graphical User Interface
120 (GUI) front-end. Percentages and proportions for qualitative and mean +/-
121 standard deviation (SD) for quantitative variables were calculated. Comparisons
122 between the proportions of groups based on faculty strata with student's
123 residing status, were seen using chi square test. Analysis of variance (ANOVA)
124 was used for multiple comparisons between the groups. To see the interaction of
125 various variables on students' test scores, univariate factorial ANOVA was
126 performed and multivariate analysis of variance (MANOVA) was carried out for
127 a detailed analysis of the dataset and to examine possible factor-level
128 differences. $P \leq 0.05$ was considered statistically significant.

129

130 **Results**

131 Of the 498 students, 109(21.9%) were studying MBBS, 56(11.2%) BDS,
132 76(15.2%) OD, 83(16.6%) DND, 109(21.9%) DPT, 35(7%) DPH, and 30(6%)
133 BSCS. The overall mean age was 19.84 ± 1.30 years. There were 210(42.2%)
134 boarders compared to 288(57.8%) day scholars ($p < 0.001$). The EI mean values
135 and student assessment scores were noted (Table 1).

136 There was a statistically significant difference in trait EI based on student's
137 faculty ($p < 0.0001$). Also, there was a statistically significant interaction
138 between the effects of faculty and student's residing status on the test scores
139 ($p = 0.01$). The scores of medical students residing in the hostel differed
140 significantly from medical day scholars ($p = 0.05$). This interaction was not
141 found significant between boarders and day scholars of other faculty students
142 (Figure).

143 There was statistically significant interaction between the effects of EQ and
144 student's residing status on student's test scores ($p = 0.037$). The scores of all

145 students having relatively lower EQ differed significantly between day scholars
146 and boarders ($p=0.05$). No such significance was found in students having
147 relatively higher EQ ($p=0.98$) (Table 2).

148

149 **Discussion**

150 The current study demonstrated that trait EI and global trait EI varied in
151 different faculties, and there was a significant linkage of faculty and student's
152 residing status on test scores. Also, interaction of EQ and student's residing
153 status showed significant changes in test scores.

154 Trait EI is the perception of an individual about his/her emotionality. It is a
155 predictor of scholastic achievement, personality development, leadership growth
156 and many other psychological factors which cannot be explored in the cognitive
157 domain.¹⁸

158 In the current study, the choice of questionnaire was important, as TEIQue is a
159 standardised and validated questionnaire to check trait and global EI, and it has
160 consistently outperformed all other EI measures which it has been pitted against
161 in various independent studies and a major meta-analysis.¹⁹

162 As the full form of the questionnaire was lengthy and would have been tedious
163 for students to fill, the TEIQue-SF(short form) was our instrument of choice for
164 this study.²⁰

165 Results suggested that both trait and global EI varied based on faculty. MBBS
166 students had the highest EI values followed by DPT students compared to other
167 faculties. This finding was consistent with previous studies which demonstrated
168 that trait EI profiles can vary with different faculties,²¹ however to our
169 knowledge, this was the first study which demonstrated the differences in EI
170 between medical students, students of allied health sciences, like DPT, OD,
171 DND, and students of dentistry as well as of social sciences. The higher
172 emotional intelligence of medical students may be attributed to the fact that they
173 are in constant interaction with people suffering physically, mentally and

174 emotionally from the very beginning of their course, and these factors may
175 develop more emotive skills.

176 Many studies correlating faculties and EI have reported that global trait EI
177 showed stronger correlation than its four factors amongst different groups,²² and
178 this was also observed in our results. No previous study has explored the role of
179 trait EI subcomponents in such relationships in faculties of allied health sciences
180 previously, hence, we cannot comment on this finding without further
181 investigation.

182 Faculty and student's residing status interacted significantly as predictors of test
183 scores in the case of medical students only. This has also been reported in
184 previous studies and possible explanations include the workload, stress and
185 burnout experienced by medical students being far greater than some other
186 faculties.²³

187 Interestingly, our results showed that medical day scholars were high scorers
188 compared to boarders, which is in contrast with previous studies that mostly
189 demonstrated higher test scores of boarders.²⁴ This could be due to social and
190 environmental variations in living conditions at various places and
191 psychological attributes of student populations of different areas. The EI of day
192 scholars can be a contributory factor here also, as these students have a better
193 EQ, being satisfied with their atmosphere and being able to learn in a favourable
194 environment.

195 EI is already an established predictor of scholastic achievement than
196 conventional measures, like the grade point average (GPA), which is liable to
197 manipulation by variability in grading on the part of the teacher.²⁵

198 We attempted to explore how EI of students combined with their residing status
199 affected results. To our knowledge, this was the first study exploring such roles
200 of EI and student's residential factors on scholastic performance. In our local
201 Pakistani context, a study demonstrated how EI took precedence in medical

202 college success over other factors, but it also showed alarmingly low levels of
203 EI in its overall sample population, which was not distinguished by residence.²⁶
204 Overall, our day scholars exhibited a slightly better EQ score than boarders
205 (3.9%), and the students who had lower EQ and were boarders had lower test
206 scores compared to lower EQ day scholars, but students with higher EQ did not
207 show any significant variations in test scores based on student's residing status,
208 suggesting that it is actually EI which is a predictor of test scores in different
209 living conditions. Previous studies also corroborated this premise that students
210 with greater EI scores performed better academically owing to their ability to
211 better understand and react to their emotional needs.²⁷ They become mentally
212 stronger and are able to pursue their careers better because Ei develops
213 resilience. Hence, it is safe to assume that EQ of students will overshadow other
214 contributing factors in academics such as their residing status.¹⁷
215 The limitations of the current study include its cross-sectional design,
216 monocultural and gender-specific setup and a small sample size.
217 Despite the limitations, however, the study can be used as a starting point to
218 guide students for future careers, in assessments and in their selection and
219 placement in hostels based on their EI scores.

220

221 **Conclusion**

222 EI was found to be an important factor in academic achievement and it varied in
223 different faculties and with respect to different living conditions.

224

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226 **Conflict of interest:** None.

227 **Source of Funding:** None.

228

229 **References**

230 1. Kim YJ, Park EH, Jon DI, Jung MH, Hong N. Does Emotional

- 231 Intelligence Fluctuate within Clinical Depressive Condition? *Psychiatry*
232 *Investig.* 2017;14:532–8.
- 233 2. Goldman A. *Emotional intelligence : why it is more important than IQ and*
234 *how you can improve yours.*(B. S. Yüksel, Çev). İstanbul: Varlık
235 Publications, Science series. 2005:192 p.
- 236 3. Borvornsakulcharoen D, Thiengkamol N. Model of EQ and MQ
237 Integrated with Environmental Education Affecting Environmental
238 Behavior. *Humanit Arts Soc Sci Stud.* 2017;17:215–38.
- 239 4. Barchard KA. Does Emotional Intelligence Assist in the Prediction of
240 Academic Success? *Educ Psychol Meas.* 2003;63:840–58.
- 241 5. Wu HY, Kung FYH, Chen HC, Kim YH. Academic Success of “Tiger
242 Cubs.” *Soc Psychol Personal Sci.* 2016;8:698–705.
- 243 6. Rode JC, Arthaud-Day M, Ramaswami A, Howes S. A time-lagged study
244 of emotional intelligence and salary. *J Vocat Behav.* 2017;101:77–89.
- 245 7. Dolev N, Leshem S. Developing emotional intelligence competence
246 among teachers. *Teach Dev.* 2017;21:21–39.
- 247 8. Ginto AI, Sisamon C, Anaya A, Antoñanzas JL, Barcelona D, Teruel P, et
248 al. Emotional Intelligence and Personality in Student Teachers. *Procedia -*
249 *Soc Behav Sci.* 2014;132:492–6.
- 250 9. Ayan Sinan, Soylu Yusuf, Bozdal Ozlem AF. Investigation of emotional
251 intelligence level of university students. *Eur J Phys Educ Sport Sci.*
252 2017;3:141–51.
- 253 10. Robbins CJ, Bradley EH, Spicer M. Developing leadership in healthcare
254 administration: a competency assessment tool. *J Healthc Manag.*
255 2001;46:188–202.
- 256 11. Ranasinghe P, Wathurapatha WS, Mathangasinghe Y, Ponnampereuma G.
257 Emotional intelligence, perceived stress and academic performance of Sri
258 Lankan medical undergraduates. *BMC Med Educ.* 2017;17:41.
- 259 12. Aithal AP, Kumar N, Gunasegeran P, Sundaram SM, Rong LZ, Prabhu

- 260 SP. A survey-based study of emotional intelligence as it relates to gender
261 and academic performance of medical students. *Educ Health*.
262 2016;29:255–8.
- 263 13. Gupta R, Singh N, Kumar R. Longitudinal predictive validity of emotional
264 intelligence on first year medical students perceived stress. *BMC Med*
265 *Educ*. 2017;17:139.
- 266 14. Abdullah NH, Wahab E, Shamsuddin A, Hamid NA. Extraversion,
267 Emotional Intelligence, English Proficiency and Academic Performance
268 among Mot Students: A Case Study at a Premier Malaysian Technical
269 University . *The Social Sciences*. 2017;12:370-375.
- 270 15. Shah C, Sanisara M, Mehta H, Vaghela H. The relationship between
271 emotional intelligence and academic achievement in medical
272 undergraduate. *Int J Res Med Sci*. 2014;2:59.
- 273 16. Select statistical services. Comparing two proportions sample size. [online]
274 2020 [cited 2019 January 20]. Available from: URL: [https://select-](https://select-statistics.co.uk/calculators/sample-size-calculator-two-proportions/)
275 [statistics.co.uk/calculators/sample-size-calculator-two-proportions/](https://select-statistics.co.uk/calculators/sample-size-calculator-two-proportions/)
- 276 17. Petrides KV, Sangareau Y, Furnham A, Frederickson N. Trait Emotional
277 Intelligence and Children's Peer Relations at School. *Soc Dev*.
278 2006;15:537–47.
- 279 18. Petrides KV, Pérez-González JC, Furnham A. On the criterion and
280 incremental validity of trait emotional intelligence. *Cogn Emot*. 2007;
281 21:26–55.
- 282 19. Martins A, Ramalho N, Morin E. A comprehensive meta-analysis of the
283 relationship between Emotional Intelligence and health. *Pers Individ Dif*.
284 2010;49:554–64.
- 285 20. Cooper A, Petrides KV. A psychometric analysis of the Trait Emotional
286 Intelligence Questionnaire-Short Form (TEIQue-SF) using item response
287 theory. *J Pers Assess*. 2010;92:449–57.
- 288 21. Petrides KV, Vernon PA, Schermer JA, Ligthart L, Boomsma DI, Veselka

- 289 L. Relationships between trait emotional intelligence and the Big Five in
290 the Netherlands. *Pers Individ Dif.* 2010;48:906–10.
- 291 22. Mancini G, Andrei F, Mazzoni E, Biolcati R, Baldaro B, Trombini E.
292 Brief report: Trait emotional intelligence, peer nominations, and scholastic
293 achievement in adolescence. *J Adolesc.* 2017;59:129–33.
- 294 23. Srivastava K, Raichaudhuri A, Bhat P, Prakash J, Joshi S, Ryali V, et al.
295 Emotional intelligence scale for medical students. *Ind Psychiatry J.*
296 2012;20:39.
- 297 24. Naeem N, van der Vleuten C, Muijtjens AMM, Violato C, Ali SM, Al-
298 Faris EA, et al. Correlates of emotional intelligence: Results from a multi-
299 institutional study among undergraduate medical students. *Med Teach.*
300 2014;36:S30–5.
- 301 25. Di Fabio A, Palazzeschi L. Beyond fluid intelligence and personality traits
302 in scholastic success: Trait emotional intelligence. *Learn Individ Differ.*
303 2015;40:121–6.
- 304 26. Imran N, Awais AM, Haider II, Farhat A. Educating tomorrow’s doctors:
305 A cross sectional survey of emotional intelligence and empathy in medical
306 students of Lahore. *Pakistan J Med Sci.* 2013;29(3):710–4.
- 307 27. Hasegawa Y, Ninomiya K, Fujii K, Sekimoto T. Emotional intelligence
308 score and performance of dental undergraduates. *Odontology.*
309 2016;104(3).

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Table 1: Comparison of global trait emotional intelligence (EI), four trait EI factors and other parameters between the university faculties

	MBBS n=109	BDS n=56	OD n=76	DND n=83	DPT n=109	DPH n=35	BSCS n=30	Total n=498	p- value	
Age	19.53±0.82	19.20± 0.81	19.83± 1.52	20.33± 1.43	20.08± 1.51	19.56± 1.10	20.43± 1.04	19.84± 1.30	<0.001	
Well being	4.92 ± 0.94	4.58 ± 0.92	4.65 ± 1.01	4.77 ± 0.91	4.78 ± 0.96	4.84 ± 1.01	4.85 ± 0.97	4.78 ± 0.96	0.382	
Self-control	4.26 ± 0.87	4.21 ± 0.98	4.25 ± 0.73	4.15 ± 0.94	4.26 ± 0.91	4.11 ± 0.73	4.20 ± 1.04	4.22 ± 0.88	0.961	
Emotionality	4.34 ± 0.84	3.97 ± 0.78	4.17 ± 0.85	4.16 ± 0.97	4.26 ± 0.99	4.22 ± 1.00	4.47 ± 0.82	4.23 ± 0.91	0.165	
Sociability	4.24 ± 0.92	3.96 ± 0.79	4.14 ± 1.00	4.13 ± 1.02	4.23 ± 0.76	4.08 ± 0.78	4.02 ± 0.76	4.15 ± 0.89	0.503	
Global trait EI	4.62 ± 0.59	4.20 ± 0.53	4.33 ± 0.60	4.27 ± 0.62	4.60 ± 0.57	4.53 ± 0.59	4.39 ± 0.56	4.45 ± 0.61	<0.001	
Assessment scores	69.80 ± 6.66	60.82± 6.89	74.48± 5.42	73.54± 7.01	69.98± 7.89	77.96± 3.94	75.39± 5.99	71.08± 7.99	<0.001	
Residing status	A	32 (29.4)	32 (57.1)	48 (63.2)	55 (66.3)	73 (67.0)	27 (77.1)	21 (70.0)	288 (57.8)	<0.001
	B	77 (70.6)	24 (42.9)	28 (36.8)	28 (33.7)	36 (33.0)	8 (22.9)	9 (30.0)	210 (42.2)	

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MBBS: Faculty of medical sciences, BDS: Faculty of dental sciences, OD: Faculty of optometry, DND: Faculty of nutrition and dietetics, DPT: Faculty of physiotherapy, DPH: Faculty of pharmacy, BSCS: Faculty of social sciences, A: Day scholars, B: Boarders.

Values are given as mean ± SD

Comparison was performed using one-way analysis of variance (ANOVA).

For student's residing status, values are given as percentages and compared using chi-square test. *p-value ≤ 0.05 was considered statistically significant

323 **Table 2: Univariate factorial analysis of variance (ANOVA) showing**
 324 **interaction of faculty and student's residing status on student assessment**
 325 **scores and interaction of emotional quotient (EQ) and student's residing**
 326 **status on student assessment scores**

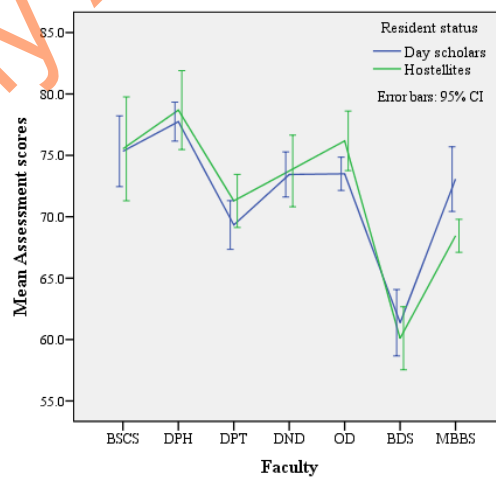
Source	df	Mean Square	F	p-value*
Interaction of class and student's residing status on student test scores				
Faculty	6	1521.35	34.69	<0.001
Student's residing status	1	0.06	0.001	0.97
Faculty × Student's residing status	6	121.46	2.77	0.01
Interaction of emotional quotient and student's residing status on student test scores				
Global trait Emotional Intelligence (EI)	1	21.19	0.33	0.56
Student's residing status	1	373.97	5.92	0.01
Trait EI × Student's residing status	1	277.17	4.38	0.037

327 *p-value ≤ 0.05 was considered statistically significant

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332 **Figure: Interaction of faculty and student's residing status on student**
 333 **assessment scores by univariate factorial analysis of variance (ANOVA).**