

Undergraduate Social Care and Healthcare Applicants’ Emotional Intelligence and Factors Related to it: A Cross-sectional Study

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Aim: To assess undergraduate social and healthcare applicants’ emotional intelligence and the factors related to it. Background: Emotional intelligence enhances study success. It also reduces stress enabling the management of emotional stressors in social and healthcare environments. However, applicants’ emotional intelligence and the factors related to it have been scarcely researched. Methods: The Emotional Intelligence Test (EMI-T) was used in 4, 808 social and healthcare applicants during the national digital entrance examination in 2021. The data were analysed with descriptive statistics, an analysis of variance with Tukey’s test in post-hoc multiple-group comparisons and a regression analysis. Results: The applicants scored best at managing emotions and their emotional intelligence mean score was above the centre of the score range. Female gender, older age, previous education, having currently employed parents and the applicant or his/her parents being born in Finland indicated higher emotional intelligence. However, these factors explained only 14% of emotional intelligence variation. Conclusions: Social and healthcare applicants managed overall well in EMI-T. Several demographic factors seem to influence applicants’ emotional intelligence to a minor degree. Further research should establish how the domains of daily life (resolution of past life events, relationships, and self-esteem) and demographic factors together explain emotional intelligence.

Keywords: *emotional intelligence; student selection; social care education; healthcare education; assessment*

Introduction

Emotional intelligence (EI) can be defined as a range of abilities, including the verbal and non-verbal appraisal, expression, management and acceptance of emotions in oneself and others. EI also consists of the ability to use emotions to achieve goals and solve problems (Mayer et al. 2016, Pienimaa et al. 2021). EI can be divided to

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trait EI, ability EI and mixed EI where EI is considered both trait and ability. Trait EI is typically measured using self-report measures and ability EI is usually measured using objective ability-type measures (Goleman 1995, Bar-On 2006, Petrides et al. 2007, Mayer et al. 2016.) EI is needed in social and healthcare education to cope with emotionally challenging clinical environments (Litvack et al. 2010, Michelangelo 2015, Lewis et al. 2017, Pienimaa et al. 2022a). Educational institutions aim to select students who have the necessary abilities to complete their studies. Student selection should be objective and fair for the applicants (Rankin 2013), thus in this study objective ability EI assessment is used.

There are indications that social care and healthcare students may have higher-than-average EI scores (Joseph et al. 2015, Stanley and Metilda 2021). Štiglic et al. (2018) and Snowden et al. (2015) also discovered that healthcare students scored significantly higher regarding EI than engineering or computing students. However, Talman et al. (2020) reported that nursing applicants differ in terms of EI, and some studies have indicated that healthcare students can have low EI scores (Cerit and Beser 2014). Those with low EI may be at risk of emotional distress, which can affect their study success (Lewis et al. 2017).

Previous social care and healthcare studies have researched mainly nursing and medical students', demographic factors relationship to EI (Cerit and Besser 2004, Van Rooy et al. 2005, Joseph et al. 2015, Stanley and Metilda 2018). However, to our knowledge, only two studies (Carrothers et al. 2000, Talman et al. 2020) have assessed the relationship between EI and demographic factors in the student selection context. According to these studies, female gender (Carrothers et al. 2000, Talman et al. 2020), older age and previous education (Talman et al. 2020) were related to higher EI scores among healthcare applicants.

Older age and female gender have also been identified as factors affecting social care and healthcare students' EI positively (Arora et al. 2010, Joseph et al. 2015, Snowden et al. 2015; Aithal et al. 2016; Stanley and Metilda 2018; Asimopoulos et al. 2020). However, some study results indicate that age and gender have no significant relationship to EI among healthcare students (Cerit and Beser 2014, Joseph et al. 2015, Štiglic et al. 2018). There are also a few studies reporting that males have higher EI scores than females (Carr 2009, Khraisat et al. 2015).

The previous research studying EI's relationship to socio-economic status (SES) or ethnicity in social care and healthcare students is scarce. Joseph et al. (2015) found that SES was not correlated with EI. There are indications that healthcare students of a white ethnic origin score higher than minority ethnic groups regarding EI (Todres et al. 2010), but there are other studies indicating the opposite (Van Rooy et al. 2005, Carr 2009). There are still other studies indicating no relationship between ethnic groups and EI (Joseph et al. 2015, Khraisat et al. 2015). However, there are indications that EI may be culturally sensitive (Zhang and Cross 2011, Johnsen et al. 2012), even though there is evidence that at least some categories of EI are intercultural phenomena (Scherer et al. 2011).

To conclude, according to a review on literature, the previous literature comparing various demographic factors and EI have had controversial results in all factors that have previously been studied, and only few studies have previously assessed the factors specifically related to EI in the student-selection context (Carrothers et al. 2000,

Talman et al. 2020). So, there is no conclusive information about the factors affecting social care and healthcare applicants EI. Thus, more research is needed to investigate which demographic factors are related to EI in student selection. This information is important because EI has an impact on study success (Pienimaa et al. 2022a) and it is crucial to identify those applicants who may need more support to finish their studies successfully.

Student selection is a high-stake situation where selection methods should be objective and fair to applicants. In other words, demographic factors should not affect the assessment (Rankin 2013). Thus, it is important to assess if the use of EMI-T in student selection is valid. The content validity and psychometric evaluation of the EMI-T have been reported in a previous study (Pienimaa et al. 2022a). Therefore, this study focuses on assessing test fairness and whether background variables are related to the applicants' test scores. This is important for identifying construct-irrelevant characteristics that may threaten the validity of the test. A fair test should measure the intended construct and minimize the risk for test being affected by construct-irrelevant characteristics such as linguistic or cultural characteristics (American Educational Research Association, American Psychological Association and National Council on Measurement in Education 2014).

The context of this study is set in the student selection of Finnish Universities of Applied Sciences. Bachelor's degree in social care and healthcare is provided in 20 Universities of Applied Sciences nationwide in Finland. The length of degrees varies from 210 to 270 ECTS credits. The expected time of graduation is from 3,5 years to 4,5 years depending on the programme (e.g. nursing, social services, physiotherapy, midwifery and paramedics) (Ministry of Education and Culture 2021).

Materials and Methods

Aim

The aim of the study was to assess undergraduate social care and healthcare applicants' emotional intelligence and the factors related to it and assess whether fair student selection is possible with EMI-T.

The research questions were: What is the EI level of undergraduate social care and healthcare applicants? What factors explain undergraduate social care and healthcare applicants' EI? Is EMI-T a fair assessment method to assess EI of undergraduate social care and healthcare applicants?

The Emotional Intelligence Test (EMI-T) was developed to assess both social care and healthcare applicants' EI because social and healthcare professionals often work together in multi-disciplinary teams to provide comprehensive care to patients and clients. Also, social care and healthcare education share common core components (Eriksson et al. 2015, GANES 2019, Stanley and Mettilda 2021, Pienimaa et al. 2022a.) Furthermore, EI does not seem to be different between social care and healthcare students (Snowden et al. 2015).

Design

A cross-sectional design was used to obtain data from social care and healthcare applicants during their entrance examination.

Sample and Participants

In total, 21,916 undergraduate (bachelor's level) applicants to social, health and rehabilitation study programmes in 20 Finnish Universities of Applied Sciences (UASs) participated in the UAS Exam on eight selection days during spring 2021. EMI-T was an official part of the UAS Exam, which all participants were required to complete. The participants in this study were all 4,808 applicants, who completed the EMI-T as part of the UAS Exam on two selection days, 31 May or 4 June 2021 (a version of the EMI-T that was used in this study was conducted to the applicants during those days) and gave their consent to participate in the research. Thus, purposive sampling method including entire population that took the test and gave consent was used (total population sampling). The information about the study was contained in the invitation letter that the applicants had access several weeks before the entrance examination.

Data Collection

The data were collected through the validated test EMI-T, which includes 20 multiple-choice items within four EI subscales (perception and understanding of emotions [eight items, maximum subscale score 8], acceptance of emotions [four items, maximum subscale score 4], management of emotions [four items, maximum subscale score 4] and social awareness and relations [four items, maximum subscale score 4]; Pienimaa et al. 2022b). Each item includes one correct response option and three incorrect ones. Each correct response yields 1 point, and unanswered or incorrect responses yield 0 points. Maximum score for the test is 20 points. The EMI-T consists of case-based questions and questions related to facial recognition. The time limit for the EMI-T is 20 minutes.

The content of the EMI-T (i.e., the relevance and clarity of the items) was evaluated by three expert panels, and a psychometric assessment of the test was based on Item Response Theory (IRT) analysis (Pienimaa et al. 2022b). IRT was used because it can provide detailed item level evaluation including the evaluation of distractors (i.e., incorrect response options). From the student selection perspective, the selection test should be able to arrange applicants in rank order based on their performance. IRT can evaluate the difficulty level of the items and the test's ability to differentiate applicants' skills in the different ability levels (Tavakol et al. 2014, Gierl et al. 2017). The quality of distractors is also essential because it affects the difficulty level of the items (DeVellis 2017, Gierl et al. 2017, Li et al. 2019).

According to the results of IRT, most of the items were easy, however they were ambiguous, and EMI-T can differentiate applicants' abilities in the upper ability level, thus only approximately 5% of applicants achieved maximum scores. There was also

a positive and statistically significant correlation between subscales and between subscales and the total score, supporting the structural validity of the test.

The demographic factors (i.e., age, gender, previous education, place of birth, parents' place of birth, parents' employment status and participation in a preparation course specifically tailored to the entrance examination) were available and collected from the entrance examination system. The background information collected was based on previous studies and the student-selection development process (Talman et al. 2018, Vierula et al. 2021a).

The EMI-T was used as a part of the national joint UAS Exam. The purpose of the joint UAS Exam is to measure the abilities needed to succeed in the UAS studies. It measures social care and healthcare applicants' abilities in reasoning, language and communication, mathematics, ethics and EI. Selection is based on overall performance, and not on any individual section score. However, applicants must achieve a minimum score on each section to be considered for the selection process. Total scores are used to rank applicants in terms of their performance on the UAS Exam and thus inform the selection decision. The UAS Exam is on-site digital test with multiple choice questions, and the test is taken under supervision (Vierula et al. 2021a).

Ethical Considerations

The study followed the ethical principles specified by the National Advisory Board on Research Ethics (The Finnish Advisory Board on Research Integrity 2012). Approvals were obtained from the participating UASs and the Human Sciences Ethics Committee in the Satakunta region on 14 May 2021, before beginning the study. The participants were informed regarding their continued anonymity, their ability to withdraw from the study and the voluntary nature of the study. Withdrawal from the study was possible at any point via contacting the researchers, and the departing participant's research data were not used in the research after this point. However, the participants were also informed that any data analysis performed prior to their withdrawal could not be reversed. This information was contained in the invitation letter, data protection statement and informed consent form. The participants gave their informed consent prior to the beginning of the UAS Exam by choosing a relevant response regarding participation (yes/no).

Data Analysis

Descriptive statistics (frequencies and percentages) and Pearson correlation coefficient were used to assess the EI level of undergraduate social care and healthcare applicants. Descriptive statistics (frequencies and percentages) were calculated to describe the participants' demographic factors and summarise their EMI-T scores. Pearson correlation coefficient was used to assess the dependencies between the sub-scores and the total score.

Analysis of variance (ANOVA) with Tukey's test in post-hoc multiple-group comparisons and multiple linear regression were used to determine what factors explain undergraduate social care and healthcare applicants' EI. Multiple linear regression was also used to determine whether the EMI-T is a fair assessment method to assess EI of

undergraduate social care and healthcare applicants. Analysis of variance (ANOVA) with Tukey’s test in post-hoc multiple-group comparisons was used to assess the factors related to applicants’ EI. ANOVA was first used to determine the statistical significance of the various factors related to EI variation. Tukey’s test was performed to further analyse the different factors relation to EI (Table 4). Multiple linear regression was used to determine the degree to which various factors explain the variation in applicants’ EI. In most of the previous studies multiple regression analysis has not been used to assess how the different factors explain together the level of EI. For this study, it was important to evaluate whether EMI-T is a fair assessment method to assess EI of undergraduate social care and healthcare applicants. All demographic factors were entered simultaneously to the model. Parents’ working status was not included in the regression analysis, due to small sample sizes in some subgroups. The threshold of statistical significance was set at 0.05 (Wasserstein and Lazar 2016). The data were analysed with the Python programming language, using Statsmodels libraries (<https://www.statsmodels.org/stable/index.html>). EI was assessed using mean EMI-T scores, observing whether a given score was above or below the centre of the range of possible scores. Mean scores close to the centre of the range are desirable in that, generally, the items that have mean values near to an extreme of the response range have low variance and do not correlate with other items (DeVellis 2017, Vierula et al. 2021b).

Results

Participants’ Demographic Characteristics

The participants were mostly female (80.3%) and had a high school (44.4%) or vocational school (39.9%) education prior to their application. About half of the participants were under 25 years old (51.7%). Most of the applicants (93.3%) and their parents (75.1%) were born in Finland, and most of the parents were employed (85.0%; Table 1.)

Table 1. *Demographic Information regarding the Participants*

Demographic information	n	%
Age (years) (n = 4,808, missing 0)		
Under 20	712	14.8
20–24	1772	36.9
25–29	824	17.1
Over 29	1500	31.2
Gender (n = 4,808, missing 0)		
Female	3862	80.3
Male	946	19.7
Previous education (n = 4,808, missing 0)		
High school	2134	44.4
Vocational school	1920	39.9
Higher education	440	9.2
Other	314	6.5

Place of birth (n = 4,808, missing 0)		
Finland	4484	93,3
Other country	324	6.7
Parents' place of birth (n = 4,808, missing 0)		
Finland	3610	75.1
Other country	1198	24.9
Father's employment status (n = 4,509, missing n = 299)		
Self-employed persons	857	19.0
Upper-level employees	628	13.9
Lower-level employees	790	17.5
Manual workers	1561	34.6
Students	28	0.6
Pensioners	485	10.8
Unemployed	160	3.5
Mother's employment status (n = 4,641, missing n = 167)		
Self-employed persons	404	8.7
Upper-level employees	472	10.2
Lower-level employees	1167	25.1
Manual workers	1901	41.0
Students	64	1.4
Pensioners	416	9.0
Unemployed	217	4.7
Participation in the training course (n = 4,808, missing 0)		
Yes	551	11.5
No	4257	88.5

Social Care and Healthcare Applicants' Emotional Intelligence

The total mean EI score of the social care and healthcare applicants (n=4 808) was above the centre of the score range (half of the applicants scored at least 16 points), indicating that they performed well in the EI section of the UAS Exam. The applicants performed well on all EI subscales, but they seemed to perform best in the management of emotions and at least half of the applicants achieved the highest possible score on this subscale. The applicants seemed to perform least well in the perception and understanding of emotions subscale and less than 5% of the applicants achieved the highest possible score on this subscale (Table 2).

Table 2. *EI Scores of Social Care and Healthcare Applicants*

EI scores	Mean/Maximum score	Centre of the score range	SD	Min	Max	50% ¹	75% ²
total score	15.92/20	10	2,16	0	20	16.00	17.00
perception and understanding of emotions	5.34/8	4	1.23	0	8	5.00	6.00
acceptance of emotions	3.41/4	2	0.80	0	4	4.00	4.00
management of emotions	3.63/4	2	0.65	0	4	4.00	4.00
social awareness and relations	3.54/4	2	0.69	0	4	4.00	4.00
¹ 50th percentile (median): half of the scores lie below the median, and half lie above the median. ² 75th percentile: value at which 25% of the scores lie above that value and 75% of the scores lie below that value.							

There was a weak, positive, and statistically significant correlation ($r = 0.18-0.32$) between the EI subscales, indicating that applicants who performed well on one subscale also performed well on the others. Furthermore, there was moderate to strong correlation between the subscales and total score, indicating that performing well on any subscale also indicated good overall performance on the EMI-T (Table 3).

Table 3. *Correlations between EI Subscales and Total Score*

Subscales	Perception and understanding of emotions	Acceptance of emotions	Management of emotions	Social awareness and relations	Total score
*Perception and understanding of emotions	1.00 ^e	0.22 ^b	0.18 ^b	0.20 ^b	0.74 ^d
Acceptance of emotions		1.00 ^e	0.30 ^b	0.30 ^b	0.65 ^c
Management of emotions			1.00 ^e	0.32 ^b	0.60 ^c
Social awareness and relations				1.00 ^e	0.62 ^c
^a 0.00–0.10 Negligible correlation ^b 0.10–0.39 Weak correlation ^c 0.40–0.69 Moderate correlation ^d 0.70–0.89 Strong correlation ^e 0.90–1.00 Very strong correlation (Schober, Boer and Schwarte 2018) All correlations statistically significant $p < 0.05$ *The correlations between subscales are not completely comparable; thus, the perception-and-understanding-of-emotions subscale’s maximum score is 8 points, whereas the other subscales have a maximum score of 4 points.					

Factors related to Social Care and Healthcare Applicants’ Emotional Intelligence

All the demographic factors except participation in a preparation course had statistically significant relationships with an applicant’s EI. (Table 4). The applicants

who were older, female, had a high school or higher education as a previous education and were born in Finland had higher EI scores. An applicant's parents being employed or born in Finland was also related to a higher EI score (Table 4).

Table 4. Factors related to Social Care and Healthcare Applicants' EI^a

Factors related to EI total scores	Difference between means	95% confidence interval	p-value ^b
Age (years)			
Over 29 versus under 20	0.3188	0.0517 – 0.5859	0.012
Over 29 versus 20–24	0.3382	0.1323 – 0.5441	0.001
Gender			
Female versus male	0.7323	0.5711 – 0.8934	0.001
Previous education			
Vocational school versus high school	-0.5247	-0.7071 – -0.3424	0.001
Higher education versus high school	0.5109	0.2076 – 0.8141	0.001
Other education versus high school	-1.0385	-1.3883 – -0.6888	0.001
Higher education versus vocational school	1.0356	0.7295 – 1.3417	0.001
Other education versus vocational school	-0.5138	-0.866 – -0.1616	0.001
Other education versus higher education	-1.5494	-1.9769 – -1.1219	0.001
Place of birth			
Another country versus Finland	-2.7179	-2.9638 – -2.472	0.001
Parents' place of birth			
Finland versus another country	0.6829	0.5347 – 0.8311	0.001
Father's employment status			
Students versus self-employed persons	-2.1957	-3.4551 – -0.9363	0.001
Unemployed versus self-employed persons	-0.9564	-1.5211 – -0.3917	0.001
Students versus upper-level employees	-2.3381	-3.6047 – -1.0715	0.001
Unemployed versus upper-level employees	-1.0988	-1.6794 – -0.5182	0.001
Students versus lower-level employees	-2.2773	-3.5384 – -1.0163	0.001
Unemployed versus lower-level employees	-1.0381	-1.6064 – -0.4697	0.001
Students versus manual workers	-2.1746	-3.425 – -0.9242	0.001
Unemployed versus manual workers	-0.9354	-1.4797 – -0.391	0.001
Pensioners versus students	2.0287	0.7541 – 3.3034	0.001
Unemployed versus pensioners	-0.7894	-1.387 – -0.1915	0.002
Mother's employment status			
Students versus self-employed persons	-1.2171	-2.1109 – -0.3233	0.001
Unemployed versus Self-employed persons	-1.138	-1.6953 – -0.5806	0.001
Students versus upper-level employees	-1.3126	-2.1976 – -0.4276	0.001
Unemployed versus upper-level employees	-1.2335	-1.7766 – -0.6904	0.001
Students versus lower-level employees	-1.266	-2.119 – -0.413	0.001
Unemployed versus lower-level employees	-1.1869	-1.6761 – -0.6976	0.001
Students versus manual workers	-1.2108	-2.0552 – -0.3663	0.001
Unemployed versus manual workers	-1.1316	-1.6057 – -0.6575	0.001
Pensioners versus students	1.018	0.1258 – 1.9102	0.014
Unemployed versus pensioners	-0.9389	-1.4937 – -0.3842	0.001
Participation in the preparation course			
Yes versus no	-0.0816	-0.2847 – 0.1216	NS

^atotal EI scores (EMI-T test) as a dependent variable (Tukey's test in post-hoc multiple group comparisons).

A regression analysis was also performed to analyse the degree to which the various factors explain the variation in social care and healthcare applicants' EI scores. Parents' working status was not included in the regression analysis, due to small sample sizes in some subgroups and participation in a preparation course was not included, because it was not statistically significantly related to the applicants' EI (Table 5).

According to the results all variables (age, gender, previous education, place of birth) were related to applicants EI but, accounted only for 14% of the variation in EI ($R^2 = 0.141$, adjusted $R^2 0.139$), indicating that these factors poorly explain the applicants' EI. (Table 5.)

Table 5. Regression Model for Factors explaining Social Care and Healthcare Applicants' EI Variation^a

Factors explaining total EI scores	Coefficient	SE	t	95% confidence interval lower – upper bound	p-value
Age (years)					
Age 20–24 versus under 20	0.1843	0.090	2.049	0.008 – 0.361	0.041
Age 25–29 versus under 20	0.4678	0.108	4.341	0.257 – 0.679	0.000
Age over 29 versus under 20	0.7116	0.099	7.166	0.517 – 0.906	0.000
Gender					
Female versus male	0.5770	0.074	7.843	0.433 – 0.721	0.000
Previous education					
Vocational school versus high school	-0.6332	0.068	-9.290	-0.767 – -0.500	0,000
Higher education versus high school	0.1473	0.115	1.285	-0.077 – 0.372	NS
Other education versus high school	-0.6853	0.125	-5.477	-0.931 – -0.440	0.000
Place of birth					
Another country versus Finland	-2.4691	0.124	-19.912	-2.712 – -2.226	0.000
Parents' place of birth					
Finland versus another country	0.2256	0.071	3.193	0.087 – 0.364	0.001

^a Multiple linear regression analysis with categorical variables
Coefficient = regression coefficient (Beta), SE = standard error, p-value = sig (two-tailed), confidence interval = 95% confidence interval level for regression coefficient

Discussion

This study aimed to assess undergraduate social care and healthcare applicants' EI and the factors related to it. According to the results, social care and healthcare applicants had EI scores above the centre of the score range. Thus, they performed well on the EI section of the UAS Exam and all EI subscales, indicating that the applicants already had EI abilities during the application phase. Previous studies have indicated that social care and healthcare applicants have better-than-average EI (Joseph et al. 2015, Štiglic et al. 2018, Stanley and Mettilda 2021). One explanation of this result may be that good EI abilities inspire individuals to select social care and healthcare as a career choice. This can be exploited in social care and healthcare

student recruitment. Higher education institutions can emphasise that EI abilities are required in these professions and, thus, can recommend social care and healthcare sector as a good career choice for applicants with high EI. In this study one reason for the applicants' good performance may also be the difficulty level (i.e. most of the items were easy) of the test used (EMI-T).

In this study, the applicants seemed to perform best in the management of emotions, indicating that they understand how to manage emotions and have the emotional flexibility needed to function appropriately in emotional situations. The applicants seemed to perform least well in the perception and understanding of emotions, indicating that they had difficulties recognising others' non-verbally transmitted emotions and understanding individuals' emotions and emotional reactions in various situations. Previous studies researching EI in healthcare student selection have mainly evaluated applicants' total EI scores, but not the EI subscales scores (Pienimaa et al. 2022a). However, Talman et al. (2020) also indicate that nursing applicants scored better in the management of emotions than in the perception of emotions, confirming the results of this study. Institutions of higher education should provide opportunities and interventions that enhance EI during education so that students who have difficulties with EI can be supported. Furthermore, information about an applicant's performance on various subscales can be used in the further development of the EMI-T on the subscale level. Those subscales that proved to be the easiest should be further developed, and their difficulty levels should be increased.

In our study, female gender, older age, a high school or higher education as previous education and an applicant's and their parents' having been born in Finland had positive relationships with EI scores obtained during student selection. Our results are in line with previous studies in which older age, a higher educational level (Talman et al. 2020) and female gender have been found to have positive relationships with EI among healthcare applicants (Carrothers et al. 2000, Talman et al. 2020). Perhaps increased cognitive ability and life experience facilitate emotional functioning, and education stimulates situations where emotional intelligence can be enhanced. Furthermore, female tend to have more nurturing role in societies and perhaps they also value more emotional aspects than males do and thus, have more experience and enter emotional interaction situation. This knowledge about the factors affecting EI in student selection is important because EI has an impact on study success (Pienimaa et al. 2022a). This information can be used in finding those applicants who may need more support to finish their studies successfully.

However, in this study these demographic factors only minorly (14% altogether) explained the variation in social care and healthcare applicants' EI indicating that factors such as gender, age and previous education as single factors do not explain the EI variation in the student selection context or affect the results of the EMI-T. Furthermore, socio-economic factors and cultural factors (such as place of birth) had only minor effects on the applicants' emotional intelligence. Thus, these results may indicate that EMI-T as a test does not discriminate against applicants from different cultures. Furthermore, EMI-T includes similar categories as validated EI instruments that have widely been used internationally in different target populations. Therefore, the use of EMI-T may be feasible in other populations. However, language and cultural validation are recommended in the future. The results of this study also imply

that there are still several unknown factors affecting the EI during student selection. Further research is needed, as there currently are only few studies that have researched EI in the student selection context (Arora et al. 2010; Pienimaa et al. 2022a) and the previous literature comparing various demographic factors and EI have had controversial results. Especially, studies that investigate the interactions between several factors and EI using regression analysis are needed. Previously, the research has focused on investigating only a few factors' interactions with EI (Fernández-Berrocal et al. 2012, Cabello et al. 2016).

Strengths and limitations

The sample size was large, enabling the relevant statistical analysis. Furthermore, the sample was collected nationwide from all the UASs offering social care and healthcare degrees. The data were collected from a digital entrance examination system. This reduced the possibility of bias because there was no manual data collection. The high total scores reported in this study may be explained by the fact that the EMI-T has previously proven to be relatively easy (Pienimaa et al. 2022b). However, previous studies, indicate that social care and healthcare students have better-than-average EI scores. Although, the EMI-T has been developed and validated to the social care and healthcare student selection context, the content and items of the EMI-T are not social care and healthcare specific. Furthermore, the EI main categories of EMI-T are very similar to the categories of the previous EI instruments, which are validated internationally to several different target populations. Therefore, the use of EMI-T is possible in other target populations and situations such as in student selection in other student groups (e.g. medical or psychological field). However, the validation of the EMI-T to these other target populations and situations should be performed before the deployment.

Conclusions

Undergraduate social care and healthcare applicants managed overall well in EMI-T. Several demographic factors seem to influence EI. However, these factors, together only partially explained the variation in the applicants' EI. This indicates that these factors do not have a major effect on the EI scores obtained during student selection. Theoretical implications of the study suggest that as in previous studies age, gender and previous education have relationships with EI. However, these results also imply that there are still several unknown factors affecting the EI during student selection. Practical implications of the study indicate that social care and healthcare applicants have EI abilities needed to success in their studies and fair student selection is possible using the EMI-T. The future social care and healthcare research should focus on addressing EI in the student selection context and establishing which factors affect EI variation in this context.

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