

Emotional Intelligence Online Learning and its Impact on University Students' Mental Health: A Quasi-Experimental Investigation

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ABSTRACT

This study has two aims: first, to compare the effectiveness of emotional intelligence intervention through online learning versus face-to-face (traditional) learning methods among undergraduate students at a local university in Malaysia. Second, it assesses the impact of emotional intelligence learning on students' mental health improvement. It is a 2 x 3 factorial quasi-experimental (online learning) using an equivalent control group (face-to-face learning) pre-post-test. Both experimental and control groups comprised 40 students, respectively. The study is set in a classroom and several computer labs in the designated university e-learning facilities. Mixed ANOVA repeated measures analysis results indicate that the online learning group shows no difference from the face-to-face learning group in emotional intelligence learning. Despite that, this study significantly

impacts the growth of emotional intelligence skills on students' mental health among online learning groups. In addition, there is improvement in students with depression over seven weeks of pre-post-test. We propose online learning to be as effective as face-to-face learning in teaching emotional intelligence in light of these findings. We further argue that online learning is more accessible and meaningful to undergraduate

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students' emotional intelligence. This study suggests that emotional intelligence is a crucial skill for students to maintain optimal mental health during their studies. Nevertheless, further investigation is needed to develop a feasible and cost-effective online learning medium accessible to students of all backgrounds.

Keywords: Emotional intelligence, mental health, online learning, undergraduates

INTRODUCTION

Emotional intelligence (EI) is one of the crucial factors contributing to personal and professional success and perseverance in life (Hamdzah et al., 2016). EI is an integration of personal and social competencies, collectively known as soft skills (Daniel, 2007). There is adequate evidence that shows a significant correlation between high levels of EI with strong academic achievement and an excellent future (Rai & Khanal, 2017), high competency in problem-solving (Goleman, 1998), and soft skills including self-awareness, self-management, and maintaining effective relationships (Goleman et al., 2013).

Adjustment to the demands of university life can be hard for some university students due to academic pressures and workloads and other physical, social, and emotional challenges (Dev & Rahman, 2016). Students may manifest psychological and physiological stress symptoms during this adjustment process through mood disturbance, destructive behaviors, depression, anxiety, and eating disorders

(Cooley et al., 2007). For instance, a longitudinal study conducted in Malaysia by Khraisat et al. (2015) that assessed EI among undergraduate medical students reported a significant decrease in EI scores throughout their five years of study. This decrease in EI scores among medical students is related to poor mental health and well-being caused by coping with difficult academic expectations and the breakdown in personal and social interactions. Similarly, other studies on Malaysian university students suggest that negative EI is correlated with frequent symptoms of negative psychological health, such as low self-esteem, social anxiety, suicidal ideation, and depression (Abdollahi & Abu Talib, 2016; Vishal et al., 2017). Interestingly, another health behavior study among university students also suggests a strong relationship between low EI and risk behaviors among university students. In addition, the study reported that several components in EI, such as appraisal and optimism, significantly predicted a person's consumption of alcohol and tobacco. Thus, this indicates that cultivating EI can be a potential intervention for better mental health adjustment among Malaysian university students (Malinauskas et al., 2018).

EI can positively influence students' mental health adjustment in their education, which may benefit their future career development. For instance, studies by Naz et al. (2019) and Davis (2018) illustrate a significant positive relationship between EI learning and students' career achievement and satisfaction. EI learning

improves a person's soft skills by enhancing cognitive skills, coping adjustment, and mood regulation. Furthermore, a study by Saklofske et al. (2007) also suggests that undergraduates with a positive EI also demonstrate positive life satisfaction and happiness. Consequently, EI constitutes an important factor in supporting students psychologically in university. Soft skills in EI can also potentially promote career growth, as they are increasingly in demand by employers today.

Some meta-analysis studies have concluded that emotional capabilities can be improved through an EI training program using either a pre-post or treatment-control design (Hodzic et al., 2017; Mattingly & Kraiger, 2019). However, despite significant evidence on the importance of EI, there is still a limited number of studies conducted on the effects of EI among undergraduate students enrolled in various university programs (Alexander, 2014; Conley, 2015; Jensen et al., 2007; Lin et al., 2011; Pool & Qualter, 2014; Salami, 2010). Since EI is not explicitly included in university syllabi, it has not been taught adequately, particularly among undergraduates (Beard & Schwieger, 2008). Online learning is thus an innovative way of teaching and learning in education, where information and communication technologies are increasingly crucial (Amhag et al., 2019). E-learning has been suggested to reduce costs and enhance learning technologies, particularly in university-level education (Ali, 2017). It is illustrated by higher exam passing rates, especially among students

enrolled in online learning platforms (Scarabottolo, 2019). However, there are still insufficient evidence-based studies on the effects of EI that predict online-learning behavior (Kruger & Blignaut, 2013) and how online learning as a mode of instruction may improve EI among university students (Cotler et al., 2017).

A study by Peluso et al. (2011) shows that psychologists are among the most common professionals to report mental health problems and low levels of life satisfaction. It is thus important to equip students studying psychology with the proper skills to promote mental and emotional well-being during their academic and professional training to prevent potential future pressure while providing consultation in the future (Dunn et al., 2008). However, according to de Vibe et al. (2013), there is a scarcity of properly designed and efficient intervention studies to address mental health concerns among the students. Hence, this study attempts to be the first intervention studying EI through online learning in psychology undergraduate programs. It also examines whether EI is better taught through online or face-to-face learning.

In line with the evidence offered by literature, we can generally hypothesize that the types of teaching strategies used are responsible for the student's emotional intelligence learning, particularly for students studying psychology. Accordingly, the following hypothesis is formulated:

- The online learning group's emotional intelligence will achieve a higher score than the control

group who took the face-to-face learning group.

- The following section discusses the details of the research *methods* followed in the study.

METHODOLOGY

Study Design

It is a quasi-experimental study using a parallel control group pre–post-test design to compare the effectiveness of teaching emotional intelligence through online learning or in-class teaching. The study design model is represented in Table 1.

Table 1
Intervention study design

Group	Pre-test	Intervention	Post-test
Experimental Group	OE1	X	OE2
Control Group	OC1		OC2

Note. OE (Outcome Experiment), OC (Outcome Control), and X (EI Learning methods)

Participant Recruitment and Procedure

The experimental and control groups were recruited with the collaboration of the Psychology and Counselling Department, Sultan Idris Education University (UPSI), located in Malaysia. The recruitment of respondents for this study is funded by a university research grant intended only to include UPSI’s students. To standardize participant background, the experimental and control groups comprised third-year students from the same batch; however, they were later divided into two groups of equal size. In addition, both groups were enrolled in the same theoretical psychology course for two consecutive semesters. However, they rarely intermingled due to the different course schedules set by the university administration. Furthermore, a pre-test was conducted to ensure the level of EI is the same before imposing a learning strategy.

When the participants were recruited, the aims and details of the study were explained to both experimental and control groups. All students who participated in this study have been granted their consent. This study was conducted using the G* power soft program 3.1 to determine the minimum sample size as suggested by Choi et al. (2015). The level of power was set at 0.8, with an α level of .05, an effect size of .50, and the minimum sample size was determined to be 21. Thus, an equal number of 40 participants each in the experimental group and control group met the appropriate sample size.

Research Data Collection

Data were collected from February 2018 through May 2018 over seven weeks, with one session running each week as part of an undergraduate psychology course at UPSI.

The course consists of two-hour lectures and a one-hour tutorial weekly. Both groups received EI learning sessions during their 1-hour tutorial class, either through online or in-person instruction. Both pre-, mid- and post-tests were applied to both the experimental and the control groups. Pre-testing was conducted in the first week, mid-testing after the third week of the EI learning session, and post-assessment was performed during the final session of EI learning (Table 2).

Research Procedure: Learning Emotional Intelligence Online vs. Face-To-Face

Both groups participated in seven sessions of the experiment over seven weeks, during which EI learning was taught through two different learning methods: online and face-to-face. Each participant was randomly assigned to either the experiment group (individual online computer-mediated learning) or the control group (face-to-face instructional learning) for the whole series. Each session is based on different EI themes such as self-awareness, self-esteem, emotional expression, empathy, communication, and accepting differences, as conducted by Cotler et al.'s (2017) study. The EI themes were taught using standardized learning material developed by Cotler et al. (2017). Choi et al. (2015) served as a rich resource for this study's design by offering useful descriptions of each EI theme and providing relevant reality scenarios based on these themes in a short video or vignette format. These short videos

are related to the conflict between family and friends in daily life and the context of community mental health issues. After each EI learning session, students were requested to complete a self-reflection check—a list of open-ended questions designed to get the participants to reflect upon what EI skills they have learned. The self-reflection open-ended questions were developed based on the EI training and coaching manual by Hughes and Terrell (2012), which aims to stimulate the immediate outcomes of the EI learning on EI skills.

Each standardized EI learning session took approximately 15 minutes for each student in the computer lab. In contrast, the control group was taught the same session in the classroom through face-to-face instruction. In addition, the online intervention group was required to complete EI learning tasks in an asynchronous format using a Google classroom learning medium. In contrast, the control group received full face-to-face instructions using PowerPoint and a video media player. A similar instructor taught all the face-to-face EI learning sessions to achieve consistency in the control group. EI learning in the classroom was also designed with limited instructor communication to minimize the impact of the instructor on the difference between online and face-to-face interventions. The detailed EI main contents that were adopted based on Cotler et al. (2017), Choi et al. (2015) and Hughes and Terrell (2012) for both the experimental and control groups are described in Table 2.

Table 2

EI learning for experimental (online learning) and control group (face-to-face)

Session & theme	Description
The first assessment (Baseline)	
1 st Module: Self-Awareness	Designed to encourage participants to understand different emotions and feelings, why a person might feel a certain way, and how well they may recognize and respond to their emotions. Students were then given a few questions to reflect on their self-awareness.
2 nd Module: Self-Esteem	Defined as confidence and satisfaction in oneself. Upon completion, students were given a few questions to reflect on self-respect.
3 rd Module: Emotional Expression	Explained how a person can accurately and effectively express their feelings to others. A diverse emotional vocabulary was also included for students to allow them to communicate their experiences by translating emotion and sensory data into verbal expression.
Second assessment (Mid-test)	
4 th Module: Empathy	Refers to how a person can be aware of, sensitive to, and vicariously experience the feelings, thoughts, and experiences of another.
5 th Module: Communication	Communication is the foundation of emotional intelligence, important in maintaining an effective interpersonal relationship. Communication skills were stressed in the session as crucial in social and emotional interactions between families and friends living and working together. Effective communication can enhance positive feelings deriving from establishing a strong human connection.
6 th Module: Accepting Differences	It entails recognizing and accepting differences without judgment for the well-being of the larger group and other individuals in the community. In addition, students were taught critical values such as respect and the importance of establishing and maintaining a reciprocal relationship between the members and the group.
7 th Module: Summary of Modules 1 – 6	All six EI themes were summarized in one short video in this session. In the end, they were required to reflect on EI learning in the preceding sessions.
Third assessment: Post-test	

Instruments

Respondent's emotional intelligence represents a global score using the short form of the Trait Emotional Intelligence Questionnaire (TEIQue) known as TEIQue-SF by Cooper and Petrides (2010), and mental health was assessed using the Stress, Anxiety and Depression scale (DASS-21) by Lovibond and Lovibond (1995).

Trait Emotional Intelligence Questionnaire-Short Form (TEIQue-SF; Cooper & Petrides, 2010).

The TEIQue-SF questionnaire was divided into 15 distinct aspects of EI grouped into four main categories (well-being, emotionality, sociability, and self-control). TEIQue-SF consists of 30 items with the scoring responses ranging from 1 ("Strongly disagree") to 7 ("Strongly agree"). The higher the score was, the higher the level of EI trait. This measure has been studied through Item Response Theory and has demonstrated satisfactory psychometric properties (Cooper & Petrides, 2010). The Cronbach's Alpha on our study was .914, indicating excellent internal consistencies.

Depression, Anxiety and Stress Scale – 21 (DASS-21; Lovibond & Lovibond, 1995).

DASS-21 is derived from the full form of the DASS-42 scales designed to measure depression, anxiety, and stress with enhanced psychometric properties. There are seven items per scale, and each item is scored on a 4-point Likert scale. DASS-21 served as a severity measurement but not as a diagnostic tool. Its Cronbach's

alpha indicated good reliability for the depression scale ($\alpha = .91$), anxiety scale ($\alpha = .84$) and stress scale ($\alpha = .90$) in the normative sample (Lovibond & Lovibond, 1995). DASS-21 has also been translated into various languages and validated in different populations, including Malaysia (Ramli et al., 2012). The Cronbach's Alpha on our sample was .924, indicating excellent internal consistency.

Ethical Consideration

The ethics committee of Sultan Idris Education University (UPSI) approved the study prior to the data collection (Code: 2019-0009-01). Participants were informed of their rights, privacy, the confidentiality of survey data recorded, and the publication of the findings from this study. Participants were also allowed to withdraw during the study without explanation and without worrying that this would affect their performance in the course. Each administered questionnaire was coded as anonymous without identifying participants by name; the survey data was stored in a secure computer with an encrypted password.

Statistical Analysis

Research data in this study were analyzed using quantitative statistical analysis software SPSS 22.0. The characteristics of the participants were calculated by real number and percentage. A mixed analysis of variance was applied to assess the effects of different learning methods of EI on students' mental health. The 2 (EI learning

methods—online or face-to-face) X 3 (pre-, mid-and post-assessment: time 1[M1], time 2[M2], time 3[M3]) mixed analysis of variance (ANOVA) repeated measures, which evaluated students' EI and their mental health at three consecutive stages of the experiment. Therefore, four separate 2 X 3 mixed ANOVA was performed to compare the effects of online and face-to-face EI learning methods on emotional intelligence, stress, anxiety, and depression between the experimental and control groups pre-and post-the six-session EI module training as in Table 2. The assumptions of mixed ANOVA were independence, normality, and sphericity. Independence was assumed. The normality of EI, stress, anxiety and depression through online and face-to-face learning was assessed. After deleting outliers, normality in all variables except depression was met satisfactorily. Since the sample was non-clinical, no severe or moderate depression scores were screened during the pre-testing (baseline). As a result, the distribution of the depression variable was skewed to the left. The negatively skewed depression variable was retained without modification for further analysis. Sphericity assumption for emotional intelligence, stress, anxiety, and depression was met with a Greenhouse-Geisser Epsilon of .90. According to the general rule of thumb by Tabachnick and Fidell (2019), the null hypothesis must be rejected if the Greenhouse-Geisser Epsilon figure exceeds 0.70.

RESULTS

Sample

Out of 80 undergraduate students recruited in this study, more than three quarter (83.1%) of the sample were female. It reflects the actual gender make-up of the population of psychology students in UPSI, which consists of female students in the majority. The distribution of ethnic groups in the sample was found to be disproportionate. Most of the sample were Malay (72.0%), followed by Indian (10.7%), Chinese (9.3%), and other (8.0%) ethnicities. Most of the respondents (67.1%) resided in urban areas, while the rest (32.9%) were rural.

Emotional Intelligence Learning

Results showed that the main (assessment time, EI learning methods) and interaction effects pre-assessment (M1), mid-assessment (M2), and post-assessment (M3; assessment time x EI learning methods) were not significant for the EI variable (Table 3). In addition, the EI scores of the students appeared unchanged throughout module implementation. Findings suggests that both experiment and control EI learning methods do not influence students' EI scores.

The Mental Health Scores (Stress, Anxiety, and Depression)

However, despite insignificant findings on EI learning, notable changes were found in students' mental health scores. Results of mixed ANOVA for stress, anxiety, and depression are reported in the following sections.

Table 3

Results of the influence of EI learning on EI variable and mental health by using mixed ANOVA

Variable	F ratio	p-value	Effect size
Emotional Intelligence			
Time	1.89	.156	.03
EI learning methods	3.15	.081	.05
Time X EI learning methods	0.375	.675	.01
Stress			
Time	6.61	.002	.09
EI learning methods	0.80	.131	.03
Time X EI learning methods	2.09	.375	.01
Anxiety			
Time	5.49	.006	.08
EI learning methods	0.10	.756	.00
Time X EI learning methods	4.19	.020	.06
Depression			
Assessment Time	4.03	.024	.06
EI learning methods	1.71	.196	.03
Time X EI learning methods	0.22	.780	.00

Note. EI (Emotional intelligence); EI learning methods (Online and Face-to-Face), Time (Assessment Time)

Findings reveal a significant effect of assessment time on students' stress scores. The students' stress scores gradually decreased when attending the EI learning at pre-, mid-, and post-assessment time ($M1 = 15.16$, $M2 = 15.80$, $M3 = 13.19$). The follow-up pairwise comparison indicates that the stress scores were significantly different between the first and the third EI assessment. Stress scores were lower in the third assessment compared to the first assessment. However, the main (EI learning methods) and interaction effects (EI learning methods x assessment time) were insignificant. Findings suggest that

both experiment and control of EI learning methods have no significant difference in students' stress scores.

The anxiety variable's interaction effect (assessment time x EI learning methods) was significant. As a result, a follow-up analysis was performed. Two repeated-measures ANOVA was performed by EI learning methods. It was found that the anxiety scores of participants who participated in EI online learning were lower than those who received face-to-face instruction. Anxiety scores of students in EI online learning appeared to be decreasing as the experiment progressed ($F(2, 62) = 6.72$, $p = .005$, $ES = .18$). There

was a significant difference in the anxiety scores between the second (mid-) and third-time assessment of EI online learning ($M1 = 14.94$, $M2 = 15.31$, $M3 = 11.38$). However, no significant changes were reported on the anxiety scores of students who received face-to-face learning ($F(2, 70) = 1.24$, $p = .297$, $ES = .034$). Findings suggest a significant discrepancy between experiment and control groups of EI learning methods in students' anxiety scores.

For depression, the main effect (EI learning methods) and interaction effect (assessment time x EI learning methods) were reported insignificant. However, there was a significant main effect of time on depression scores (Table 2). Results found a decrease in the depression scores over the three stages of the experiment at pre-, mid-, and post-assessment ($M1 = 9.18$, $M2 = 8.33$, $M3 = 6.98$). Depression scores were significantly lower at assessment time 3 of EI than assessment time 1 of the EI learning. Furthermore, the study suggests significant differences in both experiment and control groups of EI learning that influence students' depression scores.

Although EI learning positively influenced the student's mental health, the reported effect sizes were relatively small. For example, effect sizes for significant main effects for stress (at 9%), anxiety (8%), depression (6%), and interaction effect (anxiety X EI learning, at 6%) were all less than 10%, respectively. Small effect size indicates assessment time, and assessment time x EI learning methods only explained a small contribution to the overall variances in mental health variables.

DISCUSSION

The main goal of this study is to compare the effectiveness of online-based versus face-to-face teaching in emotional intelligence to determine which pedagogical method could make emotional intelligence (EI) learning more effective in improving the mental health of undergraduate students (EI). This study suggest that both experimental and control groups show no significant differences in the effectiveness of learning EI in using either method. Thus conclusively, online learning may not necessarily be more effective for teaching EI than face-to-face in-class teaching. Furthermore, it is supported by other comparative studies (Kotsou et al., 2019; Scarabottolo, 2019) that suggest that there is no significant difference between online and traditional learning. Nevertheless, the significant effect of EI online learning on mental health outcomes may suggest that providing EI online learning skills can act as a better intervention for students with mental illnesses such as anxiety and depression.

Theoretically, several meta-analyses suggest that performance-based training on EI skills is suitable for a person with stress and depression symptoms, particularly for the individual's well-being (Sánchez-Álvarez et al., 2016). For instance, people with higher EI skills show a lower apprehension of stress (Zhang et al., 2016), are better able to sustain higher self-esteem and self-efficacy (Salguero et al., 2015), and experience higher levels of happiness and gratification (Ruiz-Aranda et al., 2014). They are moreover able to promote

positive emotions and well-being (Zeidner et al., 2012), highly possible to create and maintain relationships (Lopes et al., 2005), and experience less emotional distress when facing a stressful situation (Gohm et al., 2005).

Furthermore, a recent systematic review of fifteen studies that assessed the effects of EI training on psychological health and well-being shows a strong correlation between the two (Kotsou et al., 2019). As in this study, the decrement in mental health measurement among the group participating in EI online learning constitutes strong evidence that EI online learning may not directly change the trait of EI as measured but is nevertheless effective in decreasing students' anxiety and depression. These promising findings prove that there is great potential for future research to explore the effectiveness of teaching EI through online learning as a feasible and cost-effective alternative to traditional class teaching. Moreover, the practical implication of this study would be the integration of EI online learning with the main syllabus by using a blended approach. It could be offered as psychological support for the university students besides the formal psychological intervention in university counseling services, particularly during uncertain circumstances such as the recent COVID-19 pandemic that is significantly associated with an increased risk of mental health disorders among the university students (Barros & Sacau-Fontenla, 2021).

By integrating what is known from the literature with new insights found in this study, EI online learning could

be recommended as an additional way to promote the positive psychological well-being of undergraduate students. Interestingly, in a study among nursing students, Fernandaz et al. (2012) stated that EI training should be included in the academic program because nurses' job involves human interactions that expose them to various negative changes in EI. Corresponding to this suggestion, integrating EI online learning in the current academic curriculum is another way for future studies to examine the effects of similar EI online learning on a larger scale, with more participants from various academic programs across multiple higher education institutions. Furthermore, the significant effect of EI learning on mental health may provide insight on how to support and care for undergraduate students with EI traits who are struggling with negative emotional experiences during the COVID-19 pandemic outbreak (Moroń & Biolik-Moroń, 2021). Thus, a comprehensive study would serve as a concerted effort to teach EI skills to help undergraduate students enhance their EI to cope with any mental health issues and achieve their educational goals and aspirations.

This current study shows that EI training consisting only of short online learning sessions (10-15 minutes) over seven weeks may not be adequate to promote a strong learning impact. It justifies the negative correlation between the learning method and EI measurements in current findings. Referring to the duration of EI learning, Kotsou et al. (2019) have

conducted a systematic review comparing the effectiveness of 46 studies on EI training methods, which suggests that EI increases with long-term training. Thus, future research should also consider basic EI skills such as the emotional perception that suits the training duration (short or long-term effects of intervention; Geßler et al., 2020).

Similar to many previous EI training studies, such as those conducted by Cotler et al. (2017), the EI learning in this study was focused on enhancing the overall EI component rather than differentiating the components of EI. It makes it complicated to understand how EI training works. Therefore, future research should focus on learning specific EI components rather than all EI components, as Schutte et al. (2013) suggested. Furthermore, as suggested by Geßler et al. (2020), future research should consider the EI measures used, as both performance-based and self-report measures of EI must be considered in EI training outcomes. Both measurements involve different mental processes and outcomes; performance-based measures examine how well individuals can solve emotion-related problems, while self-report measures track a person's typical behavior. Future experimental studies should be conducted in a controlled environment for respondents that exclude certain possibly disruptive variables (such as several major concurrent exams). It may help test the effectiveness of the online teaching method or identify aspects of traditional EI face-to-face teaching that should be maintained. Finally, scholars have yet to agree on

whether face-to-face or online would best ensure continuous EI learning—a topic that may require further investigation.

CONCLUSION

This study which serves as a pilot study on the influence of EI on mental health among Malaysian undergraduate students is subject to limitations, such as a small number of participants in the experimental and control group. For this reason, the study's sample size should be enlarged, and it should be done in different university settings across Malaysia to generalize the findings further. However, before researching broader-scale EI online training, prior studies confirming the fundamental factors affecting EI variables not observed in the current study must be conducted first. A future study is recommended to conduct the pre-test measures to standardize the recruited participant to reduce the intervention biases. Many other studies of EI interventions have similarly used various types of analysis of variance (e.g., repeated measures ANOVA and MANOVA) to examine the effects of EI interventions. These methods may have serious limitations, such as assuming measurement invariance across groups and time (Crayen et al., 2011). Besides that, in the current study, EI psychometric measures utilized were on trait-based EI. The meta-analysis study on EI training effectiveness by Hodzic et al. (2017) confirms that it is easier to develop ability-based EI and related explicit knowledge than trait-based EI. Thus, it is recommended for future research to look at ability-based EI psychometric measures.

This study compared emotional intelligence (EI) learning effectiveness between online and traditional methods. The results concur with previous research that suggests no difference in EI growth between the online and face-to-face groups. Nevertheless, interestingly, teaching emotional intelligence influenced another critical area significantly: students' mental health and well-being. Therefore, this model is appropriate in higher education and organizational settings as it promotes general EI skills in online platforms, thus making its implementation in bigger institutions feasible.

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REFERENCES

- Abdollahi, A., & Abu Talib, M. (2016). Self-esteem, body-esteem, emotional intelligence, and social anxiety in a college sample: The moderating role of weight. *Psychology, Health and Medicine, 21*(2), 221-225. <https://doi.org/10.1080/13548506.2015.1017825>
- Alexander, B. (2014, September 15). Higher education in 2024: Glimpsing the future. *Educause Review*. <http://www.educause.edu/ero/article/higher-education-2024-glimpsing-future>
- Ali, J. (2017). High level of emotional intelligence is related to high level of online teaching self-efficacy among academic nurse educators. *International Journal of Higher Education, 6*(5), 122-130. <https://doi.org/10.5430/ijhe.v6n5p122>
- Amhag, L., Hellström, L., & Stigmar, M. (2019). Teacher educators' use of digital tools and needs for digital competence in higher education. *Journal of Digital Learning in Teacher Education, 35*(4), 203-220. <https://doi.org/10.1080/21532974.2019.1646169>
- Barros, C., & Sacau-Fontenla, A. (2021). New insights on the mediating role of emotional intelligence and social support on university students' mental health during COVID-19 pandemic: Gender matters. *International Journal of Environmental Research and Public Health, 18*(24), Article 12935. <https://doi.org/10.3390/ijerph182412935>
- Beard, D., & Schwieger, D. (2008). Integrating soft skills assessments through university, college and programmatic efforts at an AACSB accredited institution. *Journal of Information System Education, 19*(2), 229-240. <http://jise.org/volume19/n2/JISEv19n2p229.html>
- Choi, Y., Song, E., & Oh, E. (2015). Effects of teaching communication skills using a video clip on a smart phone on communication competence and emotional intelligence in nursing students. *Archives of Psychiatric Nursing, 29*(2), 90-95. <https://doi.org/10.1016/j.apnu.2014.11.003>
- Conley, C. S. (2015). SEL in higher education. In J. A. Durlak, C. E. Domitrovich, R. P. Weissberg, & T. P. Gullota (Eds.), *Handbook of Social and Emotional Learning: Research and Practice* (pp.197-212). The Guilford Press. <https://psycnet.apa.org/record/2015-24776-013>
- Cooley, E., Toray, T., Valdez, N., & Tee, M. (2007). Risk factors for maladaptive eating patterns in college women. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 12*(3), 132-139. <https://doi.org/10.1007/BF03327640>
- Cooper, A., & Petrides, K. V. (2010). A psychometric analysis of the Trait Emotional Intelligence Questionnaire-Short Form (TEIQue-SF) using item response theory. *Journal of Personality Assessment, 92*(5), 449-457. <https://doi.org/10.1080/00223891.2010.497426>

- Cotler J. L., DiTursi, D., Goldstein, I., Yates, J., & DelBelso, D. (2017). A mindful approach to teaching emotional intelligence to undergraduate students online and in person. *Information Systems Education Journal*, 15(1), 12-25. <https://eric.ed.gov/?id=EJ1135358>
- Crayen, C., Geiser, C., Scheithauer, H., & Eid, M. (2011). Evaluating interventions with multimethod data: A structural equation modeling approach. *Structural Equation Modeling: A Multidisciplinary Journal*, 18(4), 497-524. <https://doi.org/10.1080/10705511.2011.607068>
- Daniel, D. (2007, June 25). Soft skills for CIOs and aspiring CIOs: Four ways to boost your emotional intelligence. *CIO*. <https://www.cio.com/article/2438627/soft-skills-for-cios-and-aspiring-cios--four-ways-to-boost-your-emo.html>
- Davis, S. K. (2018). *Emotional intelligence in adolescence and early adulthood*. In P. Qualter & L. Dacre-Pool (Eds.), *An introduction to emotional intelligence* (pp. 105-122). Wiley-Blackwell.
- de Vibe, M., Solhaug, I., Tyssen, R., Friberg, O., Rosenvinge, J. H., Sørli, T., & Bjørndal, A. (2013). Mindfulness training for stress management: A randomised controlled study of medical and psychology students. *BMC Medical Education*, 13(107). <https://doi.org/10.1186/1472-6920-13-107>
- Dev, R. O., & Rahman, A. R. A. (2016). Influence of emotional intelligence as the mediator between physical activity and mental health (distress) among Malaysian university students. *International E-Journal of Advances in Social Sciences*, 2(5), 492-500. <https://doi.org/10.18769/ijasos.95534>
- Dunn, L. B., Iglewicz, A., & Moutier, C. (2008). A conceptual model of medical student well-being: Promoting resilience and preventing burnout. *Academic Psychiatry*, 32(1), 44-53. <https://doi.org/10.1176/appi.ap.32.1.44>
- Fernandaz, R., Salamonson, Y., & Griffiths, R. (2012). Emotional intelligence as a predictor of academic performance in first year accelerated graduate entry nursing students. *Journal of Clinical Nursing*, 21, 3485-3492. <https://doi.org/10.1111/j.1365-2702.2012.04199.x>
- Geßler, S., Nezelek, J. B., & Schütz, A. (2020). Training emotional intelligence: Does training in basic emotional abilities help people to improve higher emotional abilities? *The Journal of Positive Psychology*, 16(4), 455-464. <https://doi.org/10.1080/17439760.2020.1738537>
- Gohm, C. L., Corser, G. C., & Dalsky, D. J. (2005). Emotional intelligence under stress: Useful, unnecessary, or irrelevant? *Personality and Individual Differences*, 39(6), 1017-1028. <https://doi.org/10.1016/j.paid.2005.03.018>
- Goleman, D. (1998). *Working with emotional intelligence*. Bantam Books.
- Goleman, D., Boyatzis, R., & McKee, A. (2013). *Primal leadership: Unleashing the power of emotional intelligence*. Harvard Business Press.
- Hamdzah, N. L. A., Hassan, S. N. S., & Hassan, R. (2016). Examining the level of emotional intelligence among semester one students in Universiti Teknologi Mara Pahang. *Journal of Human Capital Development*, 9(1), 33-46. <http://www.myjurnal.my/public/article-view.php?id=95832>
- Hodzic, S., Scharfen, J., Ripoll, P., Holling, H., & Zenasni, F. (2017). How efficient are emotional intelligence trainings: A meta-analysis. *Emotion Review*, 10(2), 138-148. <https://doi.org/10.1177/1754073917708613>
- Hughes, M., & Terrell, J. B. (2012). *Emotional intelligence in action training and coaching activities for leaders, managers, and teams* (2nd ed.). John Wiley & Sons.
- Jensen, S., Kohn, C., Rilea, S., Hannon, R., & Howells, G. (2007). *Emotional intelligence:*

- A literature review*. University of the Pacific Department of Psychology. https://www.researchgate.net/publication/251614532_Emotional_Intelligence_A_Literature_Review/citations
- Khraisat, A. M. S., Rahim, A. F. A., & Yusoff, M. S. B. (2015). Emotional intelligence of USM medical students. *Education in Medicine Journal*, 7(4).
- Kotsou, I., Mikolajczak, M., Heeren, A., Grégoire, J., Leys, C. (2019). Improving emotional intelligence: A systematic review of existing work and future challenges. *Emotion Review*, 11(2), 151-165. <https://doi.org/10.1177/1754073917735902>
- Kruger, J., & Blignaut, A. (2013). Linking emotional intelligence to achieve technology enhanced learning in higher education. *Turkish Online Journal of Distance Education*, 14(4), 99-120. <https://eric.ed.gov/?id=EJ1042580>
- Lin, Y., Lee, T., Hsu, S., & Lin, S. (2011). What causes the emotional intelligence suffered by students at universities and colleges of technology? *World Transactions on Engineering and Technology Education*, 9(2), 102-108. https://www.researchgate.net/publication/289628305_What_causes_the_emotional_intelligence_suffered_by_students_at_universities_and_colleges_of_technology
- Lopes, P. N., Salovey, P., Côté, S., Beers, M., & Petty, R. E. (2005). Emotion regulation abilities and the quality of social interaction. *Emotion*, 5, 113-118. <https://doi.org/10.1037/1528-3542.5.1.113>
- Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the depression anxiety stress scales* (2nd ed.). Psychology Foundation of Australia.
- Mattingly, V., & Kraiger, K. (2019). Can emotional intelligence be trained? A meta-analytical investigation. *Human Resource Management Review*, 29(2), 140-155. <https://doi.org/10.1016/j.hrmr.2018.03.002>
- Malinauskas, R., Dumciene, A., Sipaviciene, S., & Malinauskiene, V. (2018). Relationship between emotional intelligence and health behaviours among university students: The predictive and moderating role of gender. *Biomed Research International*, 1(11), Article 7058105. <https://doi.org/10.1155/2018/7058105>
- Moroń, M., & Biolik-Moroń M. (2021). Trait emotional intelligence and emotional experiences during the COVID-19 pandemic outbreak in Poland: A daily diary study. *Personality and Individual Differences*, 168, Article 110348. <https://doi.org/10.1016/j.paid.2020.110348>
- Naz, S., Li, C., Nisar, Q. A., & Rafiq, M. (2019). Linking emotional intelligence to knowledge sharing behaviour: Mediating role of job satisfaction and organisational commitment. *Middle East Journal of Management*, 6(3), 318-340. <https://doi.org/10.1504/MEJM.2019.098598>
- Peluso D. L., Carleton, R. N., & Asmundson, G. J. G. (2011). Depression symptoms in Canadian psychology graduate students: Do research productivity, funding, and the academic advisory relationship play a role? *Canada Journal Behavioural Sciences*, 43(2), 119-127. <https://doi.org/10.1037/a0022624>
- Pool, L., & Qualter, P. (2014). Improving emotional intelligence and emotional self-efficacy through a teaching intervention for university students. *Learning and Individual Differences*, 22, 306-312. <https://doi.org/10.1016/j.lindif.2012.01.010>
- Rai, D., & Khanal, Y. K. (2017). Emotional intelligence and emotional maturity and their relationship with academic achievement of college students in Sikkim. *International Journal of Education and Psychological Research*, 6(2), 1-5. <https://ijepr.org/paper.php?id=351>
- Ramli, M., Mohd Ariff, F., Nora, M., Rosnani, S., Aidil Faszrul, A., & Musa, R. (2012). Psychometric properties of Bahasa Malaysia version of the Depressive Anxiety and Stress Scales 42-item (DASS-42). *Age*, 19(20), 21-22.

- Ruiz-Aranda, D., Extremera, N., & Pineda-Galan, C. (2014). Emotional intelligence, life satisfaction and subjective happiness in female student health professionals: The mediating effect of perceived stress. *Journal Psychiatry Mental Health Nurses*, 21, 106-113. <https://doi.org/10.1111/jpm.12052>
- Saklofske, D. H., Austin, E. J., Rohr, B. A., & Andrews, J. J. (2007). Personality, emotional intelligence and exercise. *Journal of Health Psychology*, 12(6), 937-948. <https://doi.org/10.1177/1359105307082458>
- Salami, S. O. (2010). Emotional intelligence, self-efficacy, psychological well-being and students' attitudes: Implications for quality education. *European Journal of Education Studies*, 2(3), 247-257.
- Salguero, J. M., Extremera, N., Cabello, R., & Fernandez-Berrocal, P. (2015). If you have high emotional intelligence (EI), you must trust in your abilities: The interaction effect of ability EI and perceived EI on depression in women. *Journal of Psychoeducational Assessment*, 33, 46-56. <https://doi.org/10.1177/0734282914550384>
- Sánchez-Álvarez, N., Extremera, N., & Fernández-Berrocal, P. (2016). The relation between emotional intelligence and subjective wellbeing: A meta-analytic investigation. *Journal Positive Psychology*, 11, 276-285. <https://doi.org/10.1080/17439760.2015.1058968>
- Scarabottolo, N. (2019). Comparison of students in an undergraduate university degree offered both in presence and online. *Interactive Technology and Smart Education*, 16(1), 36-48. <https://doi.org/10.1108/ITSE-09-2018-0067>
- Schutte, N. S., Malouff, J. M., & Thorsteinsson, E. B. (2013). Increasing emotional intelligence through training: Current status and future directions. *The International Journal of Emotional Education*, 5(1), 56-72. <https://www.um.edu.mt/library/oar/handle/123456789/6150>
- Tabachnick, B. G., & Fidell, L. S. (2019). *Using Multivariate Statistics* (7th ed.). Pearson.
- Vishal, Y., Naveen, Tiwari, T., & Singh, A. L. (2017). Mental health in relation to emotional intelligence among university students. *Indian Journal of Health and Wellbeing*, 8(10), 1210-1212.
- Zeidner, M., Matthews, G., & Roberts, R. D. (2012). The emotional intelligence, health, and well-being nexus: What have we learned and what have we missed? *Applied Psychology Health Well Being*, 4, 1-30. <https://doi.org/10.1111/j.1758-0854.2011.01062.x>
- Zhang, P., Li, C. Z., Zhao, Y. N., Xing, F. M., Chen, C. X., Tian, X. F., & Tang, Q. Q. (2016). The mediating role of emotional intelligence between negative life events and psychological distress among nursing students: A cross-sectional study. *Nurse Education Today*, 4, 121-126. <https://doi.org/10.1016/j.nedt.2016.05.025>