

THE RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE (EI) AND QUALITY OF LIFE (QOL) IN TAIWANESE UNDERGRADUATES

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Abstract

Evidence showing a positive relationship between emotional intelligence (EI) and quality of life (QOL) has been documented in different populations; nevertheless, few studies have explored the association among undergraduate students. In addition, the aforementioned studies focused on university students in Western countries. Several studies have also found that EI competencies can be learned and enhanced through appropriate training techniques. The current study thus sought to bridge the gap in the existing literature on the relationship between EI and QOL through self-evaluation of Taiwanese college students. A total of 438 undergraduate students were recruited from 10 universities and technology universities in Taiwan. According to the results, EI was positively associated with all four domains of QOL

through Structural Equation Modeling (SEM) in the developed research model. Implications and recommendations of the results are given, and future research possibilities discussed.

Keywords: emotional intelligence (EI), quality of life (QOL), college students, training

Introduction

The issue of quality of life (QOL) has gained increasing attention in the fields of psychological, social, behavioral, health, and management sciences during the past few decades (Oliveira, Brochado, & Correia, 2018). The slightly different terms of QOL, such as well-being, wellness, happiness, and life satisfaction, can be associated with a wide range of positive outcomes, such as better health, social relationships, and work success (Oliveira et al., 2018; Kuykendall, Tay, & Ng, 2015; Andereck, Valentine, Vogt, & Knopf, 2007), although researchers' understanding of this topic is still in its relative infancy (Smith & Diekmann, 2017).

The international collaborative review of the WHO (World Health Organization) coordination group in Geneva sought to define QOL and provide an approach to assessing quality of life on an international scale. QOL was defined as "individuals' perception of their position in life in the context of the culture and value systems in which they

live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the persons' physical health, psychological state, level of independence, social relationships and their relationship to salient features of their environment" (The WHOQOL Group, 1995). An assessment was then developed to cover key physical, psychological, social, and spiritual domains of life. This new, updated assessment improves upon earlier assessments, which often focused narrowly on functional status rather than the broader concept of quality of life.

According to Zeidner and Olnick-Shemesh (2010), people who have higher levels of emotional management tend to have better awareness of their emotions, ability to regulate their emotions, and more effective coping strategies to deal with stress-related emotions, all of which lead to greater overall well-being (see also Luque-Reca, Pulido-Martos, Lopez-Zafra, & Augusto-Landa, 2018). This ability is defined as emotional intelligence (EI), a term

first coined by Peter Salovey and John Mayer in 1990. EI is described as “the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and actions” (Salovey & Mayer, 1990, p. 189). A recent study by Min (2014) examined the association between EI and QOL among the tour guide population, finding that higher EI is correlated positively with psychological health, physical health, and QOL. Urquijo, Extremera, & Villa (2016) had similar findings in their study, which used a sample of 400 graduates from the University of Deusto and found a significant path from EI through perceived stress to life satisfaction and psychological well-being while controlling the variable of personality traits. Comparing university students in Germany and Turkey, Koydemir and Schütz (2012) had the same findings that overall EI ability can predict subjective well-being. Luque-Reca et al. (2018) showed a positive link between EI and QOL, associating emotional processing with several health indicators among older adults.

Several other studies have found that EI competencies can be learned and enhanced through training techniques (Karimi, Leggat, Bartram, & Rada, 2020; Mattingly & Kraiger, 2019; Sarabia-Cobo, Suárez, Crispín, Cobo, Pérez,

de Lorena, Rodríguez, & Gross, 2017; Herpertz, Schütz, & Nezlek, 2016; Zijlmans, Embregts, Gerits, Bosman, & Derkzen, 2016; Goleman, 1998, 1995). In other words, EI abilities can not only be learned but also continuously improved, which in turn allows for increased QOL and well-being. However, while the topic of QOL and factors that influence adults’ behavior in different settings has drawn the attention of researchers and practitioners in different fields, there has been relatively little discussion of QOL or health issues among college students. Specific attention should be devoted to college students since this stage is recognized as a particularly high-stress period of the schooling process (Pekmezovic, Popovic, Tepavcevic, Gazibara, & Paunic, 2011, p. 391). This is particularly relevant because the college environment presents various challenges, including drinking, smoking, and poor sleep patterns and dietary practices, that contribute to poorer health status in these individuals. The long-term consequences of these factors can negatively impact students’ psychological and physical well-being (Chern & Huang, 2018; Chang, Shih, Chi, Chang, Hwang, & Chen, 2016; Vaez & Laflamme, 2003; Hall, Chipperfield, Perry, Ruthig, & Goetz 2006; Ruthig, Marrone, Hladkyj, & Robinson-Epp, 2011). Conversely, college students with better QOL are

more likely to utilize university services, get involved in extracurricular activities, perform well academically, and thus have a better overall university experience (Wrosch & Scheier, 2003). Moreover, although the association between EI and well-being among both graduate and college students was acknowledged by the above findings of Urquijo et al. (2016) and Koydemir and Schütz (2012), both of these studies focused on university students in Western countries. Nevertheless, to date, little empirical research has examined the relationship among Taiwanese college students. It is particularly necessary to investigate this issue within the Taiwanese college student population because some problems influencing quality of life were found, such as internet addiction and poor sleep quality (Chang et al., 2016; Chern & Huang, 2018). Chang et al. (2016) further argue for the importance of research on QOL among Taiwanese university students given the relatively little attention given to examining their health status and QOL.

This study thus examines the relationship between EI and QOL through self-evaluation measures and, in doing so, aims to gain a better understanding of the levels and the links of the factors in the group of undergraduate students. To our knowledge, there is a scarcity of literature investigating the relationships

between EI and QOL among the Taiwanese college student population. In practice, the results can provide information for educators to develop interventions and such interventions can potentially enhance undergraduate students' competencies of QOL, which will in turn benefit them in terms of overall QOL and well-being.

Methodology

Instruments

Two self-report instruments, the Wong and Law's Emotional Intelligence Scale (WLEIS) and the World Health Organization Quality of Life assessment short version (WHOQOL-BREF) were used in the study to assess the relationship between EI and QOL among college students. Background variables, including gender, year of university, and public/private school were also included.

Emotional Intelligence Scale (WLEIS)

The WLEIS scale was developed by Wong and Law (2002), who gave permission for its use in the current study. The measurement is consistent with Mayer and Salovey's (1997) definition of EI, as well as Davies, Stankov, and Roberts' (1998) synthesis of the EI literature. Previous studies support the scale's factor structure, internal consistency, and convergent and discrimi-

nant validity when used with the Chinese population (Law, Wong, & Song, 2004; Wong & Law, 2002). The evaluating the validation of the measurement were also extended to the population of college students in China by Shi and Wang (2007). The results showed that the Chinese version of WLEIS containing four dimensions yielded acceptable reliability, concurrent validity, convergent and discriminant validity, indicating that the scale is suitable as a research instrument to measure EI in the current study.

The scale consists of four dimensions with four items in each dimension: Self-Emotion Appraisal (SEA) (e.g., “I have a good sense of why I have certain feelings most of the time.”), Others’ Emotion Appraisal (OEA) (e.g., “I am a good observer of others’ emotions.”), Regulation of Emotion (ROE) (e.g., “I am able to control my temper so that I can handle difficulties rationally.”), and Use of Emotion (UOE) (e.g., “I am a self-motivating person.”). Participants were asked to respond to each item based on a five-point Likert-type response scale that from “strongly disagree” to “strongly agree”.

With regard to the applicability of each item to the current study, interviews were conducted to collect the opinions of seven professors from different colleges concerning the adequacy and

wording of each of the items of WLEIS as well as each item’s applicability to the undergraduate students. Two specific questions were asked of interviewers: (1) are there any modifications in terms of wording that should be made to fit the undergraduate students? (2) are there any details that should be eliminated or added to items to make them more applicable to evaluate the college students? The professors’ opinions were collected. Revisions were then made based on these professors’ opinions in order to make the items more applicable to the current study. In addition, a pilot test was conducted in which 50 undergraduate students completed the scale, after which any unclear elements were corrected.

WHOQOL-BREF (Taiwan version)

The validated WHOQOL-BREF (Taiwan version) was developed by Yao et al. in 2002 as a shortened version of the WHOQOL-100 in order to measure QOL in the current study. It consists of 24 items to assess perception of QOL in four domains, including physical health (7 items), psychological (6 items), social relationships (3 items), and environment (8 items). Each domain is represented by several facets, and questions corresponding to these facets are formulated using a five-point Likert-type scale. The items are rated reflecting intensity (nothing - extremely, e.g. “To what ex-

tent do you feel that physical pain prevents you from doing what you need to do?"), capacity (nothing - completely; e.g. "Do you have enough energy for everyday life?"), frequency (never - always; e.g. "How often do you have negative feelings, such as blue mood, despair, anxiety, depression?"), and assessment scales (very dissatisfied - very satisfied; very bad - very good; e.g. "How satisfied are you with your personal relationships?"). The participants were asked to evaluate their QOL over the past month based on the corresponding diverse items. Previous psychometric study indicates a four-domain construct satisfactory reliability (international Cronbach's alpha 0.70 to 0.77). The test-retest reliability coefficients with interval 2-4 weeks ranged from 0.41 to 0.79 at item/facet level and 0.76 to 0.80 at domain at $p < 0.01$ levels (Yao, Chung, Yu, & Wang, 2002). In keeping with the guidelines of the WHOQOL-BREF, the mean scores are multiplied by four to determine the domain scores. These domain scores range from 4 to 20, with higher scores denoting higher QOL, as reflected by the items/domains.

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denoting higher QOL, as reflected by the items/domains. The WHOQOL-Taiwan Version Development Group gave the authors of this study permission to use the Chinese version, and no wording change was required.

Participants and procedures

The 500 university undergraduate students aged 18 years or older were recruited from 10 universities and technology universities in Taiwan, including three public and seven private schools. Additionally, stratified cluster sampling was used to draw a random sample from discipline-based college (e.g. liberal arts, social science, engineering, biomedical and life sciences) that represented the universities' academic diversity. All participants were asked to sign an informed consent form before the survey procedure was administered. In order to increase the response rate of the survey, upon completion of the questionnaires every respondent was given a gift. Before distributing, subjects were informed of the purpose about the study, the voluntary nature of their participation, the confidentiality of their responses, the proper procedures to follow in completing the questionnaires, and the expected duration of their participation. The students filled out the questionnaires in their classes, and 451 were returned, for a 90% response rate.

Table 1. Pearson Correlation, Means, and Standard Deviations among Model Variables

	EI	SEA	OEA	ROE	UOE	QOL	PHY	PSY	SOL	ENV
EI	1.000	.743***	.706***	.696***	.734***	.597***	.442***	.518***	.481***	.472***
SEA		1.000	.418***	.410***	.369***	.497***	.381***	.409***	.394***	.448***
OEA			1.000	.230***	.398***	.355***	.285***	.257***	.299***	.292***
ROE				1.000	.325***	.338***	.218***	.295***	.310***	.264***
UOE					1.000	.538***	.398***	.534***	.387***	.368***
QOL						1.000	.801***	.846***	.795***	.800***
PHY							1.000	.610***	.485***	.546***
PSY								1.000	.559***	.558***
SOL									1.000	.549***
ENV										1.000
MEANS	3.623	3.845	3.789	3.396	3.463	3.330	3.166	3.337	3.375	3.493
SD	.535	.671	.741	.794	.768	.442	.446	.511	.591	.581

*p<0.05, **p<0.01, ***p<0.001

Notes 1: EI, Emotional Intelligence; SEA, Self-Emotion Appraisal; OEA, Others' Emotion Appraisal; ROE, Regulation of Emotion; UOE, Use of Emotion; PHY, Physical; PSY, Psychological; SOC, Social Relationships; ENV, Environment

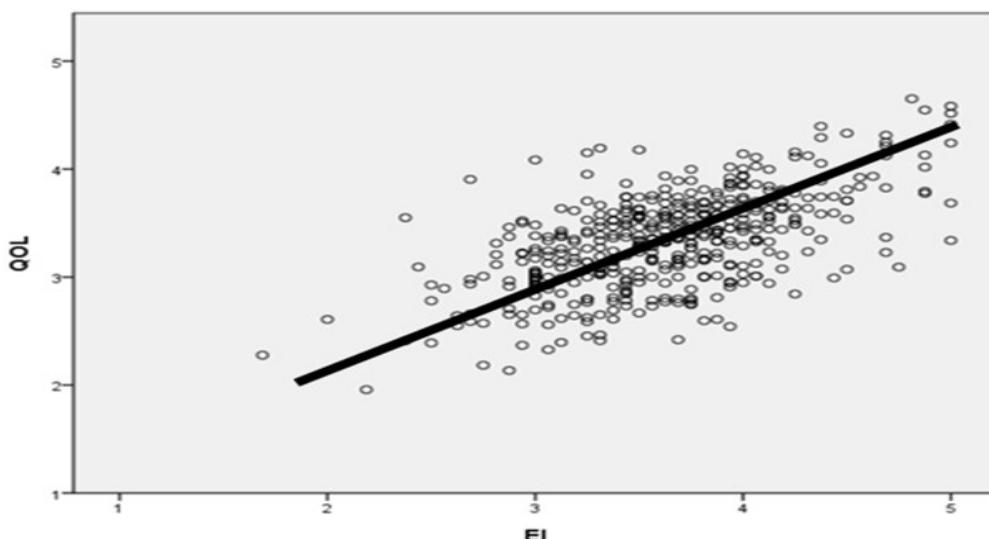


Figure 1. Correlations between EI and QOL scores ($r=.597$, $p<0.001$)

Of the returned surveys, 13 questionnaires were incomplete and eliminated from the final sample, resulting in a total valid sample of 438 for the final

analyses. Among them, 170 were males (38.8%) and 268 (61.2%) were females, with an age range from 18-29 (Mean= 20.37; SD=1.667). In terms of the year

in university, there were 101 freshmen (23%), 106 sophomores (24.2%), 180 juniors (41.1%), and 51 seniors (11.6%). Among the participants, 30% are from public and 70% are from private schools, representing similar proportions of the overall number of public/private students (32%: 68%) in Taiwan in 2019. The Cronbach alpha reliability coefficients, ranging from 0.795 to 0.918 in each dimension, indicate that internal consistency exists. Cronbach alpha reliability coefficients for all EI and QOL items were 0.890 and 0.864 respectively, which were deemed acceptable.

Results

The collected valid data from 438 college students were analyzed using SPSS 20.0 and SmartPLS 3.2.4 for Windows. In terms of intercorrelations, there were significant correlations amongst all the dimensions. Table 1 also revealed, as expected, that undergraduate students' EI dimensions were positively and significantly related to the dimensions of QOL tested by the Pearson Correlation. The correlations ($r=.597$, $p<0.001$) between both EI scores and QOL scores are displayed in Figure 1, showing that as EI increases, QOL also tends to increase.

Assessment of Measurement Model and Hypothesis Testing

All model analyses were estimated using the maximum likelihood method (ML) of estimation, which has been found to be robust violations of normality and provide valid results (West, Finch, & Curran, 1995). A significant NCI (normed chi-squared index, χ^2 / df , 72.661/19) was obtained, indicating that the model fit the data. The indicators of goodness of fit are Goodness of Fit Index (GFI)=0.961, Comparative Fit Index (CFI) = 0.973, Normed Fit Index (NFI) = 0.964, Relative Fit Index (RFI) = 0.947, (acceptably ≥ 0.90), and root mean square error of approximation (RMSEA) = 0.0790, Standardize Root Mean Square Residual (SRMSR) = 0.0389 (acceptably ≤ 0.08). Based on the results, all of the model-fit indices exceeded the common acceptance levels, thus demonstrating that the hypothesized model fits the empirical data well. Table 2 shows that the CR (construct reliability), the shared variance among a set of observed variables measuring an underlying construct, was above the suggested criterion of 0.70. This demonstrates that all of the constructs have high reliability. The average variance extracted (AVE) used to assess convergent validity represents the overall amount of variance in the indicators captured by the latent construct. Each AVE value exceeded the threshold values of 0.5, which provides satisfactory evidence for convergent validity.

Table 2. Measurement Model Results

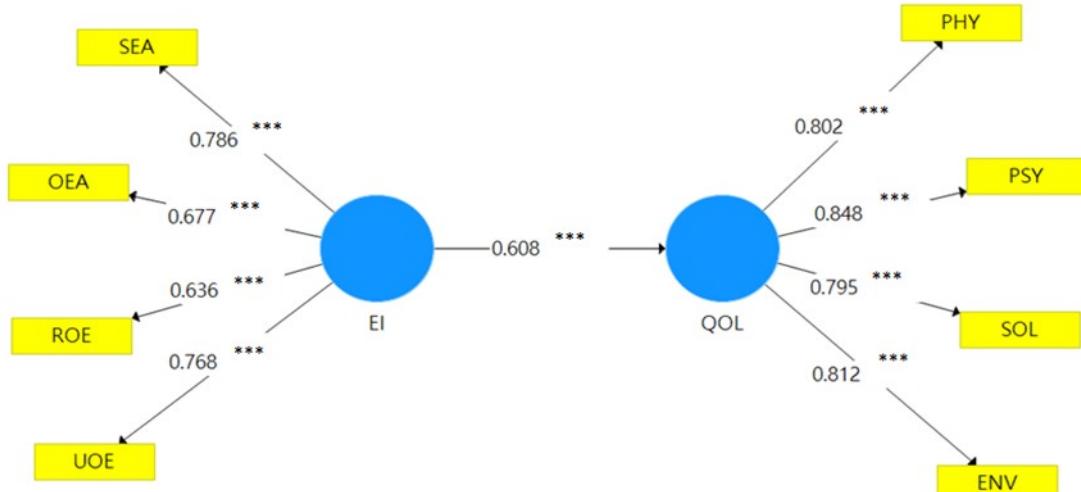
Construct	Variables	Standardised loadings	Item reliability	t-Value	SE	CR ^a	AVE ^b
EI	SEA	0.786	0.582	31.644***	0.025	0.810	0.517
	OEA	0.677	0.631	15.121***	0.045		
	ROE	0.636	0.660	11.563***	0.055		
	UOE	0.768	0.612	21.395***	0.036		
QOL	PHY	0.802	0.787	43.024***	0.019	0.887	0.664
	PSY	0.848	0.763	55.472***	0.015		
	SOL	0.795	0.792	39.397***	0.020		
	ENV	0.812	0.778	22.799***	0.036		

a Construct reliability = $(\sum \text{Standardized loadings})^2 / [(\sum \text{Standardized loadings})^2 + \sum \epsilon_j]$.

b Average variance extracted (AVE) = $\sum (\text{Standardized loadings}^2) / [\sum (\text{standardized loadings}^2) + \sum \epsilon_j]$, where ϵ_j is the measurement error.

The present study tested hypothesis through Structural Equation Modeling (SEM) in the developed research model. The structural paths were estimated to examine the hypothesized relationship among independent (EI) and dependent (QOL) variable, graphically displayed as

Figure 2. The observed variables are enclosed in squares, and the latent variables are enclosed in circles. A one-way path between constructs is indicative of a hypothesized direct effect of one construct on another.



***p<.001

Figure 2. Results of structural equation model (SEM)

Conclusion

Generally, college is a time of transition for young adults, who face numerous changes such as a heightened demand for academic autonomy and self-reliance. While QOL has become a topic of increasing concern among different populations for researchers, there is a scarcity of research focusing on the well-being and QOL of college students (Chern & Huang, 2018; Chang et al., 2016; Vaez & Laflamme, 2003; Hall et al., 2006; Ruthig et al., 2011). Moreover, previous studies reported that higher EI is correlated positively with psychological health, physical health, and QOL. The current study thus sought to bridge the gap in the existing literature on the relationship between EI and QOL through self-evaluation of Taiwanese college students. As hypothesized, EI was positively associated with all four domains of QOL. In other words, undergraduates with higher EI levels were significantly and differentially related to higher QOL in physical, psychological, social, and environment domains, which is consistent with the previous research findings.

According to the findings, as EI increases, QOL also tends to increase. From a practical perspective, improving students' EI competencies is a critical way to help them enhance the benefits of

QOL. As noted previously, EI skills can be instilled, nurtured, or taught through education and training. Therefore, it can be recommended that some courses integrate EI instruction at some level within the curricula of learning areas; furthermore, the career placement office or additional faculty can be directed to hold non-credit workshops for college students in order to improve their EI. In Gilar-Corbí (2018), a multimethodological approach for EI training, incorporating elements such as online, in the classroom, and coaching, proved effective at improving EI competencies for students in higher education. In this approach, educators had the freedom to select the most appropriate modality from a range of possibilities and according to the available resources, with the goal of developing students' abilities to manage their emotions in each situation. The benefits of EI enhancement can turn into increasing levels of students' QOL.

Limitations and Venues for Future Research

Despite previous evidence showing a positive association between EI and QOL among the adult population, few studies have explored this relationship among Taiwanese university students, who have received relatively little attention concerning their health status and

QOL (Chang et al., 2016). This study provides a clearer understanding of the relationship between EI and the perceptions of QOL domains among these college students. However, some limitations should be taken into account with respect to the present results, and these require attention from future researchers.

First, the present study collected data via self-administered surveys, and such self-reporting measures have been known to have issues such as potential reporting bias. To minimize any reporting bias and enhance internal validity, this study conducted the surveys anonymously, employed empirically validated measures for the main study variables, and conducted a pilot test to ensure the appropriateness of the survey items. Future researchers could ensure even stronger validity by eliminating self-reporting measures altogether. In terms of the data collection, participants were from ten universities in northern Taiwan and the study sample consequently may not be representative of all undergraduate students in Taiwan. Sampling extending to different regions would provide an avenue for further investigation to represent the general college student population. In addition, most of the participants in this study were female (61.2%), and the reason for this may be attributable to the majority sampling from business school (23%),

although stratified cluster sampling has been considered. A more accurate proportion of sampling extending to students in different colleges is thus strongly recommended in future research in order to yield more objective evaluations. Also, similar studies can be conducted in other countries for cross-national comparisons. In Chen, Wu, and Yao (2006), the researchers indicated that previous studies using the WHOQOL-BREF mainly focused on the adult population, and “comparisons or the trace of the dynamic change on quality of life by aging” are recommended (p. 231). In this regard, future studies might seek to compare QOL between college students and people in different age groups, such as adults or adolescents, in order to better understand QOL’s relationship with human developmental stages.

Another limitation is that this study’s use of a survey to collect data at a single point in time prevented the measuring of any potential changes in participants over time. A longitudinal study would therefore help overcome this deficit and contribute further to the body of research concerning the relationship between EI and QOL among undergraduates. A longitudinal study would allow future researchers to confirm temporal relationships and thus to better understand the underlying mecha-

nisms between EI and QOL. Such a study would also allow for the monitoring of EI trends in this population. Lastly, future research can consider how course design or workshops of EI programs affect EI and QOL. Specifically, future studies could evaluate the scores both prior to and after training programs in order to measure the impact of these programs on EI and QOL domains.

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