

Original article

**Emotional intelligence and mental health problems among adolescents in Vietnam:
A school-based survey**

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Abstract

Background: The burden of mental health problems among adolescents is substantial and apparent globally. There are fewer data and nature, prevalence and determinants of these problems available from low- and middle-income countries (LMICs). Emotional intelligence (EI), an individual characteristic that is shaped by experience, can protect adolescents from mental health problems in high-income countries. However, this relationship has not been investigated extensively in LMICs and not at all in South East Asian countries.

Aim: The aim was to investigate the relationship between EI and symptoms of mental health problems among adolescents in Vietnam.

Methods: A cross-sectional survey of adolescents attending schools in rural and urban areas of Central Vietnam was done. Data were collected using an anonymous, self-completed questionnaire, which included study-specific questions about demographic characteristics and the Vietnam-validated Depression-Anxiety-Stress Scale-21 (DASS-21), the UCLA Loneliness Scale (UCLA-8), the Trait Emotional Intelligence Questionnaire – Adolescents Short Form (TEIQue-ASF), which yields four sub-scale scores and a Global EI score.

Results: A total of 1,593/1,616 (98.6%) students completed the questionnaire. Students with higher Global EI scores and Well-being, Self-control and Emotionality subscale scores had significantly fewer symptoms of depression, anxiety and stress and a lower risk of having symptoms of loneliness. Well-being, Emotionality, and Sociability protected against loneliness.

Conclusion: Higher EI is associated with better mental health among Vietnamese adolescents. Structured interventions to assist parents in providing care that fosters EI and school-based programs to enhance EI potentially promise approaches reducing the burden of mental health problems experienced by young people in Vietnam.

Keywords: adolescents, anxiety, depression, emotional intelligence, loneliness, low- and middle-income, mental health problems, stress, Vietnam.

Introduction

Adolescence is a developmental phase characterized by rapid changes physically and mentally [1]. The changes in social relationships, responsibilities, roles, and expectations can significantly influence individual moods, affecting adolescents' well-being.

Mental health problems are prevalent among adolescents (age 10-19) throughout the world [2]. According to the World Health Organization (WHO), mental health problems are among the leading causes of mortality among adolescents globally [3]. It is estimated that approximately 20% of adolescents worldwide experience a mental health problem annually [2]. There is increasing recognition of this public health problem in low- and middle-income countries (LMICs), where 70% of the world's adolescents live [3]. In China, the prevalence of depression assessed by the Epidemiologic Studies Depression Scale (CES-D) among community-based adolescents was 20.3% [4]. Based on the Childhood Psychopathology Measurement Schedule (CPMS) clinical interview and diagnosis according to the International Classification of

Diseases-10 (ICD-10), the prevalence of psychiatric illness among 3,928 Indian adolescents aged 10-15 was 20.2% [5]. However, this burden is poorly recognized in most LMICs, which lack data about the nature, prevalence, and determinants of mental health problems among adolescents, which are essential to informing local policy responses and international efforts to develop evidence-based interventions [6].

Based on the Ecological Systems Theory formulated by Bronfenbrenner [7], the psychological growth of adolescents is influenced by individual factors and external contexts, including family, friends, school, and community. Therefore, it is essential to consider the child and the child's interactions with environmental systems to understand and help them grow and develop healthily.

Emotional intelligence (EI) is an individual factor and conceptualized as the ability to understand, regulate, and control emotions and the capacity to empathize with and adjust to others' feelings [8]. There is evidence that higher EI can protect a person from mental health problems [9]. People with higher EI are happier and develop greater life satisfaction than those with low EI. In contrast, low EI has been associated significantly with depression, anxiety, loneliness, stress, higher alcohol consumption, drug use, and personality disorder [10]. Among adolescents in high-income settings, higher EI has been shown to prevent the development of emotional problems. In Spain, a two-year longitudinal study started in 2015 concluded that early adolescents with higher EI had a lower risk of experiencing depressive and anxiety symptoms [11]. Davis and Humphrey's study in the UK concluded that higher EI predicted a lower level of depression and disruptive behaviours among school students aged 11 to 16 years [12]. These findings are consistent with those from studies conducted among adolescents in LMICs. For instance, an investigation of 247 Iranian high school students using the Emotional Intelligence Inventory, Youth Version (EQ-I, YV) revealed that the lower the EI score, the higher anxiety or depression scores [13]. The same correlation was concluded in Ahmad et al.'s

study among 112 Pakistan students aged 16 to 18 [9]. While providing consistent and promising evidence, these studies used relatively small samples and recruited single sites that might limit generalisability. Most LMICs, including those in South East Asia, have no local evidence on EI among adolescents regarding the policy or health promotion strategies.

Vietnam is a lower-middle-income, Southeast Asian country where one-fifth of the national population is adolescents [14]. However, the prevalence of mental health problems among young people appears to be higher than world averages, with a report that 41.1% of school adolescents had symptoms of mental health problems [15]. This study aimed to describe the association between EI and symptoms of common mental health problems, including depression, anxiety, stress, and loneliness among adolescents in Vietnam.

Methods

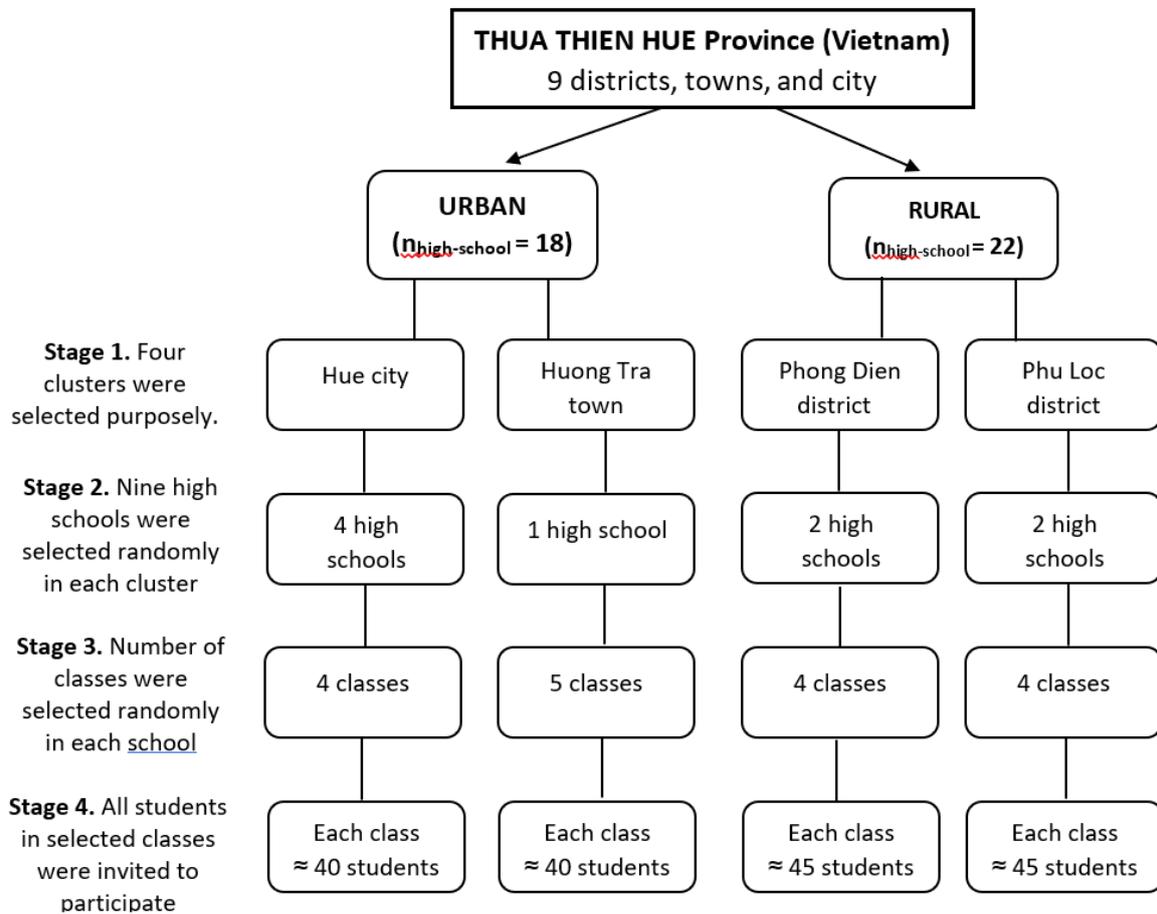
Setting

It is a cross-sectional school-based study conducted in Thua-Thien-Hue province in Central Vietnam. The ancient capital – Hue City - of Vietnam and the centre of an old feudal tradition is located. Thua-Thien-Hue is approximately 5,100kilometressquare with a total population of 1.1 million [14] and covers six districts, two district-level towns, and one capital city. The province has 40 public high schools, of which 18 are located in urban and 22 in rural areas. High schools include grades 10 to 12 and enrol adolescents aged from 15 to 19 years.

Participants

The research team invited nine public high schools, randomly selected from the Provincial Department of Training and Education list of high schools. Four to five classes from three grades (10, 11 and 12) were chosen randomly from each school. All students in target classes were invited to participate in this study. The multi-stage sampling process is illustrated in Figure 1.

Figure 1. The multi-stage sampling process



Measures

Data were collected using an anonymous, self-completed questionnaire.

Symptoms of common mental health problems, including depression, anxiety, and stress, were assessed using the Depression-Anxiety-Stress Scale-21 (DASS-21). Three subscales include seven items in each subscale measured depression, anxiety, and stress. All items are assessed on 4-point scales about how frequently each has been experienced over the past week. The scale has been validated in terms of reliability, convergent validity, and factor structure for use among adolescents in Vietnam with high internal consistency (Cronbach's Alpha of the total DASS score was 0.91). The validation study supports using the three subscale scores to investigate the symptoms of depression, anxiety, and stress among Vietnamese

adolescents(Cronbach's Alpha was 0.84, 0.74, and 0.76 for the Depression, Anxiety, and Stress subscale, respectively)[16].

Loneliness was assessed using the 8-item UCLA Loneliness Scale(UCLA-8), a short version of the well-known 20-item UCLA Loneliness Scale [17]. Hays and DiMatteo developed this short form based on the eight items loading to the first extracted factor in exploratory factor analysis [18]. Items are rated on a 4-point scale from 1 (Never) to 4 (Always). This scale has been widely used and has shown good internal consistency and convergent validity[19]. It has not, however, yet been validated for use in Vietnam.

Emotional Intelligence: High school students reported their EI using the Trait Emotional Intelligence Questionnaire – Adolescents Short Form (TEIQue-ASF) [20], which these authors had shortened from the complete form of 185 items to 30 items. The TEIQue-ASF followed the seven-point Likert structure, ranging from "Strongly Disagree" to "Strongly Agree." The questionnaire yields four subscales: Well-being (6 items), Self-control (6 items), Emotionality (8 items), and Sociability (6 items). The TEIQue-ASF has been translated and validated on adolescents in many countries, with Cronbach's Alpha ranged from 0.81 to 0.87[21, 22].

Study-specific questions were used to collect data about demographic characteristics: age, gender, rural (including coastline area) or urban residence, religion (Buddhism or other religion or no religion), marital status of parents, parental highest education and occupation, current living with parents or not, and position in the birth order in the family.

Procedure

The questionnaire was designed in English and then cross-culturally adapted based on Borsa et al.'s standard technique [23]. The adaptation process included translation, back-translation, amendments, and a pilot test on the target population. The final version was achieved based on the agreement of the research group and all translators.

All of the nine randomly selected high schools agreed to participate in the study. Within these schools, randomly selected classes were approached. All students in these classes and their parents were informed and received written explanatory statements about the study and an invitation to be the survey respondents one week before the survey date (Figure 1).

On the data collection day, after a trained research assistant introduced the questionnaire and answered all students' questions, each student in the class received a questionnaire in an envelope to complete in-class individually, anonymously, and quietly under the research assistants' supervision. At the end of the session, all participants were asked to place the questionnaires, whether they had been completed, back into the provided envelope and sealed them before submitting them to the research assistants. The teacher and other school staff were asked not to be present in the class during the completed questionnaire. Data collection was carried out in October and November 2016, which was 2-month before the end-of-semester examination.

There was no individual payment for those who participated in the study, but a small gift to the value of USD10 was given to each class's fund, which is spent on study materials, excursions, or class events.

Data management

EpiData software 3.1 was used to enter the collected data. All analyses were conducted using Stata version 14.0. Only data from fully completed questionnaires were included in the analyses.

The DASS-21 yielded three scores for depression, anxiety, and stress symptoms. Scores of each subscale were gained by summing all its seven relevant items. The range score, therefore, for each item was from 0 to 21. The higher the score, the higher the level of depression, anxiety, or stress.

Loneliness was evaluated based on the score calculated by summing all items, in which two items were reverse-coded. Total loneliness score ranged from 8 to 32. Participants with a higher score were at a higher level of loneliness.

The TEIQue-ASF includes Global EI, which is the total EI score, and four subscales' scores. Each subscale's scores were the average of all related items. Four independent items do not belong to any subscale and only contribute to the Global score retrieved by summing all items and dividing by 30. The higher the score was, the better EI the student recorded. All scores ranged from 1 to 7.

All the scores of continuous variables, including scores of depressions, anxiety, stress, loneliness, Global EI, EI subscales, were converted to standard scores for some analyses. The standard score illustrates how far a raw score, which is the score retrieved from the data collection, is above (positive standard score) or below (negative standard score) the mean value [24]. The standard score allows researchers to compare scores from different tests on a standard scale and determine which of the predictor variables have the most substantial relative impact on the criterion variable. The standard score was calculated by subtracting the mean score from the raw score and then divided the result by the SD [25].

Data analyses

Descriptive statistics were used to understand the distribution for each variable.

Four multiple linear regression models were conducted with the Global EI as an independent variable and the outcomes as depression, anxiety, stress, and loneliness scale scores to examine the relationship between EI and symptoms of mental health problems. Second, to understand each dimension of EI's role in mental health problems, other multiple regression models were conducted with four EI subscales as independent variables and four outcomes of depression, anxiety, stress, and loneliness. These models used the standard scores for depression, anxiety,

stress, loneliness, EI, and EI's subscales, while controlling for cluster effects (school) using clustered sandwich estimator and other demographic characteristics.

Ethical consideration

Approval to conduct the study was provided by the Monash University Human Research Ethics Committee (Project No.:2016-0610) and the Hue University of Medicine and Pharmacy (Project No.: 01-102016/DHYDH). Permission was received from the Provincial Department of Education and Training, all schools' directors, and participants' parents/guardians. We used an opt-out approach for both parents/guardians and students. This means that parents/guardians who did not agree to their child's participation were asked to sign and return a Withdrawal Form. For students, if they returned the completed questionnaire to the researchers meant they agree to participate in the study; otherwise, a blank questionnaire was asked to return.

Results

A total of 1,616 students were eligible and invited to participate. All parents supported their children to be respondents of the research, and no student refused to participate. Of those, 1,593 students (98.6%) provided complete data and were included in the analyses; data from 1.4% could not be included because more than half the questions were not completed. About 55% of students were females, and more than half of the participants were from rural areas (55.4%). The majority of the students were Kinh people, and almost half of them adhered to Buddhism. Most of the students were living with both birth parents. Approximately a quarter of the students had parents who had never been to school. Most of the participants' parents were working in manual labour. Only 15% of the students had no siblings or cousins, and 26% were the eldest child in their family (Table 1).

Table-1: Socio-demographic characteristics of the sample

Characteristics	Results
Age	
Mean (SD)	15.4 (0.90)
Min – max	15-18
Sex (n, %)	
Female	871 (55.4)
Male	722 (45.3)
Residence (n, %)	
Rural	883 (55.4)
Urban	710 (44.6)
Religion (n, %)	
No religion	739 (46.2)
Buddhism	729 (45.8)
Others	125 (7.8%)
Ethnicity (n, %)	
Kinh	1,581 (99.25)
Others	12 (0.75)
Parental marital status (n, %)	
Living together	1,448 (90.9)
Not living together	141 (8.9)
Current living with (n, %)	
Both birth parents	1,397 (87.7)
Not with both of birth parents	194 (12.2)
Maternal education (n, %)	
High education	258 (16.20)
Basic education	898 (56.37)
No school	437 (27.43)
Paternal education (n, %)	
High education	305 (19.15)
Basic education	900 (56.50)
No school	388 (24.36)
Maternal occupation (n, %)	
Mental labour	248 (15.57)
Manual labour	1,303 (81.8)
Jobless	42 (2.64)
Paternal occupation (n, %)	
Mental labour	311 (19.52)
Manual labour	1,169 (73.38)
Jobless	113 (7.09)
Order of child in the family (n, %)	
Elder	418 (26.24)
Younger	934 (58.63)
No sibling	241 (15.13)

SD: Standard Deviation, n: number of students

The descriptive statistics of the distributions of the scores of global EI, four EI subscales, symptoms of mental health problems are provided in Table 2.

Table-2: Mean, SD, Min and Max scores of continuous variables

	Mean (SD)	Median (IQR)	Min- max
Emotional Intelligence			
Global EI score	4.3 (0.7)	4.3 (3.9 – 4.8)	1.8 – 6.6
Well-being	4.8 (1.2)	4.8 (4.0 – 5.7)	1.0 – 7.0
Self-control	4.2 (1.0)	4.2 (3.5 – 4.8)	1.0 – 7.0
Emotionality	4.0 (0.8)	4.0 (3.5 – 4.5)	1.3 – 6.8
Sociability	4.4 (0.9)	4.4 (3.8 – 5.0)	1.0 – 7.0
DASS-21			
Depression	6.3 (5.2)	5.0 (2.0 – 10.0)	0.0 – 21.0
Anxiety	5.1 (4.4)	4.0 (2.0 – 8.0)	0.0 – 21.0
Stress	6.6 (4.5)	6.0 (3.0 – 9.0)	0.0 – 21.0
Loneliness			
Total scores	17.1 (5.3)	17.1 (13.0 – 21.0)	8.0 – 106.0

SD: Standard Deviation, IQR: Interquartile Range

There were significant associations between Global EI and symptoms of common mental health problems. Students with higher self-reported Global EI had significantly fewer symptoms of depression, anxiety, and stress (Table 3). Specifically, Global EI increases by one standard deviation, the symptoms of depression, anxiety, stress, and loneliness decrease by 0.44, 0.31, and 0.34 standard deviations. Looking further to the relationship between EI's dimensions and the symptoms of mental health problems, it was found that students who had higher Well-being, Self-control, and Emotionality scores had lower scores in Depression, Anxiety, and Stress. The Sociability subscale was negatively associated with depression scores; however, no association was repeated with either anxiety or stress scores (Table 3).

Table 3 shows that students with higher Global EI scores had a lower mean score on the loneliness scale. Increasing one standard score in Global EI reduced the loneliness standard score by 0.41. Loneliness scores were negatively correlated with Well-being, Emotionality, and Sociability subscales scores. Loneliness was decreased by 0.22, 0.16, and 0.17 standard scores when increasing one standard subscale score of Well-being, Emotionality, and

Sociability, respectively. However, the ability of self-control did not associate with the feeling of loneliness among Vietnamese adolescents (Table 3).

Table-3: Multiple linear regressions predicting symptoms of common mental health problems from EI among adolescents in Vietnam (n = 1,593 students)

EI	Depression		Anxiety		Stress		Loneliness	
	Coef.	95% CI	Coef.	95% CI	Coef.	95% CI	Coef.	95% CI
Model with Global EI^(a)								
Global EI	-0.50***	-0.57; -0.44	-0.37***	-0.44; -0.29	-0.40***	-0.49; -0.31	-0.46***	-0.52; -0.40
Model with EI's subscales^(a)								
Well-being	-0.36***	-0.44; 0.28	-0.23***	-0.30; -0.16	-0.24***	-0.30; -0.17	-0.25***	-0.32; -0.18
Self- control	-0.08*	-0.13; -0.03	-0.12**	-0.17; -0.07	-0.17***	-0.22; -0.12	-0.02	-0.09; -0.06
Emotionality	-0.16***	-0.21; -0.11	-0.13**	-0.20; -0.06	-0.15**	-0.20; -0.10	-0.18***	-0.21; -0.15
Sociability	-0.07**	-0.12; -0.03	-0.02	-0.08; 0.03	0.01	-0.02; 0.04	-0.17***	-0.24; -0.11

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

^(a)Controlled for Sex, Age, Ethics, Religion, Region, Parental Status, Parental education, Parental occupation, Person who currently living with, Woman/Man most care in the first 16 years, and Child order in family

Discussion

This study, the first from Vietnam, examined the associations between EI and mental health problems among adolescents. The main finding is that EI was a recognizable construct and was clearly and consistently related significantly to symptoms of Vietnamese youth mental health problems. This finding fits Bronfenbrenner's theory about the role of individual factors in a person's development. Evidence from this study contributes to the literature that EI might play a significant role in improving mental health among adolescents. The potential idea of enhancing mental health for adolescents at the individual level towards enhancing inner

strength could be considered. The concept of better mental health can begin with improving EI.

The current study was robust in having a large, randomly selected sample with a high recruitment fraction, including students from rural, urban, and coastline areas. The questionnaire was comprehensible and meaningful, and almost all students completed it. However, we acknowledge some limitations. First, it was conducted in one province in the Centre of Vietnam and did not include adolescents in the North or South of the country or members of ethnic minority groups and highland areas. Moreover, as attending high school is not compulsory in Vietnam, some young people have already left school and are working. Therefore, the study was unable to reach out-of-school adolescents. The results cannot be generalized to these groups.

Further studies that included this population are recommended despite difficulties in population-based recruitment, such as difficulties in contacting adolescents and their families and the refusal in participating the survey. The reasons might be due to their concerns about time-consuming, risk and safety, fear of extra financial costs, loss of confidentiality, prohibition from religious and cultural rules and stigma about mental problems. Second, these are cross-sectional data, and therefore, we can only report associations, not causal relationships. Third, the TEIQue-ASF and the UCLA-8 used in this study have not been validated in Vietnam; however, this study's cultural adaptation based on standard guidelines was conducted to ensure the acceptability, comprehensibility, and suitability these scales for use among adolescents in Vietnam. We were confident that this study's results could be generalized to adolescents attending high schools in Vietnam.

These data indicate that EI had a significant correlation to depression, anxiety, and stress. This finding was in line with previous studies in many countries. A 2018 study on 12 to 18 years Spanish adolescents by Cejudo et al. using the same EI questionnaire also concluded that EI is

negatively associated with stress and anxiety [26]. Ghana's adolescents with low EI were significantly associated with high depression and stress in a 2020 investigation [27]. The most recently Spanish study conducted in 2021 has shared the same conclusion as our survey regarding the protective role of EI to depression, anxiety and stress [28]. Our significant result contributed to EI's consistent protective role in mental health problems among young people across countries and cultures. Our study also found that EI might play an essential role in preventing adolescents from being lonely. Loneliness is a specific feeling due to a significant gap between social expectations of a person and their fundamental social interactions; it is one of the vital dimensions of EI. In the literature, there is consistent evidence of the protective role of EI against loneliness [26].

Regarding different dimensions of EI, findings from this study indicate that among this group of Vietnamese young people, characteristics of optimism, cheerfulness, satisfaction with life, self-confidence, and self-belief (EI domains of Well-being) were associated with fewer symptoms of depression, anxiety, and stress. Besides, students who could be aware of their own emotions and share it with others, understand others' perspectives, recognize others' feelings and maintain fulfilling personal relationships with family or close friends (EI dimension of Emotionality) were less likely to experience mental health problems. This finding further supports the notion that low emotional awareness increased the risk of mental health problems [26]. The EI dimension of Self-control, which indicates the good ability to regulate impulses and emotions, pressure, and stress from outside [29], protected adolescents from the risk of emotional problems. Notably, Sociability, which involves communicating effectively with people other than a family member and close friends, might play a protective role against depression; however, this relationship was not found to reduce stress and anxiety significantly. In terms of loneliness, the dimensions of EI might prevent adolescents from feeling lonely.

However, Self-control, which is the ability to self-manage and control emotions, did not contribute to this set of potential protective factors.

To concluded, EI and its dimensions were associated with better mental health among adolescents including in Vietnam. Findings in this study suggest that EI may play a particularly salient role in protecting mental health problems as Vietnamese children emerge into adolescence. As EI is potentially modifiable and can be learned and improved [29], a school-based structured intervention focusing on enhancing EI or including EI improvement programs in school curriculums is worth considering for support students with mental problems. EI also can benefit students after the psychotherapy to prevent them from falling back to mental issues. Schools in Vietnam should include EI as a prevention program to developmental well-being applied for all students. Further studies that have more participants should be considered so that the future developed EI training programs can benefit a wider population. Evidence, therefore, is much more reliable for the policymakers to consider including EI as a compulsory component in schools in Vietnam.

Data is available on the following link:

https://figshare.com/articles/dataset/EI_and_mental_health_problems_among_adolescents_in_Vietnam/13567475

Acknowledgment

We thank our colleagues from the Global and Women's Health (Monash University), Department of Psychology and Education (Hue University of Education, Hue University), and Dr. Mike Gorkin, who provided insight and expertise that greatly assisted the study and this manuscript.

We would like to show our gratitude to Thua-Thien-Hue Department of Education and Training, the Director and teachers from Nguyen Truong To, Gia Hoi, Quoc Hoc, Hai Ba Trung, Tam Giang, Phu Loc, Vinh Loc, Dang Huy Tru, and Tran Van Ky high school in Thua-Thien-Hue Province for all supports of conducting this study. We also thank all students and their parents/guardians in the above nine high schools for participating and allow their child to participate in this study.

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