



ORIGINAL RESEARCH

The Relationship of Radiologic Technology Educators' Trait Emotional Intelligence and Sense of Efficacy

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Abstract

Purpose: To determine the relationship between trait emotional intelligence (TEI) and teachers' sense of efficacy among Filipino Radiologic Technology (RT) educators.

Methods: The study utilized a quantitative, cross-sectional, and correlational design. Using Google forms for data collection, the global and domains of trait EI scores were measured using the Trait Emotional Intelligence Short Form and three teaching competencies from Teacher's Sense of Efficacy Scale Short Form which was gathered from 57 radiologic technology educators. A power analysis.

Pearson's *r* was used to determine the relationship between TEI and teachers' sense of efficacy among Filipino RT educators.

Results: The results have shown a moderate positive correlation between TEI and TSES among Filipino RT educators ($p < 0.001$). Filipino RT educators have shown an above-average score on Global TEI and described their sense of efficacy in teaching as quite a bit.

Discussion: The positive relationship between the two dispositions has shown that Filipino RT educators are able to recognize the emotions of students and other people and viewed themselves as well as efficacious in classroom management, instructional strategies, and classroom management.

Conclusion: The results have supported the findings from the existing body of literature and bridged the gap with regard to the relationship between TEI and TSES among Filipino RT educators.

Keywords

Trait emotional intelligence, Teachers' sense of efficacy, Radiologic technology educators

Introduction

The fundamental purpose of health professions education is to prepare practitioners who can cope with the many demands of working in a range of health settings [1]. The same is true in the case of radiologic technology being a health care professional. As such, the faculty preparing these types of practitioners must be imbued with certain dispositions that make them effective academic and clinical educators. Some of these dispositions are trait emotional intelligence and their sense of efficacy.

Trait emotional intelligence concerns with one's point of view of their emotion [2]. Individuals with high emotional intelligence can use their emotions very well [3]. For educators, having high emotional intelligence may aid them in creating high-quality instruction and a positive learning environment [4].

The teacher's sense of efficacy is a derivative from Bandura's self-efficacy, wherein an individual has great belief in his or her skills. A teacher's sense of efficacy, on the other hand, is a more particular belief that an educator believes in his or her teaching abilities in accomplishing tasks related to teaching [5]. Educators who have a high sense of efficacy are innovative in the delivery of their lessons and courses and found to persevere in handling students with learning difficulties [6].

Findings from previous studies show that there is an existing relationship among the dispositions [7-10]. However, the gaps among these studies were

among these educators that do not include radiologic technologist both in the United States and in the Philippines.

Thus, the purpose of the study is to assess the generalizability of the previous findings are true and the same using a different set of participants and setting which are radiologic technology educators in Philippine. Not only will it bridge the gap in knowledge in terms of trait emotional intelligence and sense of efficacy among Radiologic Technology educators, but it will also provide added knowledge in the existing body of literature and be one of the pioneer studies determining the relationship of trait emotional intelligence and teachers' sense of efficacy in the field of radiologic technology education.

Literature Review

Trait emotional intelligence

Emotional Intelligence is the ability of a person to recognize and manage emotions so that he or she can understand the feelings of others and also himself or herself [11]. Moreover, models of emotional intelligences have been identified, one of these models is TEI which is considered as a second-generation model of emotional intelligence [12]. As emphasized, TEI is a self-perception of emotional abilities and referred to as trait emotional self-efficacy [2]. The four domains of TEI which are emotionality, wherein these persons are aware not only aware of their own emotions but also the emotions of other people; self-control, wherein these persons are able to regulate their own urges, desires, impulses external pressures and stress; sociability, wherein these persons are good with social relationships, social interaction and good communicators; lastly, well-being, wherein these persons feel positive, happy and fulfilled [13].

In the investigation of TEI, the previous findings were mostly among various educators in different countries. Findings from a previous study describe that TEI plays a significant role in honing their students' interaction skills among Greek preschool educators [14]. Other findings suggest that TEI aids in improving the teaching styles of Turkish elementary school educators [15]. Moreover, findings confirmed that trait emotional intelligence is a predictor of self-efficacy, thus making Pakistani university educators more efficient in times of stress [3]. Other findings also confirmed that trait emotional intelligence aids in the improvement of emotion literacy of students among Cypriot English as foreign language educators [16]. Findings also show that TEI among Australian radiologic technology educators differs from those who working in the clinical area [17].

Teachers' sense of efficacy

The Teachers' Sense of Efficacy (TSES) is a derivative of Albert Bandura's self-efficacy, the beliefs of a person on his/her capabilities in performing tasks [5,18]. TSES

can be an influential belief and more specifically on an educator who believes on his/her abilities. Thus, it greatly influences the determination, motivation, and resiliency of how an educator can achieve specific tasks in teaching and personal goals [19]. It also aids the educator in creating conducive classroom environments, being flexible, innovative, and increases the interest of students in learning especially those who are struggling in their course of study [6,20].

Specific teaching competencies were identified and categorized into instructional strategies which deals on how an educator efficaciously deals with students who are both struggling and performing well through proper assessment strategies, discussing and clarifying complex concepts into simple and comprehensible; classroom management deals with how an educator efficaciously establishes classroom management systems, classroom policies, routines, proper handling of student misbehaviours, and makes the educator's expectation clear to the class; lastly, student engagement deals with how the teacher efficaciously engages and motivates students to come to class and help them reach their potentials [19].

Findings in terms of the teachers' sense of efficacy were investigated among educators who specialize in other fields in different countries. On the other hand, among American preschool educators, a strong belief on their sense of efficacy can aid in the literacy growth of their students [21]. Findings confirmed that a high sense of efficacy among Iranian English as foreign language educators result in high student motivation [20]. Findings verified that female Chinese and Dutch primary school teachers were found to have a greater teachers' sense of efficacy [22,23]. Moreover a need for further studies to clearly understand the interplay of factors which contributes to teachers' sense of efficacy among American primary school educators [24]. Other findings shows that teachers' sense of efficacy was linked to an increase interest in joining professional learning communities among American high school educators [25].

Trait emotional intelligence and teachers' sense efficacy

Findings in determining the relationship of TEI and teachers' sense of efficacy showed a correlation existed between TEI and teachers' sense of efficacy among Belgian physical education educators [7]. Likewise, similar results of the relationship of the two dispositions were observed from Iranian English as a foreign language educators, and Croatian foreign language educators [8,9,26,27]. In congruence with the existing findings, the relationship was evident among Turkish and Nigerian pre-service educators, wherein educators who possess high emotional intelligence and sense of efficacy are aware of their own capability to prepare students in learning thus applying these skills in the

classroom setting [28,29]. Other investigations resulted with similar findings which were studied among primary and secondary educators in Greece [30]. Similarly, the relationship reflected the same findings among dance education educators in United Kingdom, and this led to which can implicate that improvement of TEI could also improve teachers' sense of efficacy [10]. Likewise, the relationships of these dispositions are parallel that among primary school Ethiopian English as foreign language educators, and that these dispositions can aid in enhancing an educator's teaching proficiencies [31]. The same results have been affirmed among Portuguese public school educators and found it beneficial for both the educators and students [32].

Published research involving the relationship of TEI and teachers' sense of efficacy were obtained from the following databases such as Google Scholar, EBSCOhost, Science Direct, and Research Gate. From published findings, none of them reported in radiologic technology education in the Philippines. Thus a gap in the existing body of literature as seen as a purpose to conduct the study and if the previous findings from the previous researches is generalizable in a different sample and setting.

Research Questions

1. Is there a significant relationship between the participants' TEI and their sense of efficacy?

Hypothesis of the study

There is a significant relationship between the participants' TEI and their sense of efficacy.

Methods

Research design

The study utilized a quantitative research design, specifically a cross-sectional and correlational design to determine the relationship between TEI and teachers' sense of efficacy.

Participants and setting of the study

Non-probability sampling specifically snowball sampling and consecutive samplings were utilized in the study. Snowball sampling was utilized to ask participants for referrals of other possible participants to become part of the sample, while consecutive was utilized since

data collection was only for eight weeks. The participants were Radiologic Technology educators with a degree in Bachelor of Science in Radiologic Technology, registered radiologic technologists in the Philippines, and handling professional courses in Radiologic Technology. The schools offering radiologic technology in Luzon were reached out to for prospective participants.

Fifty-seven (57) radiologic technology educators participated in the study as there are only few radiologic technology educators employed in an institution. A post hoc analysis was done to determine the adequacy of the sample obtained in data. The post hoc power analysis was computed to be 0.99. This larger value of power means that the chances of saying that there is a relationship between two variables, and in fact there is one. It lends support to the acceptability of the data analysis obtained from a sample of 57 radiologic technology educators. With a power of 0.99, the inferences obtained from the results can be considered robust because the sample size was adequate.

The computed effect size (0.51) is interpreted as medium effect size. This is consistent with the Pearson's *r* correlation coefficients (see Table 1) determined to be of moderate magnitude. The Pearson's *r* correlation coefficient can be used as a measure of effect size [33].

Research instrument

Before the data collection, permission from the authors of the questionnaires was sought for the utilization of their developed questionnaire in the study. Trait emotional intelligence was measured using the Trait Emotional Intelligence Questionnaire Short Form (TEIQue-SF) developed by Petrides. The tool has a Cronbach's alpha of 0.89 [34,35].

The tool contains 30-items derived from the long form of the TEI Four (4) domains were identified namely, emotionality, self-control, sociability, and well-being.

These items were selected based on their correlations with the corresponding total facet score. The scores from the questionnaire determined which of the four (4) trait EI factors has the highest score including the EI global score, which were rated (1) Completely Disagree to (7) Completely Agree by the participants. The scoring engine dedicated for the TEIQue-SF utilized for the scoring and interpretation can be accessed through this link <http://psychometriclab.com/scoring-the-teique>.

Table 1: Relationship between the radiologic technology educators' trait emotional intelligence and sense of efficacy.

| Teachers' sense of efficacy (TSES) | Global Trait Emotional Intelligence | | |
|-------------------------------------|-------------------------------------|-------------------------|-------------------------------|
| | Pearson correlation | p-value Sig. (2-tailed) | Interpretation |
| Student engagement | 0.477 | < 0.001 | Moderate Positive Correlation |
| Instructional strategies | 0.460 | < 0.001 | Moderate Positive Correlation |
| Classroom management | 0.487 | < 0.001 | Moderate Positive Correlation |
| Overall teachers' sense of efficacy | 0.511 | < 0.001 | Moderate Positive Correlation |

The Teachers' sense of efficacy was measured using the Ohio State Teacher Efficacy Scale or the Teachers' Sense of Efficacy Scale Short Form developed by Megan Tschannen-Moran and Anita Woolfolk Hoy. The tool contains 12-items, and measured the teachers' efficacy in student engagement, instruction strategies, and classroom management. The participants rated each item on how much they can do in a certain scenario from (1) to (9). Scoring and interpretation of the subscales of TSES were done by computing the unweighted means of items under the efficacy in student engagement which are item numbers 2, 4, 7 and 11, while items for efficacy in instructional strategies item number 5, 9, 10 and 12, and items 1, 3, 6, and 8 are for efficacy in classroom management. The tool has a Cronbach's alpha of 0.90 [19].

Data collection procedure

Before gathering the data, a letter of consent in electronic format was sent to the participants, who had the option to participate or not in the study. A uniform resource locator (URL) provided by Google was posted in social media groups and on the social media accounts of the researcher and sent through personal messages to the participants. All questions or statements requiring answers were marked in the provided questionnaire. The google forms platform provided the data in Microsoft Excel format.

Ethical consideration

The ethical principles of confidentiality, autonomy, and beneficence were observed throughout the study. Informed consent was obtained from the participants before the data collection. It contained an invitation to the participants to join the web-based online survey stating the research title and the principal investigator. The web-based survey took ten (10) to 15 minutes to assess the participants' TEI and their sense of efficacy as educators. The data collection of the online survey lasted for one month. The responses from Google Forms were exported as MS Excel files for data analysis.

The possible risk or discomforts answering the survey were minimal, no benefits in monetary form were given as compensation. However, the respondents may help by contributing to the existing body of knowledge in radiologic technology education.

Information gathered using the Google forms were treated with utmost confidentiality. Information will be stored for two (2) years in a password-protected cloud drive after which will be deleted. Google Drive does not collect identifying information; therefore, the responses of the participants were anonymous during the study. Participating in the study was voluntary. Any participant who wished to withdraw or refused to participate may opt-out without any penalty.

Moreover, each participant can opt to receive a

summary of the results and information shared before it will be made available to the public.

The certificate of consent indicated how the data shared by the participant will be stored: Two years or indefinitely or destroyed after two years or immediately. The contact information of the principal investigator was indicated for queries regarding the study or procedure or request on the results of the study. The contact information of the Holy Angel University Institutional Review Board (HAU-IRB) was given for the participants' questions on rights, concerns, or comments regarding the study.

The study was reviewed by the HAU-IRB and was granted ethical clearance with the protocol number: 2021-010-JGCALMA-RTEDUCATOR.

As part of the consent, the participants chose to agree or disagree on how their samples shall be stored. Their initials were typed in if they agreed with the stated information in the consent.

Data analysis

Jamovi version 1.6.15 was used for the descriptive and inferential statistics of the study. The descriptive statistics such as frequency and percentage (profile demographic profile of the participants), standard deviations, and weighted mean (scores for the participants' answers for the teachers' sense of efficacy questionnaire) were used. The weblink www.psychometriclab.com computed for the scores on the four (4) facets of the TEIque-SF version 1.5. A test for normality was done to determine if the data set was well-modeled by a normal distribution before inferential statistics. The inferential statistics particularly Pearson's *r* was used to determine the relationship between global TEI and self-efficacy.

Results

Table 2 reflects the demographic profile of the participants. The total number of participants who

Table 2: Demographic profile of the participants.

| Sex | <i>f</i> | % |
|---------------------|----------|----|
| Male | 30 | 53 |
| Female | 27 | 47 |
| Age in years | | |
| 21-25 | 20 | 35 |
| 26-30 | 12 | 21 |
| 31-35 | 8 | 14 |
| 36-40 | 2 | 4 |
| 41-45 | 5 | 9 |
| 46-50 | 5 | 9 |
| 51-55 | 3 | 5 |
| 56-60 | 2 | 4 |

n = 57

joined the study was 57, because of the pandemic most of the RT educators opted not to join the survey. Among the 57 who joined the study 53% of the participants were male and 47% were female. In terms of age group, most of the participants were between 21 to 25-years-old.

Table 3 reflects statements under the domains of TEI with their means and standard deviations. The domain of emotionality has a mean of 5.37, standard deviation of 0.85 and interpretation of above average, the domain of self-control has a mean of 4.96, standard deviation of 0.95 and interpretation of average, the domain

of sociability has the lowest mean of 4.80, standard deviation of 0.95 and an interpretation of average, the domain of well-being has the highest mean of 5.64 standard deviation of 0.87 and an interpretation of above average.

Lastly, global TEI with a mean of 5.27, standard deviation of 0.74 and an interpretation of above average.

Table 4 reflects the statements under the subscales of teachers' sense of efficacy with their means, standard deviations, and interpretations. The subscale of student engagement has a mean of 7.87, standard deviation of

Table 3: Trait Emotional Intelligence scores of radiologic technology educators.

| Trait Emotional Intelligence | Mean | SD | Interpretation |
|---|-------------|-------------|----------------------|
| Emotionality | 5.37 | 0.85 | Above Average |
| Expressing my emotions with words is not a problem for me | 5.70 | 1.18 | |
| I often find it difficult to see things from another person's viewpoint | 4.86 | 1.65 | |
| Many times, I can't figure out what emotion I'm feeling | 4.93 | 1.83 | |
| Those close to me often complain that I don't treat them right | 5.89 | 1.57 | |
| I often find it difficult to show my affection to those close to me | 5.30 | 1.67 | |
| I'm normally able to "get into someone's shoes" and experience their emotions | 5.60 | 1.37 | |
| I often pause and think about my feelings | 5.26 | 1.49 | |
| I find it difficult to bond well even with those close to me | 5.44 | 1.54 | |
| Self-control | 4.96 | 0.95 | Average |
| I usually find it difficult to regulate my emotions | 4.75 | 1.61 | |
| I tend to change my mind frequently | 4.11 | 1.71 | |
| On the whole, I'm able to deal with stress | 5.84 | 1.15 | |
| I'm usually able to find ways to control my emotions when I want to | 5.65 | 1.33 | |
| I tend to get involved in things I later wish I could get out | 4.14 | 1.71 | |
| Others admire me for being relaxed | 5.23 | 1.39 | |
| Sociability | 4.80 | 0.95 | Average |
| I can deal effectively with people | 5.67 | 1.30 | |
| I often find it difficult to stand up for my rights | 4.56 | 1.90 | |
| I'm usually able to influence the way other people feel | 5.07 | 1.37 | |
| I would describe myself as a good negotiator | 5.37 | 1.17 | |
| I tend to "back down" even if I know I'm right | 4.14 | 1.79 | |
| I don't seem to have any power at all over other people's feelings | 4.00 | 1.49 | |
| Well-being | 5.64 | 0.87 | Above Average |
| I generally don't find life enjoyable | 6.19 | 1.32 | |
| I feel that I have a number of good qualities | 5.75 | 1.18 | |
| On the whole, I have a gloom perspective on most things | 4.40 | 2.20 | |
| On the whole, I'm pleased with my life | 5.88 | 1.04 | |
| I believe I'm full of personal strengths | 5.61 | 1.33 | |
| I generally believe that things will work out fine in my life | 6.00 | 1.15 | |
| Uncategorized facets | | | |
| On the whole, I'm a highly motivated person | 6.09 | 1.11 | |
| I often find it difficult to adjust my life according to the circumstances | 5.32 | 1.81 | |
| I normally find it difficult to keep myself motivated | 5.28 | 1.68 | |
| Generally, I'm able to adapt to new environments | 5.98 | 1.14 | |
| Global TEI | 5.27 | 0.74 | Above average |

Table 4: Teachers' sense of efficacy of radiologic technology educators.

| Teachers' Sense of Efficacy | Mean | SD | Interpretation |
|---|-------------|-------------|--------------------|
| Student engagement | 7.87 | 0.96 | Quite a bit |
| How much can you do to motivate students who show low interest in schoolwork? | 7.96 | 1.13 | |
| How much can you do to get students to believe they can do well in schoolwork? | 8.11 | 1.13 | |
| How much can you do to help your student's value learning? | 8.25 | 0.892 | |
| How much can you assist families in helping their children do well in school? | 7.16 | 1.72 | |
| Instructional strategies | 7.90 | 0.94 | Quite a bit |
| How much can you do to motivate students who show low interest in schoolwork? | 7.65 | 1.22 | |
| How much can you do to get students to believe they can do well in schoolwork? | 7.68 | 1.20 | |
| How much can you do to help your student's value learning? | 8.18 | 0.966 | |
| How much can you assist families in helping their children do well in school? | 7.88 | 1.09 | |
| Classroom management | 7.78 | 1.05 | Quite a bit |
| How much can you do to control disruptive behavior in the classroom? | 7.44 | 1.38 | |
| How much can you do to get children to follow classroom rules? | 7.81 | 1.26 | |
| How much can you do to calm a student who is disruptive or noisy? | 7.77 | 1.30 | |
| How well can you establish a classroom management system with each group of students? | 8.12 | 0.97 | |
| Overall Weighted Mean | 7.85 | 0.92 | Quite a bit |

0.96 and an interpretation of quite a bit, the subscale instructional strategies has the highest mean of 7.90, standard deviation of 0.94 and has an interpretation of quite a bit, the subscale classroom management has a mean of 7.78, standard deviation of 1.05 and an interpretation of quite a bit. The overall weighted mean is 7.85, with a standard deviation of 0.92 and an interpretation of quite a bit.

Table 1 reflects the Pearson's r results between the relationship of global TEI and the subscales of the teachers' sense of efficacy. Analysis of the data revealed that the radiologic technology educators' global TEI score is correlated with the subscale of student engagement subscale ($r = 0.477, p < 0.001$), instructional strategies ($r = 0.460, p < 0.001$), classroom management ($r = 0.487, p < 0.001$) and the overall teachers' sense of efficacy ($0.511, p < 0.001$). All correlation coefficients are positive and interpreted as moderate positive.

Discussion

The results of the study under TEI showed that the domain of emotionality interpreted as above average, which means that radiologic technology educators were aware of their own and others' feelings and can manage their emotions well [13]. The domain self-control is interpreted as average, which means that radiologic technology educators are capable of handling pressure and challenges [13]. There were occasions when they get anxious and stressed when challenges came in. The domain sociability is interpreted as average, which means that radiologic technology educators were somewhat able to interact and influence effectively and efficiently with diverse sorts of people and somewhat able to handle criticism and feedback [13]. The domain of well-being is interpreted as above average, which

means that radiologic technology educators can face life adversity confidently as they can enjoy life and can be optimistic that positive things will happen [13]. The global TEI is interpreted as above average, which means that radiologic technology educators can recognize and manage their own emotions as well as others, optimists, able to handle stress and pressure, and able to deal and interact with people from different backgrounds [13].

The results of the study under teachers' sense of efficacy show that the subscales of student engagement, instructional strategies and classroom management are interpreted as quite a bit [19]. In terms of student engagement, radiologic technology educators can deal, engage and motivate students in their classes and help them reach their potentials in a considerable amount; in terms of instructional strategies, radiologic technology educators can deal with students who are both struggling and performing in the assessments, discussing and clarifying complex concepts into simple and comprehensible in a considerable amount; for classroom management, radiologic technology educators can establish classroom management systems, classroom policies, routines, proper handling of student misbehaviors, and make the teacher's expectation clear with the class in a considerable amount. Overall, the beliefs of the radiologic technology educators on how efficacious they are in terms of teaching are in considerable amount [19].

The results of the study are in congruent with the previous published literatures on the relationship of TEI and teachers' sense of efficacy. The study can be reflected that educators who possess a good TEI also possess a good sense of efficacy [7,9,10,26,27,29-32,36-38].

This can be reflected that educators who possess a

good TEI also possess a good sense of efficacy who may see themselves as effective in classroom management, teaching, and establishing rapport with the students which could affect the students' academic performance positively [26,28,31,32,38].

Educators who possess a good sociability trait for TEI are good in answering difficult questions raised by the students, provide proper assessments for brilliant learners, provide clear expectations, and properly respond to disobedient students [9]. They can also increase the students' motivation, interpersonal skills and implement effective teaching approaches.

Educators who possess a good self-control are able to manage emotions and handle stressful situation and can make them effective in the implementation of an ideal classroom setting [7,9].

Limitations of the Study

The limitations identified from the study are the setting and sample, wherein the study was conducted in the Philippines particularly in Luzon which does not represent the whole population of RT educators in the Philippines.

Conclusions

Trait emotional intelligence of the radiologic technology educators are exceptional, wherein they can understand and manage their own and others' emotions, optimist, able handle stress and challenges, and deal with other people. They view themselves as educators who are efficacious in a considerable amount in terms of classroom management, instructional strategies, and student engagement. The findings support the existing literature in terms of the relationship of the two dispositions, thus educators who are trait emotional intelligent can view themselves as efficacious in their teaching profession thus improving the students' academic performance and learning process.

Lastly, the study makes a significant contribution to the existing body of knowledge and one of the pioneer studies in the field of radiologic technology education assessing the relationship of the two dispositions.

Recommendations

The findings of the study generate the recommendation of a replication study, with a different setting and a larger sample size to determine the generalizability of the study with an addition of the students' academic achievement as one of the variables to be determined. Also, the development of trainings for improving TEI which could pave the way for radiologic technology educators in improving their sense of efficacy in teaching. These trainings could be advantageous for educators who are novices in the field of teaching.

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