

## ORIGINAL RESEARCH

# A cross sectional exploration of emotional intelligence in US baccalaureate nursing students

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## ABSTRACT

**Objective:** New nurses may be vulnerable to bullying as they often lack confidence or do not have the skills or maturity to communicate their needs or those of their patients. Increasing emotional intelligence particularly in at-risk nursing students may be one way to foster resiliency. This exploratory cross sectional study aimed to exam the overall level and specific components of emotional intelligence as well as associations with age, ethnicity, gender, or academic standing in baccalaureate nursing students.

**Methods:** A cross sectional analytical study was conducted using a paper demographic survey and an online emotional intelligence (EI) instrument, the MSCEIT V2.0. A convenience sample of lower division nursing students attending a professional nursing course was recruited. Statistical analyses include demographic descriptives, EI total and sub score means and standard deviations, paired t-tests to compare within group differences, and simple and linear regression on seven different EI scores to examine predictive qualities of demographic variables.

**Results:** Overall total and many component EI scores were high average with variations noted within groups. Multiple linear regressions demonstrated that after controlling for all variables, a higher GPA and being Asian compared to White were associated with higher scores in mostly all components of EI. Four-year students scored higher than transfer students in understanding emotions. Being male was predictive of the branch, facilitating thought, and Latinos were associated with a higher score in perceiving emotions.

**Conclusions:** This study provides an in-depth exploration of not only total EI in a lower division nursing student sample, but a comprehensive examination of the components of emotional intelligence. EI measurements can be used to identify strengths and weaknesses in abilities that can be either gleaned, or developed as needed to facilitate creative problem solving, effective patient interactions, and to develop resiliency to incivility in the workplace.

**Key Words:** Emotional intelligence, Nursing students, Ethnicity, Age, Gender, GPA, Demographic, Resiliency, Bullying

## 1. INTRODUCTION

An unfortunate irony of nursing as a caring profession is the existence of horizontal violence in the workplace.<sup>[1]</sup> Furthermore, the inability to manage conflict among healthcare team members may result in decreased collaboration and adverse patient outcomes.<sup>[1-6]</sup> Workplace hostility affects many nurses regardless of experience;<sup>[1]</sup> however, new nurses may especially be vulnerable to bullying as they often lack confi-

dence in confronting senior staff members effectively, or do not have the skills or maturity to communicate their needs or those of their patients.<sup>[7,8]</sup> A recent survey of 197 novice nurses (NN) revealed that nearly 73% reported a “workplace bullying” (WPB) event within the previous month, with close to 57% being the direct target and 15% witnessing an event primarily by more experienced nurses.<sup>[7]</sup> Novice nurse productivity was found to be compromised when bullying was

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present.<sup>[7]</sup>

In a revealing systematic review of hostile clinician relationships and the impact on patient outcomes, Hutchinson & Jackson<sup>[1]</sup> reported on four thematic hostile relationships that had varying effects on patient safety and quality of care. Included were nurses stories of outright sabotage as pay-back or acts of hostility that jeopardized patient care such as withholding of pertinent patient information “to make work difficult.”<sup>[6]</sup> Walrafen and colleagues<sup>[9]</sup> conducted a mixed methods study examining horizontal violence in staff nurses (N = 227) and reported that up to 70% of their sample witnessed acts of horizontal violence and more than half (53%) had reported experiencing it including nonverbal negative innuendos and backstabbing.

Workplace incivility, another term used to describe horizontal hostility is defined as “low intensity deviant behavior with ambiguous intent to harm the target, in violation of workplace norms for mutual respect.”<sup>[8]</sup> Langrefen *et al.*<sup>[8]</sup> examined the impact of incivility on new graduates’ mental health and found that personal resiliency imparts a protection from potential harm of workplace hostility aimed at them. It is believed that victimization can lead to emotional responses such as anger, fear, and sadness, which can lead to a desire to retaliate, and thus perpetuate the cycle of violence. Resilience—the ability to “bounce back” from adversity may modify these emotional responses aiding individuals in successfully processing personal challenges, thus building self-efficacy in responding in an effective and non-violent manner.<sup>[8]</sup> Emotional intelligence, described as the emotional, personal, and social foundations of intelligent behavior has piqued the attention of researchers from various disciplines including nursing.<sup>[10–31]</sup> Although workplace incivility needs to be examined and addressed from many angles, increasing emotional intelligence particularly in at-risk nursing students may be one way to develop and foster resiliency as well as enhance a more civil and effective way to respond to adverse situations in future workplaces.<sup>[10–13]</sup>

This exploratory cross sectional study aimed to answer the following questions: Among lower division baccalaureate nursing students: 1) what is the overall level of emotional intelligence? 2) are there variations in the components (or abilities) of emotional intelligence? and 3) are there age, ethnicity, gender, or academic differences in overall and/or separate components of emotional intelligence?

### Emotional intelligence (EI)

In the late 1980s, Mayer and Salovey, both psychologists, began to develop and test theoretical properties of emotional intelligence; however, the idea of an emotional intelligence had

been explored twenty years earlier by psychiatrists, Beldoch and Leuner, and became popularized in Payne’s doctoral dissertation in 1985.<sup>[28]</sup> Mayer and Salovey purported that other than the cognitive intellect that had dominated the paradigm of personal success, another type of intelligence based on an ability model was needed for personal and interpersonal success—that of emotional intelligence.<sup>[29–31]</sup> They classified EI as a person’s ability to read the emotions of others and to act accordingly, thus their focus was on measuring abilities and they make clear distinctions between what they aimed to measure versus what other researchers in emotional intelligence focused on which were “. . . tests of cognitive intelligence, of emotion, and other self-report scales focusing on well-being, positive affect, optimism, and other qualities. . . .”<sup>[30]</sup> They further distinguish from other popular authors such as Goleman (1995) who defined emotional intelligence more of a character trait of one who exhibits, “good social behavior.”<sup>[30]</sup> In 1997, Mayer & Salovey developed the “Four-Branch Model” of emotional intelligence, the Mayer Salovey Caruso Emotional Intelligence Test Version 2.0 (MSCEIT V2.0) and will be explained in detail later under the description of the instrument used for this study.<sup>[29–31]</sup> The MSCEIT “. . . refers to the capacity to reason with emotions and emotional signals, and to the capacity of emotion to enhance thought.”<sup>[30]</sup>

### Emotional intelligence and nursing

When examining the association between emotional intelligence and conflict handling styles, Morrison<sup>[17]</sup> found higher levels of emotional intelligence to be associated with a collaborating style of conflict resolution in nurses. All four measurements of EI analyzed in the study (self-awareness, self-management, social awareness and relationship management) were positively correlated with collaboration, a preferred conflict management style.<sup>[17]</sup> In their study of hospital nurses, Codier and colleagues<sup>[18]</sup> discovered that emotional intelligence scores were positively correlated with performance level of clinical staff nurses. Undergraduate and graduate nursing students’ emotional intelligence was examined by Beauvais *et al.*<sup>[19]</sup> to describe the relationship between EI and nursing performance. The students rated their self-perception of 6 constructs of performance: leadership, critical care, teaching and collaboration, planning and evaluation, interpersonal relations and communication, and professional development.<sup>[19]</sup> All of the subscales except for critical care and leadership were found to be positively associated with EI.<sup>[19]</sup>

Different measurements of EI have been also tested as predictors of academic success among college students,<sup>[20,21]</sup> and in a descriptive study conducted with baccalaureate nursing students, participants were found to have varying scores on emotional intelligence, with a statistically significant pos-

itive linear trend toward the higher the grade level of the student.<sup>[22]</sup> In a similar descriptive study, Codier and colleagues<sup>[23]</sup> examined the relationship between GPA and various abilities of EI using the MSCEIT V2.0 measurement tool. They discovered that GPA positively correlated with total overall EI as well as the experiential area.<sup>[23]</sup> Heffernan *et al.*<sup>[24]</sup> examined the associations of EI with self compassion of nurses in acute care settings. They purported that without ability for self-compassion, nurses might be ill prepared to show compassion to those for whom they care.<sup>[24]</sup> Their sample of 135 nurses demonstrated moderately positive correlation ( $r = 0.55$ ) between self compassion and EI.<sup>[24]</sup>

Research supports the positive impact of emotional intelligence in nurses<sup>[10, 12, 16–19, 21, 22, 24–26]</sup> as well as the urgent need to disrupt the culture of hostility in the healthcare environment.<sup>[1–9]</sup> Although addressing the deficiencies of emotional intelligence in student nurses is only one piece of the puzzle, it has the potential to reduce the harmful effects of bullying in nursing. Gaining an in-depth understanding of the predictors of emotional intelligent abilities may aid nurse educators in improving emotional processes of nursing students which could subsequently improve future relations with healthcare colleagues. Furthermore, the development of emotional intelligence in new nurses may be one strategy among others to reduce the incidence of workplace incivility as well as enhance relations with challenging patients, and ultimately improve job retention and satisfaction.

## 2. METHODS

A cross sectional analytical design was used incorporating an Internet based EI instrument, the MSCEIT V2.0<sup>[29–31]</sup> and a paper demographic questionnaire developed by the researcher. This current analysis was part of a larger study exploring the role that Nonviolent Communication plays in the ethics of authenticity<sup>[32]</sup> and a mixed methods study testing the impact of a Nonviolent Communication (NVC) training on empathy.<sup>[33]</sup>

### 2.1 Sample recruitment

Baccalaureate nursing students attending a mandatory professional nursing course as part of the first or second semester of the nursing program at a United States private Catholic university in Northern California were invited to participate. Inclusion criteria included students who were eighteen years or older, currently attending the professional nursing course, and proficient in English. A statistical power analysis was calculated using G Power for the pre/post intervention study previously reported on<sup>[34]</sup> to determine the sample size needed for robust analyses. Power equal to .80 was used as is ad-

vised when the exact figure is unknown. In a difference of means analysis with  $\alpha = .05$ , effect size = .80, and power = .80, a sample size of at least 26 was needed.<sup>[34]</sup>

### Ethical considerations

All students attending the professional nursing course were explained details of the study and for those who agreed to participate, written informed consent was obtained prior to completing the demographic questionnaire and MSCEIT instrument. In order to avoid the possibility of coercion and to maintain confidentiality, the instructor of the course was not the PI and was not present when students completed consents and the demographic questionnaire, thus the instructor was not aware of who was participating; this reduced any risk of non participation inadvertently affecting their grade. Time was given in class to explain the study, receive consents, and to complete the demographic survey. The principal investigator was initially available in-person to answer any questions that students may have had prior to participating, or via email or phone during the study and participants were informed that they could decide not to participate at any time without any risk of consequence. Institutional IRB for the protection of human subjects was acquired prior to any contact with the students.

### 2.2 Study instruments

Participants completed a structured sociodemographic questionnaire administered on paper in class. Variables used for this analysis include age, gender, ethnicity, transfer or 4 year student, and GPA. The MSCEIT V2.0 (Multi-Heath Systems, North Tonawanda, NY, USA) a slightly shortened version of the original MSCEIT was used to measure emotional intelligence and includes 141 items that takes on average 30 to 45 minutes to complete.<sup>[29–31]</sup> Psychometrics of the instrument have been very well documented<sup>[20, 29–31]</sup> including extensive validity and reliability testing, and exact instruments or close versions have been used extensively in nursing research and university students.<sup>[10–31, 36, 37]</sup> The MSCEIT V2.0<sup>[29–31]</sup> operationalizes emotional intelligence on four ability measures or branches: 1) perceiving emotions in self and others; 2) using emotions to facilitate reasoning or thought; 3) understanding emotions in self and others; and 4) managing emotions in self and in interactions with others.

The scoring includes a total score, two area scores, four branch scores, and eight tasks. The total score enables the measurement of overall emotional intelligence.<sup>[29–31]</sup> The area scores (experiential & strategic) enable the researcher to differentiate the respondent's ability to perceive and utilize emotions from one's ability to understand and manage emotions.<sup>[30]</sup> Experiential EI indicates how well one reads

and expresses emotions, and moreover, how one “functions under the influence of different emotions” without necessarily understanding emotions, whereas strategic EIQ captures how accurately one understands the meaning of an emotion, and how to manage emotions in self and in others.<sup>[30]</sup> The first branch, perceiving emotion, falls under the experiential area and measures how well a person recognizes their own feelings and those of others by picking up on facial expressions and voice tones, *etc.* The association between recognizing emotions in others and recognizing emotion in self allows for the use of pictures and faces (two task scores) as a proxy to measure one’s own ability to perceive his or her emotions. Facilitating thought, the second branch score under the experiential area, measures the interaction between thought and emotion, how one’s feelings influences thoughts and cognitive function, which is also believed to be associated with creative problem solving, and seeing from other perspectives.<sup>[30]</sup>

The third branch, understanding emotions is a component of strategic EI and measures how well an individual can group emotions into related categories. This ability is believed to help one understand the cause of emotions and how they lead to other related emotions. The ability for one to de-escalate situations would depend on this skill. Managing emotions, also under the strategic area is the fourth branch and is crucial to regulating the response one has to emotions, and knowing how to act judiciously rather than reacting without thinking. Using emotion in problem solving, rather than ignoring, or minimizing emotion is believed to enable one to regulate optimally.<sup>[30]</sup>

Each of the four branches is measured with two tasks. Each of the eight tasks comprises a number of item parcels or individual items. For example, for one of the tasks measuring the identification of emotions, a face is shown exhibiting five different emotions to be identified, and this makes up an item parcel.<sup>[31]</sup> Other items require one response per stimulus, and thus constitute an individual item.<sup>[31]</sup> To measure emotional management, respondents are asked to judge the actions that are most effective in generating an emotional outcome for characters in a story.<sup>[31]</sup> For the emotional relationship task, respondents determine the most effective manner to deal with another’s emotions.<sup>[30]</sup> Stimuli are varied, as are response types such as likert scales or multiple choice questions. Mayer, Salovey & Caruso<sup>[30]</sup> advise to use the task scores with caution because of lower reliability scores than the other measurements; however they suggest they could be used to develop means to enhance specific components of EI. Although a breakdown of the task scores are reported here, they were not used for any of the analyses.

### 2.3 Data collection

After students signed consents, they completed the paper questionnaire which was coded and entered into Excel by the research assistant. Participants were emailed a link to complete the EI instrument online in their own time. To encourage participation and to compensate for out of class time, participants were offered the chance to enter a lottery for a \$25 gift certificate to a technology store for the completion of the on-line survey.

### 2.4 Interpretation of MSCEIT scores

All scoring was done by Multi-Health Systems (MHS), Inc., the administrator of the MSCEIT. After all surveys were completed, the PI was sent a link to the excel score sheet with multiple scores available for analysis including raw, adjusted for various demographics, or standardized based on the choice selected when requesting the score, either compared with a national general consensus or expert sample. The scores used for the analyses in this study were the general consensus standardized scores that compare each respondent’s score to a normal distribution of a national sample with an average score of 100 and a standard deviation of 15.<sup>[30]</sup>

### 2.5 Statistical analyses

Data were analyzed using IBM SPSS software 20th edition. Descriptive statistical analyses include means, standard deviations, and range scores for overall total EI, the two area scores, four ability/branch measures, and eight task measures. Simple descriptive analyses were conducted on demographics of sample. Paired sample t-tests were conducted to assess within group differences in area and branch scores. Simple and multiple linear regressions were performed on seven dependent variables: Total overall EI; two areas, experiential and strategic; and the four branches, perceiving emotions, facilitating thought, understanding emotions, and managing emotions. Simple regressions were calculated to determine bivariate associations between age, gender, ethnicity, transfer student status, GPA and all EI outcomes. Multiple regression models were performed to determine prediction of each dependent variable while controlling for all independent variables simultaneously entered into the model. Dummy variables were created for Ethnicity since it had more than two categories. For each ethnicity dummy variable, ‘other’ was coded as 0. In addition, for dichotomous variables, males were the reference for gender (males = 0, females = 1); and being a 4 year student was the reference for transfer status (transfer no = 0, transfer yes = 1). Statistical significance was determined on a two-tailed alpha level of 0.05 for all analyses.

### 3. RESULTS

#### 3.1 Participant characteristics

A total of 71 students ( $N = 71$ ) completed the demographic questionnaire. The mean age was 19 ( $SD \pm 1.5$ ) with 91% female ( $n = 65$ ), and 9% male ( $n = 6$ ). Ethnicity breakdown includes 35.3% Asian ( $n = 25$ ), 50.7% European White ( $n = 36$ ), 12.7% Latino/Hispanic ( $n = 10$ ), and 1.4% African American ( $n = 1$ ). Asian ethnicity was combined and should best be understood as a broad sense of all Asian (or Eastern) cultures since so few numbers were found in each category resulting from a “fill in the blank” answer. Therefore in this analysis Asian ethnicity included the entries, Hawaiian/Asian Pacific/Filipino, Korean, Japanese, Chinese, East Indian, and Iranian. The average GPA was 3.38 ( $SD \pm 0.4$ ). Around 18% ( $n = 13$ ) were transfer students as opposed to 82% of participants who had started at this 4 year university from first college semester. Table 1 includes demographic information.

**Table 1.** Demographic breakdown of sample ( $N = 71$ )

Items	N (Percent)
<b>Age (Mean <math>\pm</math> SD)</b>	18.9 $\pm$ 1.5
Median, Mode	18, 18
Range	18-28
<b>Gender (n, %)</b>	
Male	6 (8.5%)
Female	65 (91.5%)
<b>Ethnicity (n, %)</b>	
Asian	25 (35.2%)
White	36 (50.7%)
Latino	9 (12.7%)
African American	1 (1.4%)
<b>GPA (Mean <math>\pm</math> SD)</b>	3.38 $\pm$ 0.4
Median, Mode	3.45, 3.8
Range	2.50-4.00
<b>Transfer Student (n, %)</b>	
Yes	13 (18.3%)
No	58 (81.7%)

#### 3.2 Emotional intelligence scores

##### 3.2.1 Total sample scores

A total of 71 students completed the online MSCEIT V2.0 EI online survey with all subscores sufficiently complete to be included in scoring. The overall EI of the total sample (Mean 119;  $SD \pm 17$ ) is considered a “high average score” according to the User Manual Guidelines for Interpreting MSCEIT scores.<sup>[31]</sup> (See Table 2 for breakdown of categories and percentage of sample in each.) Participants scored on average lower in experiential than strategic EI ( $107 \pm 16$  vs.  $114 \pm 18$ ,  $t = -3.2$ ,  $p < .01$ ) and when examining differences in branch scores, students scored lower in perceiving emotions ( $100 \pm 14$ ) when compared to facilitating thought ( $111 \pm 17$ ,  $t = -5.6$ ,  $p < .001$ ). Under the strategic area, the average score for understanding emotions was higher than that of managing emotions ( $116 \pm 18$  vs.  $107 \pm 17$ ,  $t = 4.2$ ,  $p < .001$ ). Branch scores ranged from a low mean of 59 for

managing emotions to a high mean of 165 for understanding emotions. The lowest mean score (57) was calculated for the pictures task. See Table 3 for complete breakdown of mean scores for all measures for total sample.

##### 3.2.2 Scores by subsets

Table 4 describes the results of the stratified analysis of mean EI scores for overall, area and branches by gender, transfer status, and ethnicity. For overall EI, males scored higher than females ( $115 \pm 16$  vs.  $109 \pm 17$ ), transfer students scored lower than 4 year students ( $98 \pm 14$  vs.  $112 \pm 17$ ), and Asians scored higher than other ethnic groups ( $118 \pm 19$  vs.  $104 \pm 15$  for Whites, and  $105 \pm 12$  for Latinos). African American ethnicity was excluded from the comparison due to extremely small subsample size ( $n = 1$ ). Statistical comparisons for between group differences are examined in the simple and multiple linear regression models.

When examining differences in area and branch scores for within individual subsets, variances between scores were revealed. Males’ highest score was in facilitating thought ( $126 \pm 17$ ) vs their lowest in perceiving emotions ( $105 \pm 18$ ). The finding was not statistically significant; however, it is possible this was due to a small sample size ( $n = 6$ ). Females also scored lower in perceiving emotions ( $100 \pm 14$ ) than in facilitating thought ( $110 \pm 16$ ) and this was a significant finding ( $t = -5.1$ ,  $p < .001$ ). In addition, they scored lower in the experiential area when compared to strategic area ( $106 \pm 16$  vs.  $114 \pm 18$ ,  $t = -3.2$ ,  $p < .01$ ). Female average score for understanding emotions was higher than managing emotions ( $116 \pm 19$  vs.  $106 \pm 17$ ,  $t = 4.3$ ,  $p < .01$ ).

Four-year students had variances in scores, whereas transfer students did not but again this could be due to a smaller sample of transfer students ( $n = 13$ ). For four-year students, differences were found between experiential and strategic areas ( $108 \pm 16$  vs.  $117 \pm 17$ ,  $t = -3.6$ ,  $p < .01$ ) as well as between the branches, perceiving emotions and facilitating thought ( $101 \pm 14$  vs.  $113 \pm 16$ ,  $t = -5.8$ ,  $p < .001$ ), and understanding versus managing emotions ( $120 \pm 18$  vs.  $109 \pm 18$ ,  $t = 4.0$ ,  $p < .001$ ).

Regarding within group variations in scores among the different ethnic groups, Whites scored lower in perceiving emotions ( $98 \pm 12$ ) than in facilitating thought ( $109 \pm 16$ ,  $t = -4.5$ ,  $p < .001$ ), and higher in understanding than managing emotions ( $113 \pm 16$  vs.  $101 \pm 12$ ,  $t = 4.2$ ,  $p < .005$ ). Latinos also scored lower in understanding versus managing emotions ( $110 \pm 5$  vs.  $102 \pm 7$ ,  $t = 4.2$ ,  $p < .01$ ). Asians scored lower in the experiential area ( $111 \pm 19$ ) than in the strategic area ( $124 \pm 21$ ,  $t = -2.7$ ,  $p < .05$ ) as well as lower in the branch, perceiving emotions ( $102 \pm 15$ ) versus facilitating thought ( $116 \pm 17$ ,  $t = -4.7$ ,  $p < .001$ ).

**Table 2.** Interpreting MSCEIT total, area and branch scores: sample categorized by EI range and significance of each category and includes sample breakdown in each category, n (%) (N = 71)

EQ Range	Qualitative Range	Total	A1	A2	B1	B2	B3	B4
69 or less	Consider development	1 (1.4)	1 (1.4)	0	3 (4.2)	0	0	1 (1.4)
70-89	Consider improvement	5 (7)	8 (10.2)	2 (2.8)	10 (14)	7 (9.8)	2 (2.8)	7 (9.8)
90-99	Low average score	11 (15.4)	14 (19.6)	10 (14)	16 (22.4)	9 (12.6)	8 (10.2)	16 (22.4)
100-109	High average score	23 (32.2)	15 (21)	18 (25.2)	23 (32.2)	17 (23.8)	19 (26.6)	22 (30.8)
110-119	Competent	15 (21)	17 (23.8)	18 (25.2)	15 (21)	22 (30.8)	15 (21)	13 (18.2)
120-129	Strength	7 (9.8)	12 (16.8)	11 (15.4)	4 (5.6)	9 (12.6)	16 (22.4)	3 (4.2)
130 +	Significant strength	9 (12.6)	4 (5.6)	12 (16.8)	0	8 (10.2)	11 (15.4)	5 (7)

Note. A1 = Experiential; A2 = Strategic; B1 = Perceiving Emotions; B2 = Facilitating Thought; B3 = Understanding Emotions; B4 = Managing Emotions.

**Table 3.** Emotional intelligence (EI) standard total, area, branch, and task scores, mean  $\pm$  SD, & range, and paired samples *t* - test examining differences between area and branch scores for total sample (N = 71)

Score Type	Score	Mean $\pm$ SD	Range		<i>t</i> , <i>p</i> value
			Minimum	Maximum	
<b>Overall</b>	Total EIQ MSCEIT V2-0	109 $\pm$ 17	65	156	
<b>Area 1</b>	Experiential	107 $\pm$ 16	68	150	<i>t</i> = -3.2 **
Branch 1	Perceiving Emotions	100 $\pm$ 14	60	129	<i>t</i> = -5.6***
Task	Faces	107 $\pm$ 25	47	143	
Task	Pictures	107 $\pm$ 13	57	132	
<b>Branch 2</b>	Facilitating Thought	111 $\pm$ 17	77	150	
Task	Sensations	108 $\pm$ 16	74	133	
Task	Facilitation	108 $\pm$ 14	75	145	
<b>Area 2</b>	Strategic	114 $\pm$ 18	75	158	
<b>Branch 3</b>	Understanding Emotions	116 $\pm$ 18	71	165	<i>t</i> = 4.2***
Task	Blends	122 $\pm$ 17	77	142	
Task	Changes	108 $\pm$ 12	68	140	
<b>Branch 4</b>	Managing Emotions	107 $\pm$ 17	59	158	
Task	Emotional Mgt	105 $\pm$ 15	65	157	
Task	Emotional Relations	108 $\pm$ 14	69	140	

Note. Total Sample Scores in Area 1 (Experiential) were compared to scores in Area 2 (Strategic); Scores in Branch 1 (Perceiving Emotions) were compared to scores in Branch 2 (Facilitating Thought); Scores in Branch 3 (Understanding Emotions) were compared to scores in Branch 4 (Managing Emotions). \**p* < .05; \*\**p* < .01; \*\*\**p* < .001

### 3.2.3 Correlation of predictor variables

A correlation matrix was performed to determine associations between the predictor variables, age, gender, ethnicity, transfer status and GPA. Age and transfer status were the only two variables significantly correlated ( $r = .671$ ,  $p < .001$ ). Borderline relationships were noted between transfer status and GPA ( $r = .215$ ,  $p = .072$ ) and lesser so, between age and GPA ( $r = .204$ ,  $p = .089$ ).

### 3.2.4 Simple linear regression analyses

Simple regressions on seven dependent variables (total overall EI, the 2 areas, and 4 branches) were performed to examine each demographic variable's ability to predict the outcome without controlling for confounding influences. Various associations were discovered between the outcome variables and independent variables, age, gender, ethnicity, trans-

fer status and GPA entered individually in each model. Refer to Table 5 for statistics related to predictors of total and the two area scores, and Table 6 for those related to the four branches.

### 3.2.5 Multiple linear regression analyses

Multiple linear regressions on the seven major dependent variables (total overall EI, the 2 areas, and 4 branches) were calculated to examine each independent variable's ability to predict the outcome while controlling for confounders. The following results were demonstrated in each regression with independent variables, age, gender, ethnicity, transfer status and GPA entered simultaneously into the models. Dummy variables were used for Ethnicity with European White as the reference population. See Table 7 for total and the two area models, and Table 8 for the four branch models.

**Table 4.** Emotional intelligence (EI) standard total, area & branch scores for demographic subsets (gender, ethnicity, transfer status) mean  $\pm$  SD, and within group paired sample *t*-tests (*t* & *p* values given for statistically significant differences) (N = 71)

Score Type	Score	Gender		Transfer Student		Ethnicity		Hispanic n = 9	Asian n = 25
		Male n = 6	Fem n = 65	Yes n = 13	No n = 58	White n = 36	AA§ n = 1		
Overall	Total EIQ	115 $\pm$ 16	109 $\pm$ 17	98 $\pm$ 14	112 $\pm$ 17	104 $\pm$ 15	115.97	105 $\pm$ 12	118 $\pm$ 19
Area (A1)	Experience Emotions	114 $\pm$ 17	106 $\pm$ 16 <i>t</i> = -3.2**	100 $\pm$ 18	108 $\pm$ 16 <i>t</i> = -3.6**	104 $\pm$ 14	113.28	105 $\pm$ 16	111 $\pm$ 19 <i>t</i> = -2.7*
Branch (B1)	Perceive Emotions	105 $\pm$ 18	100 $\pm$ 14 <i>t</i> = -5.1***	97 $\pm$ 17	101 $\pm$ 14 <i>t</i> = -5.8***	98 $\pm$ 12 <i>t</i> = -4.5***	114.29	105 $\pm$ 20	102 $\pm$ 15 <i>t</i> = 4.7***
Branch (B2)	Facilitate Thought	126 $\pm$ 17	110 $\pm$ 16	103 $\pm$ 20	113 $\pm$ 16	109 $\pm$ 16	111.42	106 $\pm$ 17	116 $\pm$ 17
Area (A2)	Strategic	119 $\pm$ 11	114 $\pm$ 18	100 $\pm$ 12	117 $\pm$ 17	109 $\pm$ 14	124.13	108 $\pm$ 8	124 $\pm$ 21
Branch (B3)	Understand Emotions	117 $\pm$ 12	116 $\pm$ 19 <i>t</i> = 4.3**	101 $\pm$ 12	120 $\pm$ 18 <i>t</i> = 4.0***	113 $\pm$ 16 <i>t</i> = 4.2***	123.03	110 $\pm$ 5 <i>t</i> = 4.3**	123 $\pm$ 23
Branch (B4)	Manage Emotions	113 $\pm$ 17	106 $\pm$ 17	97 $\pm$ 8	109 $\pm$ 18	101 $\pm$ 12	112.77	102 $\pm$ 7	116 $\pm$ 22

Note. Within group analyses examined differences between Area 1 & Area 2; Branch 1 & 2, and Branch 3 & 4 for each subset (e.g., female scores in A1 were compared to female scores in A2, etc. and were found to be significantly different, *t* = -3.6\*\*). §Due to small sample of AA (n = 1), it was not included in Paired Sample *t*-Tests. \**p* < .05; \*\**p* < .01; \*\*\**p* < .001

Total overall EI. A significant regression equation was found ( $F(7,63) = 6.55, p < .001$ ) and all variables together accounted for 36% of the variance (adjusted  $R^2$ ). After controlling for all independent variables, GPA and being Asian both remained positively associated with total EI. Asians scored nearly 17 points higher than Whites and participants increased their total EI by 18 points for every point increase in GPA. They were equally moderately correlated ( $\beta = .44; p < .001$  for both).

Experiential and strategic areas. A significant regression equation was found in the experiential area ( $F(7,63) = 3.03,$

$p < .01$ ) and all variables together accounted for 17% of the variance. With all predictors entered simultaneously into the model, being Asian ( $\beta = .27, p < .05$ ) and having a higher GPA ( $\beta = .42, p < .01$ ) again predicted the outcome. A significant regression on strategic area scores was also found ( $F(7,63) = 6.2, p < .001$ ) with predictors accounting for 34% of the variance, and once again being Asian compared to White ( $\beta = .46, p < .001$ ) and higher GPA ( $\beta = .25, p < .01$ ) remained statistically associated. In addition, those who were transfer students scored 15 points lower than 4 year students and was moderately correlated ( $\beta = -.35, p < .05$ ).

**Table 5.** Simple linear regression for total EI and two areas: Experiential & strategy as dependent variables: age, gender, ethnicity, transfer status, and GPA as independent variables in all models (F value included for statistically significant findings), N = 71

Variable	Total Overall EIQ			Experiential Area			Strategic Area		
	Adj $R^2$	$\beta$	F value	$R^2$	$\beta$	F value	$R^2$	$\beta$	F value
Age	.079	-.303	6.98*	.026	-.20	NS	.126	-.373	11.13**
Gender	-.002	-.112	NS	.005	-.14	NS	.009	-.077	NS
<b>Ethnicity</b>									
Hispanic	-.005	-.096	NS	-.014	-.031	NS	.002	-.126	NS
AA	-.002	.048	NS	-.012	.05	NS	-.010	.069	NS
Asian	.118	.361	10.3**	.023	.19	NS	.154	.407	13.7***
White	.072	-.29	6.4*	.017	-.176	NS	.090	-.32	7.9**
Transfer Status	.086	-.314	7.6**	.024	-.195	NS	.142	-.39	12.6**
GPA	.052	.256	4.8*	.059	.269	5.39*	-.007	.085	NS

Note. References for categorical variables include Gender: Male; Transfer Status: No; Adj  $R^2$  represents the amount of variance in the dependent variable accounted for by the independent variable after adjusting for error. Standardized coefficients are represented by  $\beta$  and are comparable to Pearson's *r* coefficient. \**p* < .05; \*\**p* < .01; \*\*\**p* < .001; NS = Not statistically significant

**Table 6.** Simple linear regression for 4 branches: perceiving emotions, facilitating thought, understanding emotions, and managing emotions as dependent variables: age, gender, ethnicity, transfer status, and GPA as independent variables (N = 71)

Variable	B1: Perceiving Emotions			B2: Facilitating Thought			B3: Understanding Emotions			B4: Managing Emotions		
	Adj R <sup>2</sup>	β	F value	Adj R <sup>2</sup>	β	F value	Adj R <sup>2</sup>	β	F value	Adj R <sup>2</sup>	β	F value
Age	.019	-.18	NS	.051	-.26	4.79*	.131	-.38	11.6**	.047	-.25	4.49*
Gender	-.002	-.112	NS	.034	-.22	3.5^	-.014	-.02	NS	-.001	-.11	NS
Ethnicity												
Hispanic	-.001	.117	.NS	-.007	-.09	NS	.002	-.13	NS	-.003	-.11	NS
AA	.000	.119	NS	-.013	.04	NS	-.013	.044	NS	-.013	.04	NS
Asian	-.010	.067	NS	.038	.228	3.8*	.062	.274	5.6*	.154	.41	13.7***
White	.015	-.17	NS	.015	-.17	NS	.022	-.19	NS	.094	-.33	8.28**
Transfer Status	-.003	-.11	NS	.069	-.29	6.2*	.141	-.39	12.5**	.055	-.26	5.09*
GPA	.050	.25	4.67*	-.014	.016	NS	.003	5.13	NS	-.014	.005	NS

Note. References for categorical variables include Gender: Male; Transfer Status: No; Adj R<sup>2</sup> represents the amount of variance in the dependent variable accounted for by the independent variable after adjusting for error. Standardized coefficients demonstrate the relative strength of the association, and are represented by β. \*p < .05; \*\*p < .01; \*\*\*p < .001; NS = Not statistically significant; ^ = Borderline significant with p = .07.

**Table 7.** Multiple linear regression for total EIQ and two areas: experiential & strategy as dependent variables with all independent variables (age, gender, ethnicity, transfer status, & GPA) entered simultaneously (N = 71)

Variable	Total Overall EIQ			Experiential Area			Strategic Area		
	B	SE B	β	B	SE B	β	B	SE B	β
Age	-1.69	1.54	-.15	-1.23	1.67	-.112	-2.0	1.6	-.17
Gender	-9.28	6.07	-.15	-11.19	6.51	-.19	-4.6	6.3	-.07
Ethnicity									
Hispanic	5.76	5.40	.11	6.38	5.8	.13	2.6	5.6	.05
AA	15.48	14.05	.11	14.19	15.1	.10	15.6	14.7	.11
Asian	15.72	3.65	.44***	9.28	3.9	.27*	16.8	3.8	.46***
Transfer Status	13.22	5.87	.30*	-7.84	6.3	-.19	-15.2	6.1	-.34*
GPA	17.74	4.18	.44***	15.97	4.49	.42**	10.7	4.4	.25**
R <sup>2</sup>	.42			.25			.41		
Adj R <sup>2</sup>	.36			.17			.34		
R	.64			.50			.64		
F	6.55***			3.03**			6.20***		

Note. References for categorical variables --Ethnicity: European White; Gender: Male; Transfer Status: No R<sup>2</sup> represents the amount of variance in the dependent variable accounted for by the independent variable. Unstandardized coefficients are represented by B & SE B; Standardized coefficients are represented by β. \*p < .05; \*\*p < .01; \*\*\*p < .001

Branch scores. All branch regression equations were significant. In the first branch, perceiving emotions, predictors accounted for 13% of the variance (F(7,63) = 2.51, p < .05) with Hispanics scoring 10 points higher than Whites (β = .24, p < .05). In addition, students increased scores by 13 points for every point increase in GPA (β = .40, p < .01). Predictors accounted for 12% of variance in the second branch, facilitating thought (F(7,63) = 2.33, p < .05) with females scoring 16 points lower than males (β = -.27, p < .05) and Asians scoring 9 points higher than Whites (β = .26, p < .05). For the subscores, the most variance in the outcome (25%) was accounted for in the regression on understanding emo-

tions (F(7,63) = 4.3, p < .01) with being Asian and having a higher GPA both increased scores by nearly 12 points (β = .30, p < .01 and β = .27, p < .05, respectively). Transfer students compared to 4 year students decreased their score by 15 points (β = -.31, p < .05). Less variance was accounted for (19%) in scores of the final branch, managing emotions and was accounted for mostly by being Asian since it was the only significant predictor in the model (F(7,63) = 3.41, p < .01). Asians compared to Whites increased their score by nearly 16 points and was strongly correlated (β = .47, p < .001).

**Table 8.** Multiple linear regression for 4 branches: perceiving emotions, facilitating thought, understanding emotions, and managing emotions as dependent variables with all independent variables (age, gender, ethnicity, transfer status, & GPA) entered simultaneously (N = 71)

Variable	B1: Perceiving Emotions			B2: Facilitating Thought			B3: Understanding Emotions			B3: Managing Emotions		
	B	SE B	$\beta$	B	SE B	$\beta$	B	SE B	$\beta$	B	SE B	$\beta$
Age	-1.6	1.5	-1.1	-1.0	1.7	-.09	-2.6	1.8	-.21	-1.0	1.7	-.09
Gender	-9.8	5.9	-.19	-16.2	6.9	-.27*	-.31	7.0	-.01	-6.8	6.7	-.11
Ethnicity												
Hisp	10.3	5.2	.24*	1.2	6.2	.02	-.42	6.3	-.01	2.7	6.0	.05
AA	20.6	13.6	.17	5.0	16.0	.10	9.4	16.3	.06	11.8	15.6	.08
Asian	5.3	3.5	.18	8.9	4.2	.26*	11.5	4.2	.30**	15.7	4.1	3.8***
Transfer Status	-2.3	5.7	-.06	-8.1	6.7	-.19	-14.8	6.8	-.31*	-9.9	6.5	-.23
GPA	13.4	4.0	.40**	8.2	4.8	.21	11.8	4.9	.27*	5.6	4.6	.14
R <sup>2</sup>	.22			.21			.32			.28		
Adj R <sup>2</sup>	.13			.12			.25			.19		
R	.47			.45			.57			.52		
F	2.51*			2.33*			4.31**			3.41**		

Note. References for categorical variables-- Ethnicity: European White; Gender: Male; Transfer Status: No; R<sup>2</sup> represents the amount of variance in the dependent variable accounted for by the independent variable. Unstandardized coefficients are represented by B & SE B; Standardized coefficients are represented by  $\beta$  and portray the relative strength of correlation. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

#### 4. DISCUSSION

This in-depth analysis examined multiple associations between demographic factors and various scores of emotional intelligence as measured by MSCEIT V2.0, a highly tested valid and reliable instrument. Overall, the majority of this sample of underdivision baccalaureate nursing students scored “high average” on most measurements with the majority scoring in the “competent” range for the experiential area and the branch, facilitating thought.<sup>[30]</sup> Nearly 17% of the sample scored in the “significant strength” category for strategic area, with 15% specifically in understanding emotions. This may be attributed to the quality of student body in this highly competitive 4 year private university. Moreover, this sample of nursing students is compared to a national population; nursing students by the mere nature of work involving a certain level of sensitivity may be self selected and generally higher in emotional intelligence than the average late teen/young adult. Other researchers examining EI in nursing students have found similarly high average scores.<sup>[23]</sup> Codier and Odell<sup>[23]</sup> using the same instrument, reported for their sample of 74 nursing an average total score of  $100 \pm 14$  which was lower than this study’s total EI ( $109 \pm 17$ ) even though a larger percentage of this sample scored below average in the total score (23.8%) vs. only 18% in theirs. A large percentage of this sample also scored in the “consider improvement” and “low average scores” in some of the subscales. Specifically, the overall sample scored lower in the experiential versus strategic area, and lower in the branches, perceiving emotions versus facilitating thought, and in managing versus understanding emotions. Interestingly, in Codier and Odell’s<sup>[23]</sup> study, a larger percentage of

their sample (28% vs. 22% for this sample) scored below average in the facilitating thought branch. These below average scores could be indicative of complications further down the road in the workplace or even in dealing with emotional challenges in the remainder of the academic tenure. Effective corrective measures could be tailored similarly to the remedial actions that students receive after taking specialty and exit exams such as the HESI.<sup>[37]</sup>

Within group differences in means scores of the various EI components were found in the simple regressions examining the demographic sub-samples. Many remained predictive in the multiple linear regressions of the seven measurements. After controlling for all other variables examined in this study, being Asian compared to White was associated with higher scores in all components of EI except for the branch, perceiving emotions. GPA also remained highly predictive in all components except for the branches, facilitating thought and managing emotions. Four-year students scored higher than transfer students in the strategic area and specifically the branch, understanding emotions. Being male was predictive of facilitating thought, and Latinos versus Whites were associated with a higher score in perceiving emotions.

The experiential area determines the ability to “read” and “express” emotions without fully needing to understand them, and it includes one’s ability to respond and manipulate information that is being perceived.<sup>[30]</sup> This seems crucial to nursing, especially when dealing with unstable patients, or when there may be a need for a quick and accurate assessment of the emotional state of self or another, such as a co-worker. As mentioned above, the mean of the total sam-

ple was significantly lower in perceiving emotions, the first branch under the experiential area. In addition, the decoding of emotions is addressed here, and with this lacking, the nurse may not attend well to what another is expressing if it is not accurately assessed. It is also believed that to reflect on one's ability to accurately assess one's own feelings will aid in accurately assessing another's.<sup>[30]</sup> How comfortable one is with another's emotions is also addressed here in this branch. This ability is imperative in nursing since nurses are exposed to a gamut of emotional expression on a regular basis with patients in distress or colleagues working in high stress situations. Facilitating thought, in contrast, appraises a respondent's ability to cognitively process an emotion.<sup>[30]</sup> It is believed that the astute problem solver doesn't ignore emotions, but uses them strategically to creatively think of a solution.<sup>[30]</sup> The fact that students scored higher in this branch reflects potential for creative problem solving in this sample.

The strategic area denotes one's ability to understand and manage emotions. The higher scores in this area most likely demonstrates the students' higher capacity to understand the meaning behind emotions rather than manage them, since scores were lower in this branch. This is worrisome, because the inability to manage emotions could result in stress, frustration, decreased job satisfaction, and an escalation of conflict situations.<sup>[17]</sup> The emotional regulation needed in all areas of personal and professional life incorporates the integration of awareness and acceptance of emotions, and to understand them and purposefully apply cognitive functioning to optimally address and utilize them. This branch is crucial for the prevention of hostility toward others, as well as for developing a resiliency to other's hostility from mismanaged emotions.<sup>[8]</sup>

Regarding some of the demographic predictors of EI, having a higher GPA has been found to be associated with increased emotional intelligence in other studies.<sup>[23,26]</sup> The only two measurements in this study that GPA did not predict a higher score in were the branches, facilitating thought and managing emotions. Oddly, these are two branches where cognitive functioning is brought to the forefront. There may be some other characteristics that enhance those abilities other than what is captured by an increase in GPA. The creative ability to problem solve and/or manage emotions may not be the same ability that enables one to do better academically or take exams. This ability may be more associated with the "art of nursing" that incorporates the creative problem solving capacities of nurses. However, overall total score was highly correlated with GPA, as was perceiving and understanding emotions.

The other prominent and consistent predictor of higher scores in most all measurements was Asian ethnicity. This finding is independent of GPA, which makes it more intriguing since often Asian nursing students are diligent, high achieving students. The fact that it is independent of GPA speaks to the possibility that there may be a cultural component that could increase emotional intelligence. This warrants further exploration and investigation with the potential to hone in on characteristics of the Asian culture that could be developed in other ethnic populations. These findings contrast those of Scott-Halsell *et al.*<sup>[27]</sup> who researched undergraduate hospitality students in multiple US universities comparing scores of Western students versus those from Eastern cultures. Although using a different instrument, they found that Eastern students scored significantly lower in overall and all subscales of EI.<sup>[27]</sup> The researchers mostly attributed their findings to the cultural emotional restraint valued in Eastern collective cultures.<sup>[27]</sup> This may support the findings in the current study where perceiving emotions was the only branch that being Asian was not associated with. Intra-group harmony was believed to be the reason why the Eastern participants in Scott-Halsell *et al.*'s sample were less proficient in emotional expression; the authors reiterated that this may be related to the Eastern culture's propensity to not offend others.<sup>[27]</sup> It would almost seem that this ability would lead to a more effective emotional management, which in this current study, being Asian was the only predictor of.

To address the negative correlation between being a transfer student and various abilities of EI, further examination of this is needed. The positive correlation found in bivariate analyses between transfer status and age, suggested confounding; however, in multivariate regressions, age was not a predictor of the outcomes, while being a transfer student was for some outcomes. Previous studies have found associations between being older and higher EI<sup>[22]</sup> but this was not supported in the current study nor was it supported in Shanta & Gargiula's<sup>[26]</sup> study which hypothesized that senior students after being exposed to patient centered curricula would increase emotional intelligence. The potential reasons why transfer students in this study scored lower in the area of strategic thought and understanding emotions warrants more exploration. GPA, a possible explanation (assuming low GPA scores in one who transfers from a 2 year college) was actually shown to be higher in transfer students, although only borderline significant. The lower scores in these two branches may be worthy to make note of when developing curricula that can target populations in need of certain aspects of EI development.

The only persistent gender difference was in the branch, facilitating thought with males scoring higher than females, on

average by 16 points. Gender has been examined in original studies performed by Mayer & Salovey<sup>[29-31]</sup> and found that females generally scored slightly higher in emotional intelligence but these were general population samples and not nursing. In a comprehensive analysis of associations between gender and the four branches of EI in nursing students in Hawaii (using the same instrument MSCEIT), Codier and MacNaughton<sup>[35]</sup> found no statistical differences between the groups on any of the subscales. However, they noted that both males and females scored higher in the strategic area, and when examining the four branches, both groups scored higher in perceiving emotions. In an examination of gender differences in EI measured by MSCEIT V2.0 conducted in a Spanish university by Fernández-Berrocal *et al.*<sup>[36]</sup> females scored higher on most components except for experiential area and the branch, perceiving emotions. However, when age was entered into the models, no gender differences were noted.<sup>[36]</sup> Males in this study may have higher EI than males in the general population in any ability of emotional intelligence because they are self selected to attend training in an emotionally sensitive profession such as nursing. Codier and MacNaughton<sup>[35]</sup> came to similar conclusions about the lack of gender differences in their study.

### Limitations

This was a convenience sample of baccalaureate nursing students, and somewhat homogenous as they all were attending a lower division course generally taken in the first or second year of their program. Having included students at the end of their academic program may have afforded the ability to examine change in EI and have offered more variance in age. In addition, GPA was self reported and this may have caused inflation of this representation of academic standing. Including an increased number of male and minority students, and in particular, African Americans, could have more rigorously detected gender and ethnic differences in EI; however, even with small subsamples differences were detectable. Ethnicity, a characteristic that is most always self reported sometimes forces students to choose one, and occasionally this may not fully represent the student if a mixture exists. Asian ethnicity was collapsed from various submissions. Differences in these cultures subsequently were unable to be examined. However, the majority of the Asian sample was either Chinese or Filipino. Finally, generalizing results from a study conducted at a small, private university in a major US city must be done so with caution. However, the inclusion of transfer as well as minority students adds to the heterogeneity, and thus the generalizability to similar populations.

## 5. CONCLUSION AND IMPLICATIONS FOR NURSING

Current research supports the contribution of emotional intelligence to effective socialization in personal lives as well as in the workplace.<sup>[11-13]</sup> Nurses in particular are often challenged in high stress situations to maintain a steady, clear response to myriad emotions in both their patients and their colleagues. Emotional intelligence has been associated with effective conflict management styles,<sup>[13]</sup> a skill that all nurses should be proficient in.

Decreasing the incidence of workplace incivility in nursing warrants much attention and innovation. Early identification of those at risk for perpetrating as well as falling victim may help facilitate early corrective action. In a study of university teachers, Bibi and Karim<sup>[12]</sup> discovered an inverse relationship between emotional intelligence and workplace incivility as well as counterproductive work behavior (CWB). Of particular interest, EI was found to moderate the effects of incivility and CWB which supports promise in assuaging the harmful effects of hostile work environments.

This study adds an in-depth exploration of not only total EI in a lower division nursing student sample, but a comprehensive examination of the components of emotional intelligence. As opposed to some studies that suggest using EI in admission decisions,<sup>[21]</sup> it is the belief of the current study's researchers, and supported by others,<sup>[11,31]</sup> to utilize measurements of EI to identify strengths and weaknesses in abilities that can be either gleaned, or developed as needed. It is generally believed now that instead of deeming EI as a personality trait that one is predispositioned toward, there is a potential to develop this capacity to be more effective conductors of emotional operations.<sup>[11,31]</sup>

Much time is spent on teaching our nursing students to become critical thinkers which must remain a cornerstone of safety in nursing. However, it is time now to also focus on their ability to perceive, understand, and appraise emotions, and utilize them to be creative problem solvers, and effective emotional regulators who can de-escalate tense situation or prevent falling victim to or perpetrating violence in the workplace.<sup>[38,39]</sup>

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