



The Internet Journal of Allied Health Sciences and Practice

<http://ijahsp.nova.edu>

A Peer Reviewed Publication of the College of Allied Health & Nursing at Nova Southeastern University

Dedicated to allied health professional practice and education

<http://ijahsp.nova.edu> Vol. 7 No. 2 ISSN 1540-580X

Emotional-Social Intelligence of Physical Therapy Students during the Initial Academic Component of Their First Professional Year

Hélène Larin, PT, PhD¹

Jean Wessel, PhD²

Renee Williams, PhD²

1. Associate Professor, Department of Physical Therapy, Ithaca College
2. Professor Emeritus, School of Rehabilitation Science, McMaster University

United States, Canada

CITATION: Larin, H., Wessell, J., Williams, R. Emotional-Social Intelligence of Physical Therapy Students during the Initial Academic Component of Their First Professional Year. *The Internet Journal of Allied Health Sciences and Practice*. April 2009, Volume 7 Number 2.

ABSTRACT

Purpose: To describe and compare the development of emotional-social intelligence (ESI) of physical therapy students from a traditional education program and a problem-based learning (PBL) program during the initial academic component of their first professional year of studies. Methods: At the beginning of their first professional year (time 1), sixty students (39 from the traditional program, 21 from the PBL program) completed the Bar-On Emotional Quotient Inventory Short (EQ-i:S) for ESI. The EQ-i:S provides a total score and five subscale scores (Intrapersonal, Interpersonal, Stress Management, Adaptability, and General Mood). Higher scores mean higher levels of ESI. The students completed the EQ-i:S again at the end of their first academic year, just prior to commencing their first full-time clinical placement (time 2). Results: A two-way ANOVA with repeated measures (group versus time) revealed significant group by time interaction effects ($p < .001$) for the total EQ-i:S score and the intrapersonal, Stress Management and General Mood subscale scores. This interaction was a result of a decrease in scores for students from the traditional education program [Total Score: 105.0 (9.3) to 100.0 (11.3)], and an increase for those from the PBL program [Total Score: 98.3 (11.4) to 101.9 (13.1)] from time 1 to time 2. Conclusion: Although the observed changes in ESI were small in both groups, the patterns of change were different in students from traditional and PBL programs. More research is required to determine the reason for these differences.

INTRODUCTION

Emotional intelligence (EI) or emotional-social intelligence (ESI) is an attribute just recently being studied for its significance in physical therapy and other health science professions. It is defined by Bar-On as "a multi-factorial array of emotional and social competencies that determine how effectively we relate with ourselves and others and cope with daily demands and pressures."¹ Moreover, ESI is considered necessary for individual and workplace success.²⁻⁴ There is also some evidence that ESI can improve with life experiences and training.^{1,5}

Most of the quantitative studies linking measures of ESI with other attributes have not been conducted on health science professionals or students. Bar-On reported correlations of 0.39-0.82 between ESI and work, academic and leadership ability in recruiters, and persons considered for leadership positions in the military.⁴ He also found that the ESI of students at entry to a university was correlated $r=0.45$ with their grade point average (GPA) in the middle of the academic year.⁴ McQueen refers to studies that indicate those with higher ESI have better interactive skills, are more cooperative, and develop closer relations.⁶ ESI has also been related to ethical decision making in Liberal Arts and Career and Technical undergraduate students, with no

difference between educational programs.⁷ Herbert and Edgar summarized data from several studies, and concluded that those with higher ESI are seen by their subordinates as having greater leadership skills.⁸ In addition, ESI was higher in “star” leaders compared to average performers.

In the health field, the nursing profession has shown an interest in the ESI concept, but much of the work is still theoretical.^{9,10} Farmer suggested that higher ESI may help prevent burnout in nurses, but found no relationship between ESI and job satisfaction in this group.¹¹ Grace, on the other hand, found that some aspects of ESI of nursing students predicted satisfaction with their educational program, although there was no association between ESI and GPA.¹²

Many of the characteristics associated with a high ESI would be desirable attributes for physical therapists. Physical therapists must relate effectively to other health professionals and to patients with diverse health issues, cultural backgrounds, and beliefs. In 2000, Gard and Gyllensten reviewed the literature on the importance of emotions in treatment situations.¹³ They concluded that physical therapists tend to respond mainly at an intellectual level even though they are aware of underlying emotions. They thought that if physical therapists could better identify and express emotions in treatment situations, there might be an improvement in their clinical reasoning skills and ultimately the treatment outcome. Later, in a qualitative study, expert physical therapists indicated the need for both themselves and their patients to identify and express their emotions.¹⁴ If the measurement of ESI is associated with effective therapist-patient interaction, then physical therapy programs may wish to specifically target ESI in their curricula.

Only cross-sectional studies have been conducted on the ESI of physical therapists or physical therapy students. Boyce found low, but significant, correlations of EI (as measured by the Emotional Intelligence Test [MEIS]) with cognitive ability (Wonderlic Personnel Test) and academic success.¹⁵ In a more recent doctoral thesis, Lewis measured ESI by means of the Mayer-Salovey-Caruso EI test, and found that this score was correlated to 2 out of 24 items on the Physical Therapy Clinical Performance Instrument (CPI) after controlling for GPA and scores on the Graduate Record Exam (GRE).¹⁶ None of these studies investigated any development of the ESI in physical therapy students during their academic or clinical education.

In physical therapy education programs, students gain knowledge and develop specific psychomotor skills. However, it is also expected that students will improve in their communication, professional behavior, and moral reasoning.¹⁷⁻¹⁹ Previous studies have confirmed that physical therapy students are aware of the importance of their relationships with clients and other health professionals, and of the need to adapt to different client circumstances and stressful situations.^{20,21} However, little is known about when students develop these skills and attitudes, and whether the type of educational program has an effect on this development. It has been shown that content related to many of these issues is included in physical therapy programs in North America,²² but specific methods of learning might be more effective in instilling changes in behavior. Since problem-based learning (PBL) emphasizes self-direction, self and peer evaluation, communication and team work, students from such a program may have greater or earlier changes in some aspects of ESI compared to students in a traditional program.²³

A previous study conducted by the authors found that there were no differences in ESI between physical therapy students entering a problem-based program and those entering a traditional program.²⁴ The purpose of the present study was to determine if ESI of physical therapy students changed over their first professional academic year (prior to clinical placements), and whether the change was any different between students from PBL and traditional education programs.

METHODS

Design and Procedures

This study followed a group comparison, repeated measures design. Physical therapy students from two institutions completed the Bar-On Emotional Quotient Inventory Short (EQ-i:S) at the beginning of their professional programs (T1), and again just prior to commencing their first full-time clinical placements (T2). We chose these time points for data collection to ensure that changes due to clinical placements did not mask changes due to the educational programs. It has been shown that some differences between PBL and traditional students decrease after clinical experience.^{25,26} Subjects had no access to their T1 scores when completing the questionnaires at T2.

Subjects

Subjects were 21 physical therapy students from McMaster University, Ontario, and 39 physical therapy students from Ithaca College, New York. Students in both programs were informed of the study by e-mail or through announcements in classes/tutorials. They were offered a pizza lunch or a \$5.00 food voucher for their participation. They contacted the research assistant if they were interested in being in the study. The groups of students and their characteristics are illustrated in Table 1. Students in the Ithaca program were in the third year of an undergraduate program but in the first year of their professional

studies which would lead to a Master's degree in physical therapy. The McMaster students had completed an undergraduate degree and were enrolled in the first year of an entry-level Master's program in physical therapy. The study received ethical approval from the ethics review boards of both institutions involved in the study, and all subjects provided informed consent.

Table 1. Characteristics of Subject Groups

Program	N	Class Size	Male/Female	Age mean (SD)	Education Level	Education Mode
McMaster	21	59	1/20	24 (4.0)	Graduate	Problem-based
Ithaca	39	67	7/32	20 (2.1)	Undergraduate/Graduate	Traditional
Total	60	126	8/52	22 (3.3)		

Bar-On Emotional Quotient Inventory Short (EQ-i:S)

The EQ-i:S is a self-report measure of emotional and social intelligent behaviors.⁴ This tool comprises 51 items in the form of short sentences. Respondents rate each statement from 1 (very seldom or not true of me) to 5 (very often or true of me). Items are added to produce a total score and 5 subscale scores (Intrapersonal, Interpersonal, Stress Management, Adaptability and General Mood). These scores are presented as standard scores, with a mean of 100, based on age and gender. Persons who score between 85 and 115 (one standard deviation) are said to be functioning effectively. Those who score above 115 are considered to have enhanced ESI, and those with scores below 85, to be in need of improvement. Internal consistency was confirmed by an alpha of 0.97. Intraclass correlation coefficients (ICCs) for test-retest reliability were 0.72 for males and 0.80 for females.²⁷

Analysis

The data were evaluated for fit with a normal distribution by means of the Kolmogorov-Smirnov statistic with a Lilliefors significance level. As the p values for this test were >0.05 for all data, the EQ-i:S scores of the two groups at T1 and T2 were compared by means of a two-way analysis of variance (ANOVA) with repeated measures. The significance level was set at p<0.05.

RESULTS

All but one of the 60 students tested at T1 completed the EQ-i:S at T2. One student from Ithaca College was unavailable because she had dropped out of the program.

The means and standard deviations of the EQ-i:S scores are presented in Figure 1, and the results of the ANOVA in Table 2. The means of the total and subscale scores were within the effective functioning range for both student groups. The ANOVA revealed no significant group effects for any of the scales. Only the Adaptability subscale showed a significant time main effect. The group by time interaction effects were significant for EQ-i:S total score, and the Intrapersonal, Stress Management, and General Mood subscales (Table 2). Because these interactions were significant, post hoc paired t-tests were used to examine the change in EQ-i:S scores from T1 to T2 for each group. As noted in Table 3, there was a slight decrease in some EQ-i:S scores for Ithaca students and a slight increase for McMaster students.

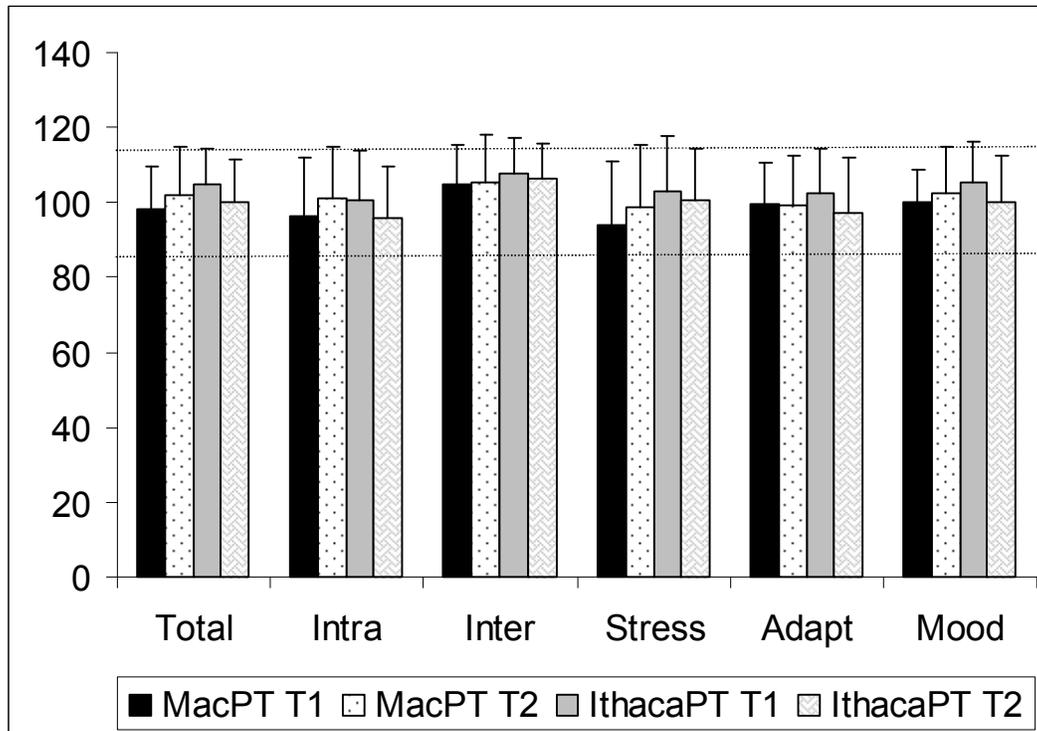


Figure 1. EQ-i:S scores (total and subscale) for the two programs at T1 and T2. Subscales are Intrapersonal (Intra), Interpersonal (Inter), Stress Management (Stress), Adaptability (Adapt) and General Mood (Mood). All scores between the dashed lines are considered to be in the effective functioning range for emotional-social intelligence. There were significant group X time interactions for the Total score and for the Intra, Stress, and Mood subscales.

Table 2. ANOVA Summary Table for EQ-i:S Total and Subscale Scores

Scale	Source	F value	P value
Total EQ-i:S score	Group	0.63	0.430
	Time	0.63	0.430
	Interaction	24.17	<0.001*
Intrapersonal	Group	0.02	0.889
	Time	0.01	0.931
	Interaction	20.30	<0.001*
Interpersonal	Group	0.43	0.517
	Time	0.15	0.701
	Interaction	0.25	0.617
Stress	Group	1.90	0.174
	Time	0.66	0.421
	Interaction	8.18	0.006*
Adaptability	Group	0.05	0.830
	Time	4.39	0.041*
	Interaction	3.41	0.070
General Mood	Group	0.20	0.654
	Time	1.41	0.239
	Interaction	13.01	0.001*

* significant at $p < .05$

Table 3. Post hoc t-tests performed on the change in EQ-i:S scores from T1 to T2 for the two programs

Score	McMaster University		Ithaca College	
	T2-T1	p value	T2-T1	p value
Total	3.5	0.024	-5.1	<0.001
Intrapersonal	4.4	0.018	-4.6	<0.001
Interpersonal	0.1	0.938	-1.1	0.477
Stress	4.9	0.018	-2.7	0.112
Adaptability	-0.3	0.881	-5.3	0.002
General Mood	2.7	0.172	-5.3	<0.001

Negative values indicate a decrease in score from T1 to T2

DISCUSSION

The results of the present study showed that physical therapy students, as a total group, had “normal” EQ values at entry to their professional programs, and no significant change in ESI over their first professional academic year. However any significant changes were masked by the group by time interactions. Significant interactions suggest that the pattern of change in ESI may be different for students in PBL versus students in a traditional program. The PBL students showed an increase in EQ-i:S scores while the students in the traditional program had a decrease.

The results do suggest that a PBL program might have a better chance of improving the ESI of students. One of the significant interactions was on the Intrapersonal scale. In the PBL program, students evaluated themselves and their classmates on a regular basis in the tutorial sessions. In the past, physical therapy students have commented positively on the value of learning how to give and receive feedback, even though they found it difficult and stressful at first.²¹ Such regular self-evaluation might have contributed to the positive change in the Intrapersonal score. In the traditional program, students received feedback through their results on written examinations and comments on their performance in practical examinations. However, there was no formal requirement for self-reflection and self-evaluation.

Stress Management was another subscale that demonstrated a group by time interaction. The students from the PBL program may have been more stressed at the beginning because they were entering a new educational method and they did not know what to expect. The students in the traditional program had already completed two pre-professional years within the physical therapy program. The PBL students might have improved their stress management as they adapted to their new educational format. On the other hand, the students in the traditional program may have had an increase in stress as they faced increased demands to integrate and apply knowledge and demonstrate professional behaviors. In addition, students may have been concerned with maintaining the required GPA to continue into the professional program.

General Mood was the final subscale that demonstrated a group by time interaction. Changes in mood could be related in part to the changes in the Intrapersonal scale. The correlation between the change scores of these two scales was $r=0.43$, $p=0.001$. The Intrapersonal scale measures individuals' awareness of their own emotions, ability to express these feelings, self-reliance, and ability to set and achieve goals.²⁷ As these skills improve, we might expect an improvement in General Mood, which is a measure of optimism; happiness with self, others, and life in general; and self-motivation.²⁷ Previous qualitative research has shown that physical therapy students in a PBL program adapt new learning strategies and become more confident in their ability to access, interpret, and utilize information over the first year of their program.²¹ The increased confidence and the support they receive from the other members of their PBL groups would likely relate to an improvement in mood.²¹ Students in the traditional program may not have had this same level of support. Each student had a faculty advisor to assist with academic and personal issues, but larger classes would not provide the same opportunity for group support as PBL tutorials with 6-8 persons.

Although the group by time interactions were significant for the total EQ-i:S score and three of the subscales, the changes in scores were small. Greater change in ESI was expected in the PBL group because the PBL tutorial sessions provide a forum for self-reflection and analysis of others' behavior. However, the McMaster program does not specifically train students to be more aware of their emotions and the emotions of others, and perhaps such training is necessary to effect major change in the EQ-i:S score. As an example, students in a business program had improvements in ESI immediately after taking a course specifically designed to improve ESI.⁵ These changes were maintained up to 7 years later.

Another reason for the small changes may be the high initial EQ-i:S scores of the students. Both groups had mean values considered in the “effective functioning” range for the total and subscale scores. Perhaps students with high emotional intelligence wish to be in professions, such as physical therapy, that involve interaction with others. Although it is known that ESI is related to “caring” and leadership qualities, it is not known whether an increase in ESI would also lead to increases in these two attributes.

There are some limitations to this study. The sample was small and included students from only two programs. Moreover, all students were volunteers and represented only 35.7% of students in the PBL program and 58.2% of students in the traditional program. A volunteer bias might have resulted in a sample that included students who felt more confident or had a greater interest in “emotional social intelligence” than the general student population.

Age likely did not contribute to the differences in EQ-i:S change scores of the two groups. The Ithaca students were slightly younger, but students in both groups were in the same standardized age category for the EQ-i:S. In addition, the mean scores for both groups were in the effective functioning range for ESI. Gender may have affected the results, because there was a higher percentage of male students in the sample from Ithaca compared to the sample from McMaster. The gender distribution of the sample also did not accurately represent that of the two classes. Although both physical therapy programs have more female than male students, male students were under represented in this study. However, the standardization of the EQ-i:S scores takes into account both age and gender.

This study does not provide a definitive answer as to the effect of type of educational program on the ESI of physical therapy students. However, it does suggest that the initial (first year) change in ESI may be different in students in traditional and PBL programs. Additional research should look at the longer term, examining changes in the ESI throughout the entire educational programs and into the beginnings of physical therapists' professional careers. Specific training of ESI should be evaluated to determine not only if ESI increases, but if other attributes such as caring, leadership, and clinical performance change in parallel.

CONCLUSION

This study was the first to examine the change in the ESI of physical therapy students. Over the first professional academic year, the ESI did not change significantly. The pattern of change in ESI, however, was different between the two groups of students: PBL students showed a slight increase in EQ-i:S scores while the students in the traditional program had a slight decrease. The mean EQ-i:S scores of both groups were within the normative values for age and gender. Further studies are needed to identify educational experiences that may influence the development of ESI in physical therapy students.

ACKNOWLEDGEMENTS

The authors wish to thank all the physical therapy students who volunteered to participate in this study. This project was supported by seed funding from the School of Health Sciences and Human Performance (HSHP), at Ithaca College.

REFERENCES

1. Bar-On R. *Bar-On Emotional Quotient Inventory: Short (Bar-On EQ-i:S): Technical Manual*. Toronto: Multi-Health Systems Inc., 2002.
2. Corning S. Profiling and developing nursing leaders. *J Nurs Adm* 2002;32:373-5.
3. Snow JL. Looking beyond nursing for clues to effective leadership. *J Nurs Adm* 2001;31:440-3.
4. Bar-On R. The Bar-On model of emotional-social intelligence (ESI). *Psicothema* 2005;17:1-28.
5. Boyatzis RE, Saatscioglu A. A 20-year view of trying to develop emotional, social and cognitive intelligence competencies in graduate management education. *J Manage Dev* 2008;27:92-108.
6. McQueen AC. Emotional intelligence in nursing work. *J Adv Nurs* 2004;47:101-8.
7. Scott BS: The relationship between emotional intelligence and ethical decision making [dissertation]. Union University; 2004.
8. Herbert R, Edgar L. Emotional intelligence: a primal dimension of nursing leadership? *Can J Nurs Leadersh* 2004;17:56-63.
9. Cadman C, Brewer J. Emotional intelligence: A vital prerequisite for recruitment in nursing. *J Nurs Manag* 2001;9:321-4.
10. Freshwater D, Stickley T. The heart of the art: emotional intelligence in nurse education. *Nurs Inq* 2004;11:91-8.
11. Farmer, S. The relationship of emotional intelligence to burnout and job satisfaction among nurses in early nursing practice [dissertation]. University of Utah; 2004.
12. Grace, F. R. The relationship between student satisfaction and emotional intelligence among undergraduate students enrolled in nursing programs [dissertation]. Wayne State University; 2004.
13. Gard G, Gyllensten AL. The importance of emotions in physiotherapeutic practice. *Phys Ther Rev* 2000;5:155-60.

14. Gard G, Gyllensten AL. Are emotions important for good interaction in treatment situations? *Physiother Theory Pract* 2004;20:107-19.
15. Boyce, D. A. The correlation of emotional intelligence, academic success, and cognitive ability in master's level physical therapy students [dissertation]. Spalding University; 2001.
16. Lewis, E. S. A study of emotional intelligence, cognitive intelligence and clinical performance of physical therapy students [dissertation]. University of Massachusetts Lowell; 2004.
17. Barnitt RE. 'Deeply troubling questions': The teaching of ethics in undergraduate courses. *Br J Occup Ther* 1993;56:401-6.
18. Finley C, Goldstein MS. Curriculum survey: Ethical and legal instruction - A report from the APTA Department of Education and the APTA Judicial Committee. *J Phys Ther Educ* 1991;5:60-4.
19. Geddes EL. Ethics, moral reasoning and professional virtue in physiotherapy education in Canada [abstract]. *Physiother Can* 1998;50 Suppl:13.
20. Williams RM, Wessel J, Gémus M, Foster-Seargeant E. Journal writing to promote reflection by physical therapy students during clinical placements. *Physiother Theory Pract* 2002;18:5-15.
21. Williams R, MacDermid J, Wessel J. Student adaptation to problem-based learning in an entry-level master's physical therapy program. *Physiother Theory Pract* 2003;19:199-212.
22. Geddes EL, Finch E, Larin H, Janson R, Taylor M. Ethics in physiotherapy practice: Determining key issues for student learning [abstract]. *Physiother Can* 1998;50 Suppl:13.
23. Saarinen-Rahiika H, Binkley JM. Problem-based learning in physical therapy: a review of the literature and overview of the McMaster University experience. *Phys Ther* 1998;78:195-207.
24. Wessel J, Larin H, Bentley G, et al. Emotional-social intelligence in health science students and its relation to leadership, caring and moral judgment. *Internet J Allied Health Sci Pract* 2008;6(1).
25. Lieberman SA, Stroup-Benham CA, Litwins SD. Cognitive benefits of problem-based learning: do they persist through clinical training? *Acad Med* 2001;76:S84-6.
26. Titchen AC, Coles CR. Comparative study of physiotherapy students' approaches to their study in subject-centred and problem-based curricula. *Physiother Theory Pract* 1991;7:127-33.
27. Bar-On R. The Bar-On Emotional Quotient Inventory (EQi): Rationale, description, and summary of psychometric properties. In: Geher G. ed. *Measuring emotional intelligence: Common ground and controversy*. Hauppauge, NY: Nova Science Publishers; 2004:111-42.