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Analysis of Empathy in Physical Therapy Students

The purpose of this study was to measure empathy in physical therapy students using a self-report measure of empathy. One hundred seventy students from three different majors participated in the study. The physical therapy group consisted of 49 people, 24 men and 25 women. The psychotherapy group has 59 people, 17 males and 42 females. 62 participants were randomly assigned to the engineering group, with 18 males and 44 females. It was hypothesized that empathy would be higher in physical therapy students compared to those in engineering. Empathy Quotient (EQ) supported the research hypothesis, with students in physical theapy higher than students in engineering There is no statistically significant difference in the EQ between physical therapy and psychotherapy. There were also differences in empathy according to major and gender. Our research suggests that empathy needs to be promoted through education and training.

Key words: *Empathy, Physical Therapy, Emotion Empathy Quotient, Physical Therapy Education*

Chang Ryeol Lee, Ph.D, Prof., Min Park,Ph.D, Prof.

Korea Nazarene University, Cheonan, Republic of Korea

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Address for correspondence
Chang Ryeol Lee, Ph.D.
Department of Physical Therapy, Korea Nazarene University, 48 Wolbong-ro, Seobuk-gu, Cheonan-si,
Chungcheongnam-do, Korea
Tel: 82-10-4415-9668
E-mail: crlee@kornu.ac.kr

INTRODUCTION

Empathy involves not only understanding of another's emotional state but also the affective experience of the other person's emotional state [1]. Empathy is a superordinate category that includes emotional contagion, sympathy, cognitive empathy, helping behavior, and so on [2].

Empathy is a capacity that is important in the effective provision of health care [3] and also important for therapy-related careers [4]. According to Bayliss and Strunk, empathy is a vital communication skill capable of enhancing therapeutic relationships. Therefore, it is an important skill to foster in physical therapy students [5]. Empathy also plays a crucial role in the psychotherapy [6], patient-physician relationship [7], nursing quality [8].

Several studies have investigated empathy in the field of medical science, nursing science, and psychology. In the field of medical science, the effect of grade and gender on empathy was studied using Jefferson Scale of Physician Empathy (JSPE), an instrument to measure empathy in physicians and medical students [9]. The results of studies, conducted with Korean medical students, showed the same pattern; that is, statistically significant differences in the empathy scores were found among years in medical school. However, there were no significant differences in empathy with regard to gender [7, 10, 11]. Studies, conducted with students majoring in nursing, showed common results that female students score higher than male students on Jefferson Scale of Physician Empathy [12, 13, 14]. American university students majoring in psychology reported more empathetic concern for others than did other majors [4]. In one study, gender and major differences of empathy were investigated with Korean university students in the science major and the humanities major [15, 16]. There were no significant gender and major differences on the empathy scores.

Previous studies examining individual differences in empathy consistently reported the following two results: First, science major students (especially engineering and physics) scored lower on empathy measurement, compared to those in the humanities [17, 18]. Second, females appear to be more empathic than

males [19, 20, 21].

There appears to be no study conducted with Korean physical therapy students to examine empathy yet. Accordingly, the aim of this study was to measure empathy in physical therapy students and to compare empathy among other major students using a self-report questionnaire. We chose two types of major, so as to measure empathy level of physical therapy major. One major was psychotherapy major which is relatively high empathic [4] and the other major was engineering major which is known as low empathic [17, 18].

PARTICIPANTS AND METHODS

Participants

One hundred seventy university students participated in this study. We recruited students from one university in Cheonan. The majors of students consisted of physical therapy (PT), psychotherapy (PSY), and engineering (EN). The average age of PT major group was 22.60 years (range=19~27, SD=2.41). The average age of PSY major group was 20.07 years (range=18~25, SD=1.76), The average age of EN major group was 21.60 years (range=18~27, SD=2.93).

The school year of PT major group consisted of which 18 were first year, 13 were second year, 14 were third year, and 4 were fourth year. The school year of PSY major group consisted of which 19 were first year, 17 were second year, 9 were third year, and 14 were fourth year. The school year of EN major group consisted of which 14 were first year, 17 were second year, 18 were third year, and 13 were fourth year. There were no differences in the frequency of school year of participants [$\chi 2(6, n=170)=8.928$, $p=.178$].

The PT major group consisted of 49 participants of which 24 were males and 25 females. The PSY major group consisted of 59 participants of which 17 were males and 42 females. The EN major group consisted of 62 participants of which 18 were males and 44 females. There was differences in the frequency of participants' gender [$\chi 2(2, n=170)=6.190$, $p=.045$]. Table 1 describes the characteristics of participants.

Measurement Method

Students self-reported levels of empathy using Empathy Quotient [22]. The Empathy Quotient (EQ) was developed for measuring empathy in adults of normal intelligence. It contains 40 items and on each empathy item a person can score 2, 1, or 0. Participants are asked to respond 'definitely agree', slightly agree', 'slightly disagree' or 'definitely disagree' to each item. For example, after reading an empathy item such as "I really enjoy caring for other people," participants responded to that item on a

Table 1. Characteristics of Participants (n=170)

Major Gender,School Year	Physical Therapy	Psychotherapy	Engineering
Male	24	17	18
	(40.7%)	(28.8%)	(30.5%)
Female	25	42	44
	(22.5%)	(37.8%)	(38.6%)
1	18	19	14
Freshman	(35.3%)	(37.3%)	(27.5%)
2	13	17	17
Sophomore	(27.7%)	(36.2%)	(36.2%)
3	14	9	18
Junior	(34.1%)	(22.0%)	(43.9%)
4	4	14	13
Senior	(12.9%)	(45.2%)	(41.9%)
Total	49	59	62
	(100.0%)	(100.0%)	(100.0%)

"definitely agree', if that item well describe themselves. Those who score high on EQ considered having more empathy. The Korean version of the EQ was used in the present study [15]. Internal consistency between the items (Cronbach's alpha) was calculated for the EQ used in this study and it was .86.

Data Analysis

We computed three sets of one-way analysis of variance (ANOVA)s with major status (physical therapy major, psychotherapy major, engineering major), gender (male, female), and school year (first year, second year, third year, fourth year) as independent variables. We also computed two sets of two-way ANOVAs on these data to test for interactions: In one set, type of major and gender were the two independent variables; In the other set, type of major and school year were the two independent variables. All statistical analysis was performed using IBM SPSS Statistics 22.0. We held the overall statistical significance level at .05.

RESULTS

One-way ANOVA revealed that type of major was statistically significant [F(2, 167)=3.314, p=.039, partial η2=.038]. PT (M=41.02) and PSY (M=41.80) groups were significantly more empathetic than EN (M=37.61) groups. However, gender was not statistically significant between groups [F(1, 168)=.094, p=.759, partial η2=.001], and school year was also not statistically significant among groups [F(3, 166)=1.687, p=.172, partial η2=.030].

Two-way ANOVA showed that the interaction between gender and major was statistically significant [F(2, 164)=3.745, p=.026, partial η2=.044]. Female PT students were significantly more empathetic than male PT students. On the other hand, male PSY students were higher in empathy than female PSY students (Table 2). The interaction between school year and major was not statistically significant [F(6, 158)=1.420, p=.210, partial η2=.051]. (Table 3).

DISCUSSION

The present study was conducted to determine the degree of empathy in physical therapy students. Our findings showed that students majoring in physical therapy scored higher on the EQ, compared to those in the engineering. There were also differences in empathy according to major and gender. Female physical therapy students were significantly more empathetic than male physical therapy students. The opposite pattern was seen for psychotherapy students. That is, male psychotherapy students were significantly more empathetic than female psychotherapy students. However, gender, school year, and the interaction between school year and major were not statistically significant.

Table 2. Empathy Scores by Gender and Major

Major	PT			PSY			EN		
Gender	Male	Female	Total	Male	Female	Total	Male	Female	Total
M±SD	38.71±11.02	44.76±9.70	41.80±10.70[a]	43.94±10.04	39.83±10.28	41.02±10.31[b]	37.00±6.07	37.86±7.03	37.61±6.73[c]

PT=Physical Therapy, PSY=Psychotherapy, EN=Engineering, M=Mean, SD=Standard Deviation, Values are the EQ scores.
[a]: The values in the PT group and PSY group were significantly higher than those in the EN group.
[b]: The values in the female PT students were significantly higher than those in the male PT students.
[c]: The values in the male PSY students were significantly higher than those in the female PSY students.

Table 3. Empathy Scores by School Year and Major

Major	PT					PSY					EN				
School Year	1	2	3	4	Total	1	2	3	4	Total	1	2	3	4	Total
M±SD	41.28±12.10	44.69±10.64	38.93±9.32	44.75±9.29	41.80±10.70[a]	40.79±9.22	42.47±10.89	45.00±9.67	37.00±11.02	41.02±10.31[b]	32.79±6.85	39.65±5.41	40.11±6.79	36.69±5.63	37.61±6.73[c]

PT=Physical Therapy, PSY=Psychotherapy, EN=Engineering, M=Mean, SD=Standard Deviation, Values are the EQ scores.
[a]: The values in the PT group and PSY group were significantly higher than those in the EN group.
[b]: The values in the female PT students were significantly higher than those in the male PT students.
[c]: The values in the male PSY students were significantly higher than those in the female PSY students.

The empathy score of physical therapy students was higher than engineering students. But mean score of empathy did not differ between physical therapy major and psychotherapy major. The mean score of students majoring in physical therapy major (M=41.02) was similar to the mean score of the Belgian humanities major students (M=41.70) [18] and higher than Korean humanities major students (M=37.85) [16]. Students in physical therapy major obtained more empathy score than did students in engineering major. This result suggest the possibility that highly empathetic students may choose physical therapy major and a greater tendency to enter a helping profession may contribute to the choice of physical therapy major.

The gender differences on the EQ were not found in this study. This is consistent with the results of studies conducted with Korean university students [7, 10, 11, 15, 16]. There were no significant differences in empathy with regard to gender. According to foreign literature, however, females are significantly more empathetic than males [19, 20, 21]. One possibility is that because of collectivism culture, Korean males developed more empathy compared with Western males. This influence resulted in no gender differences [16]. Actually, as for physical therapy major, female students were more empathetic than male students, whereas in the case of psychotherapy major male students were higher in empathy score than female students.

The study, conducted with Korean medical students, showed statistically significant differences in the empathy scores were found among grades in medical school [7, 10]. However, in the present study, the year of class appeared to have no significant influence on the students' empathy. This may be the result of insufficient empathy education program in currently enrolled university [10]. It also possible that empathy is a stable trait and thus it is not likely to change significantly during the college years [4]. It is necessary to identify which is the case in the future research.

In the field of medicine and nursing, it has been pointed out that empathy may be amenable to positive change with various interventional strategies [22] and it is possible to increase empathic ability [23]. To train future professional physical therapist, physical therapy educators need to explore various ways to teach empathetic competency. Introduction of empathy enhancement education program in the formal curriculum and extra-curriculum should be actively taken into consideration.

Finally, the most obvious limitation of this study is the convenience sampling of physical therapy students enrolled at one university which limits the generalizability of the results.

CONCLUSION

In the present study, we found that physical therapy students were more empathetic than engineering major students. There was no statistical difference between physical therapy students and psychotherapy students on empathy score. There was no relation between school year and empathy score. There were also differences in empathy according to major and gender. The empathy score of physical therapy students was significantly higher than engineering students. But mean score of empathy did not significantly differ between physical therapy major and psychotherapy major. This finding suggests that physical therapy educators need to search ways to enhance students' empathetic competency.

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