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A Cross-Sectional Study of Empathy Among College Students in Health and Human Sciences Degree Programs

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Abstract

Empathy is an essential skill for health and human science professionals and students pursuing degrees in helping profession careers such as social work, counseling, nursing, and speech pathology. Empathy in providers is correlated with positive outcomes in medical and behavioral healthcare settings. To date, most studies on empathy in college students have focused on those in medical, nursing, and social work programs and have not examined prior experiences in the field. The purpose of this study was to assess and explore differences in levels of empathy among students (n=530) enrolled in a variety of health and human sciences degree programs at a regional southern university. Using a cross-sectional design, empathy was measured using the Interpersonal Reactivity Index (IRI), which assesses four dimensions. Results indicated higher empathy scores among female students, certain degree programs, and in upper level and graduate students. Students with practical experience that involved patient/client contact, whether at work or internships, scored higher on the Perspective Taking subscale and lower on the Personal Distress subscale. Implications for degree programs who train future health and human science professionals involve inclusion of field experiences and integration of education and training on empathy in coursework.

Keywords: Empathy, Health Education, Survey Research, Helping Professions, health sciences, human sciences, social work, Interpersonal Reactivity Index

Introduction

Empathy is an essential skill for students pursuing degrees in health and human sciences (i.e. helping professions) such as social work, counseling, nursing, speech pathology, and those designed as pre-professional programs (e.g., pre-occupational therapy, pre-physical therapy, pre-physician's assistant) [1-3]. Empathy among providers is correlated with better care experiences and positive outcomes for patients and providers [4]. For example, a meta-analysis by Howick et al. [5] concluded that practitioner empathy can have patient benefits for a range of clinical conditions. Several studies showed empathic interactions resulted in less pain, anxiety, and shortened length of hospital stays [5]. Atta et al. [6] noted that higher levels of empathy in nursing students was associated with increased levels of caring behavior and emotional support towards patients. In the addictions field, Moyers et al. [7] found higher empathy by therapists was associated with decreases in drinking by clients who had an alcohol use disorder. Thus, empathy may be considered a key part of educational programming for helping profession majors [1, 3, 8, 9].

Conceptualization of empathy has developed over several decades of research. Generally, empathy has a cognitive and an affective or emotional component [10]. Cognitive empathy is the ability to understand what another person is experiencing [2, 3, 10, 11]. Affective empathy involves recognizing or feeling another person's pain and suffering [10-12]. Related to the affective component is the concept of sympathy. Experiencing or reacting to the feelings of others in the form of sympathy may have a curvilinear relationship with patient outcomes. Too little sympathy or too much sympathy can decrease positive outcomes [1].

Previous research has found that levels of empathy vary across different degrees of study, levels of education (undergraduate vs. graduate), and genders. Lucas-Molina et al. [13] found that women scored higher across all of the Interpersonal Reactivity Index subscales than men. In a study of students and practitioners in social work and nursing, Lawrence et al. [9] found significant differences in empathy levels between bachelor level students, graduate level students, and practitioners. Bachelor of social work students scored the lowest on empathy while practicing nurses scored the highest. These findings suggest that empathy can be learned, and it is possible that targeted training/education and work experiences can help students develop empathy. A failure to expose students to training/education targeting interpersonal skills and empathy may result in no changes or even a decline in empathy during professional training, which has been found in some studies on medical education [1].

To date, most studies examining empathy among college students have focused on those in medical, nursing, and social work programs. Students in other professional allied health programs (e.g., speech

pathology) and pre-professional degree programs that provide the undergraduate basis for graduate study in physical therapy, occupational therapy, and physician assistant and other specializations are under-represented. To enhance our understanding of empathy levels in a broader sample, this cross-sectional study aims to assess and explore differences in empathy among students enrolled in a variety of health and human sciences degree programs (undergraduate and graduate levels) at a regional southern university. Adding to the research, empathy scores were also evaluated relative to students' healthcare work or practicum experience and having a family member working in an allied health field. Results from this study may help inform pedagogical and curricular decisions among those involved in developing future healthcare professionals.

Methods

Participants

Participants were students attending a public regional southern university and enrolled in targeted graduate and undergraduate programs within a health and human sciences college. At this university, students in these degrees are future health and human science professionals, but vary in career path. Degrees in Nursing, Counseling, Social Work, and Communication Sciences and Disorders lead to licensure in these professions. Students pursuing undergraduate degrees in Kinesiology and Health Sciences were pre-professional students. The degree in Human Sciences similarly prepares students for careers in helping professions including child life, and nutrition education. The final sample included 530 completed surveys. From the 538 received surveys, eight were discarded due to missing data. As indicated in Table 1, the sample was primarily female (82.2%); over 70% were 18-23 years old, the age range of traditional college students; and most (61.1%) were upperclassmen and graduate students. Slightly over 74% reported their race/ethnicity as White, followed by African American (17.2%).

Variable	n	%
Sex		
Female	434	82.2%
Male	85	16.1%
Other/no response	9	1.7%
Age		
18-23	361	72.5%
24 and older	137	12.5
Race/Ethnicity		
African American	92	17.4%
Asian/Pacific Islander	16	3.0%
Hispanic	7	1.3%
Multi-Racial	19	3.6%
White	394	74.3%
Classification		
Freshman	74	14.0%
Sophomore	91	17.2%
Junior	119	22.5%
Senior	168	31.7%
Graduate Student	37	7.0%
Academic Major		
Communication Sciences & Disorders	30	5.7%
Counseling	26	4.9%
Health Sciences	119	22.5%
Human Sciences	21	4.0%
Kinesiology	143	27%
Nursing	154	29.1%
Social Work	37	7.0%
Do You Have Regular Contact with Patients		
Yes	240	45.4%
No	290	54.6%
Do You Have a Family Member or Close Friend Who Has Contact with Patients		
Yes	380	71.6%
No	150	28.4%

Table 1: Descriptive Characteristics of the Sample (N=530)

Data Collection

After receiving approval from the Institutional Review Board, data were collected March 27, 2023, through May 5, 2023. Using a cross-sectional design, an online survey was used to collect the data. Participation was sought through email messages sent to all registered students within the university's health and human sciences college. Participants were informed that the research team was studying empathy among students enrolled in a variety of health and human science degrees, their participation was voluntary, and their responses were anonymous.

Empathy was measured using the Interpersonal Reactivity Index (IRI). The IRI is a self-report measure of empathy commonly used in research, and has good reliability (.72 to .79) across its subscales [10, 13, 14]. The IRI conceptualizes empathy as four distinct constructs. Example items include: "I often have tender concerned feelings for people less fortunate than me" (Empathetic Concern item); "In emergency situations, I feel apprehensive and ill-at-ease" (Personal Distress item); "I sometimes try to understand my friends better by imagining how things look from their perspective" (Perspective Taking item); and "After seeing a play or movie, I have felt as though I were one of the characters" (Fantasy item). Items are not grouped by subscale, but randomly ordered, and some items are negatively worded so that higher empathy would correspond to a lower rating. Respondents were provided the survey's 28 statements and rated how well each described them on a 5-option scale anchored by "Does not describe me well" and "Describes me very well."

In addition to empathy items, additional questions sought demographic information (age, gender, race/ethnicity, classification, and major), and two characteristics that may influence empathy. Separate items asked, "Are you currently employed or in an internship where you have regular contact with patients or clients?" and "Do you have family members or close friends who work in a helping profession where they have regular contact with patients or clients?"

Data Analysis

Responses to IRI items were translated to a 0 to 4-point numerical scale, and items requiring it were reverse scored. Scores for items associated with subscales were summed, deriving four subscale scores for reach respondent: Empathic Concern, Perspective Taking, Personal Distress, and Fantasy. Some researchers have combined Empathic Concern + Perspective Taking subscale scores to calculate an empathy score that includes both the affective and cognitive dimensions (Wang et al., 2020). We calculated this value as Combined EC+PC. Descriptive statistics for each subscale are provided for the entire sample (see Table 2). Variation in empathy scores by sex (male/female), patient contact (no/yes), and having a family members/friend who had patient contact (no/yes) were examined using t-tests. Differences between grade classifications and different majors were examined using ANOVA analyses. Cohen's d was calculated as a measure of effect size for two-group comparisons.

Results

When examined across the entire sample (see Table 2), students reported the highest scores on the Empathic Concern and Perspective Taking subscales and were lowest on the Personal Distress subscale. These values indicate they had relatively high levels of emotional empathy (compassion of individuals in distress) and cognitive empathy (the ability to see the world from another's perspective), but do not experience a high level of distress when working with individuals in stressful or difficult situations.

Subscale	Range	Mean	Std. Dev
Fantasy	1-28	17.44	5.50
Empathic Concern	6-28	21.80	3.88
Perspective Taking	4-28	19.98	4.35
Personal Distress	0-26	10.21	4.75
Combined EC+PC	18-56	41.78	7.02

Table 2: Interpersonal Reactivity Index Subscale Scores of the Sample (N=530)

Empathy Variation as a Function of Gender, Classification, and Major

Comparison of empathy scores among females vs. males revealed significant differences for two subscales (Fantasy and Empathic Concern) and the Combined EC+PT score (see Table 3). Female students' mean values were significantly higher than males' and effect sizes were moderate (see Table 3).

Subscale	Female Mean (SD)	Male Mean (SD)	Statistic
Fantasy	17.74 (5.45)	15.35 (5.29)	$t(517)=3.70$, $p<.001$, $d=.45$
Empathic Concern	22.20 (3.68)	19.81 (4.21)	$t(517)=5.35$, $p<.001$, $d=.60$
Perspective Taking	21.10 (4.23)	19.61 (4.68)	
Personal Distress	10.38 (4.72)	8.95 (4.83)	
Combined EC+PT	42.31 (6.74)	39.42 (7.61)	$t(517)=3.53$, $p<.001$, $d=.40$

Table 3: Interpersonal Reactivity Index Subscale Scores of Female and Male Students

To examine empathy variation by grade classification we created three categories: (1) freshmen and sophomores, (2) juniors and seniors, and (3) graduate students (which included both masters and doctoral students). Comparisons using univariate ANOVAs indicated significant differences in 3 of the 4 subscales, and the Combined EC+PT score (see Table 4). Scores showed a pattern of increasing Empathic Concern and Perspective Taking across increasing years in school. For example, Empathic Concern increased significantly across the three classifications, with graduate students reporting higher levels than undergraduates. Similarly, Perspective Taking was

significantly lower among Freshman/Sophomores than upper class undergraduates and graduate students. Differences in Personal Distress scores were in the opposite direction, with Freshman/Sophomore students reported a significantly higher level of anxiety or unease when dealing with individuals in distress than Junior/Senior undergraduates, who were significantly higher than graduate students.

Scale	Fresh/Soph Mean (SD)	Jr/Sr Mean (SD)	Grad Mean (SD)	Statistic
Fantasy	17.12 (5.59)	17.53 (5.39)	17.78 (5.70)	
Empathic Concern	20.96 (3.92)[a]	21.90 (3.90)[b]	23.06(3.34)[c]	$F(2,527)=8.86$, $p<.001$
Perspective Taking	18.72 (4.15)[a]	20.50 (4.49)[b]	20.69 (3.79)[b]	$F(2,527)=10.45$, $p<.001$
Personal Distress	11.22 (4.63)[c]	10.04 (4.58)[b]	8.88(5.16)[a]	$F(2,527)=7.58$, $p<.001$
Combined EC+PT	39.68 (6.65)[a]	42.40(7.21)[b]	43.74 (6.13)[b]	$F(2,527)=12.44$, $p<.001$

Table 4: Variation of Interpersonal Reactivity Index Subscale Scores by Grade Classification

[abc] Groups significantly different

We explored variation in empathy scores among students in various majors using separate one-way ANOVAs (see Table 5). Differences were revealed for two subscales, Empathic Concern [$F(6,523)=5.397$, $p<.001$], and Personal Distress [$F(6,523)=3.778$, $p=.001$], as well as the Combined EC+PT score [$F(6,523)=3.774$, $p=.001$]. Empathic Concern was lowest among Kinesiology majors, and their scores were significantly lower than students majoring in Counseling, Human Sciences, and Social Work. Personal Distress was highest among Communication Sciences and Disorders students, and lowest among those studying Nursing; these groups significantly different from each other. Counseling students had the highest Combined EC+PT score, and their mean was significantly higher than Kinesiology students.

Academic Major	Fantasy Subscale	Empathic Concern Subscale*	Perspective Taking Subscale	Personal Distress Subscale*	Combined EC+PT Score*
Counseling	19.12 (5.72)	23.15 (4.35)[b]	21.81 (3.43)	10.62 (4.45)	44.96 (5.58)[b]
Communication Sci & Disorders	17.90 (6.13)	22.40 (4.38)	19.00 (3.24)	11.93 (5.59)[b]	41.40 (5.86)
Health Sciences	17.61 (5.73)	22.32 (3.99)	20.50 (4.26)	10.81 (4.69)	42.82 (7.18)
Human Sciences	17.81 (6.43)	23.33 (3.23)[b]	20.52 (3.74)	10.38 (5.93)	43.85 (5.53)
Kinesiology	16.59 (5.01)	20.43 (3.68)[a]	19.55 (4.44)	10.50 (4.30)	39.97 (7.07)[a]
Nursing	17.66 (5.37)	21.84 (3.63)	19.66 (4.47)	8.80 (4.83)[a]	41.49 (6.82)
Social Work	17.51 (5.82)	23.00 (4.35)[b]	20.54 (5.04)	11.27 (3.93)	43.54 (7.98)

Table 5: Interpersonal Reactivity Index Subscale Scores of Students in Different Academic Majors

* Significant differences observed

[ab] Groups significantly different

The Effect of Personal or Family/Friend Patient Contact

Slightly less than half (45.4%) of respondents indicated being in regular patient contact as a result of work, internship, or clinical experiences. These respondents had significantly higher values on two subscales (Fantasy and Empathic Concern) as well as the Combined EC+PT score compared to students without patient contact (see Table 6). Effect sizes calculated for these variables indicated differences were of moderate size.

In addition to the potential effect of students having regular contact with patients/clients on their empathy, the researchers were interested in what impact having a family member or friend who works in a health and human sciences profession may have. The majority (71.6%) of respondents indicated having one or more family members or close friends who worked in a helping profession where they had regular contact with patients or clients. Comparison of efficacy scores among students who did vs. did not have a family member or close friend who had patient contact indicated a significant difference in only one subscale, Personal Distress [$t(528)=2.19$, $p=.029$, $d=.21$.] Respondents who had a family member or close friend who worked as a helping professional scored significantly lower on this subscale [mean = 9.93, SD = 4.78)] than those who did not [mean = 10.93, SD = 4.63)].

Scale	**Patient Contact**	**No Patient Contact**	**Statistic**
Fantasy	17.74 (5.45)	15.35 (5.29)	$t(517)=3.70$, $p<.001$, $d=.45$
Empathic Concern	22.20 (3.68)	19.81 (4.21)	$t(517)=5.35$, $p<.001$, $d=.60$
Perspective Taking	21.10 (4.23)	19.61 (4.68)	
Personal Distress	10.38 (4.72)	8.95 (4.83)	
Combined EC+PT	42.31 (6.74)	39.42 (7.61)	$t(517)=3.53$, $p<.001$, $d=.40$

Table 6: Interpersonal Reactivity Index (IRI) Subscale Scores by Patient Contact

Discussion

This study examined empathy among college students pursuing a variety of career paths in healthcare and helping professions; the results include four major findings. First, data suggest that as students progressed through their degree programs, aspects of empathy change. Perspective Taking (cognitive empathy) and Empathic Concern (affective empathy) were lowest among freshman/sophomores and higher in upperclass and graduate students. These findings are consistent with previous longitudinal research on nursing students who demonstrated higher scores on Perspective Taking over time [15]. Lawrence et al. [9] also found significantly higher empathy scores by graduate social work students as compared to undergraduates. Also potentially important is our finding of a pattern of reduced Personal Distress among the three levels of classification; upperclass and graduate students were less likely to report discomfort when working with people who are in distress. Conceptually, a decrease in Personal Distress and an increase in Perspective Taking is a desirable outcome of programs training future health and human science professionals [15].

Second, students who were currently involved in an internship/clinical rotation or employed in a helping profession role reported significantly higher scores on the cognitive empathy scales. These students were more able to take the perspective of their patients/clients. In addition, they were able to identify with fictional characters in books and films as seen in higher scores on the Fantasy scale. This is similar to previous research that found higher empathy scores for practitioners in social work and nursing as compared to social work students [9]. These findings support the conclusion that practical experience in a healthcare setting and/or personal contact with patients and clients plays an important role in empathy development in future professionals. It was also notable that students who reported having a family member or close friend who worked in a helping profession had significantly lower scores on the Personal Distress subscale. It is possible that communications with these friends and family members tends to reduce personal emotional reactions to those in crisis. This is a novel finding and worthy of further exploration.

Third, students pursuing different majors had significantly different empathy subscale scores. Counseling and Social Work majors had significantly higher scores on Empathic Concern than Kinesiology students. It is possible that higher empathy in Counseling and Social Work students compared to Kinesiology majors is related to personality characteristics that are involved in career choices, or that they enrolled in professional coursework that brings them closer to working with clients. These results may echo the findings of Hojat [1], who reported medical students who were interested in higher patient contact fields like family medicine had significantly higher empathy scores than procedure-oriented fields like radiology. Yet, Communication Sciences and Disorders students reported the highest level of discomfort when working with people in distress and were significantly higher on the Personal Distress subscale than Nursing students who reported the lowest level of discomfort.

Not surprisingly, female students scored higher on Perspective Taking than their male counterparts. Previous research has reported similar results. Lucas-Molina et al. [13] found in a sample of Spanish college students that women scored higher across all IRI subscales compared to men, and Wang et al. [16] found that females scored significantly higher than males on the Empathic Concern subscale. Additionally, a study of undergraduate medical students found that women scored statistically higher in overall empathy than men [17].

Limitations

Limitations of this study are those related to sampling and measurement. Our sample was from one university and was not gender balanced or diverse in race/ethnicity. Participants were primarily female (82.2%) and White (74.3%). However, these characteristics reflected the demographics of the general university population and allied health sciences college from which they were drawn. Additionally, Human Sciences and Social Work degree programs were underrepresentred. Thus, results may not adequately demonstrate levels of empathy from these degree programs. Future research examining empathy among students in health and human sciences majors might collect data from multiple sites and particularly recruit a more diverse sample.

Surveys used to measure empathy are subjective and self-report, and do not examine empathic behaviors, choices, or interactions that would demonstrate empathy in action [18]. Additionally, responses to scaled items do not provide in-depth perspectives. Studies combining empathy scales and qualitative interviews would enhance understanding. Finally, our examination of empathy among freshman/sophomores, juniors/seniors, and graduate students was cross-sectional. A logical extension of this line of research would include longitudinal empathy assessments of students in a variety of healthcare and human services programs as they progress through programs. Using the IRI, this line of inquiry would also help better understand how scores on the Personal Distress subscale can change over time.

Recommendations and Conclusions

Programs can and should strive to improve the level of cognitive and affective empathy in their students. Kinesiology programs, in particular, might evaluate ways to target empathy skills within their curriculum as these programs are more likely to have a larger proportion of male students, and their empathy scores were lower than other students. Studies have consistently found that empathy-focused training can benefit student growth and development [19, 20, 21]. While the specific components of empathy training and the time spent on these components has not been discerned, various studies have evaluated various preparatory, simulation-based, and hands-on experiences.

In a meta-analysis of training content focused on physicians, medical students and nurses, Paulus and Meinken [19] noted that training methods included role play, discussion, feedback, lecture, tasks or exercises to elaborate on a topic, conversations with experts, and observations of exemplary modeling [19]. For example, Sweeney [21, 22] had students watch filmed interviews with patients and then participate in a facilitated discussion aimed at increasing empathy. In another study, first-year medical students shadowed a patient during a clinic visit followed by small group discussion with the students to reflect on their experiences [23]. Additionally, simulation-based approaches are suggested as building blocks prior to real-life experiences in the field [20]. Rakel et al. [24] found that the use of role-play followed by debriefing showed significant improvements in levels of cognitive empathy. These studies suggest that specific preparatory and simulation-style content on empathy can be integrated into program curricula in addition to clinical or practicum experiences.

The role of empathy development in terms of hands-on experiences like internships or clinical practicums embedded in educational programs has limited research [20]. A study of counseling students in a university-based practicum experience demonstrated increased empathy scores post-practicum experience [25]. In social work, Greeno et al. [26] found that volunteer experience and work engagement was predictive of comprehensive empathy.

All the majors included in this study have internship, practicum, or clinical experiences embedded in the curriculum, yet there is room for improvement to explore the impact of preparatory, simulation, and hands-on empathy training on Perspective Taking, Personal Distress, and Empathic Concern. Based on the current study, students who indicated any education-based experience and/or employment-based experienced demonstrated higher scores on Perspective Taking. Thus, integration of hands-on practicum experiences across healthcare majors is recommended.

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Ethical Declarations

Competing interests: All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

Informed consent was obtained from all individual participants included in the study. The protocol was approved by the Institutional Review Board at the university affiliated with the first author in accordance with the ethical principles set forth in the Belmont Report and follows federal regulations based on the Federal Policy for the Protection of Human Subjects.

Additional Information

The data that support the findings of this study are not available openly. The data are, however, available from the authors upon reasonable request and with the permission of the primary author's university Office of Sponsored Research and Programs.

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