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Levels of Empathy in Undergraduate Healthcare Professions Students

Ashley M. Tegge
Illinois Wesleyan University

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School of Nursing

Illinois Wesleyan University

Abstract

Empathy is a central component in effective healthcare provider-patient relationships, yet evidence exists that healthcare professions students lack empathy. A cross-sectional survey was completed to identify whether a relationship exists between empathy levels in baccalaureate nursing, psychology, pre-medical, pre-dental, pre-physical therapy, and pre-occupational therapy majors who have or have not identified a projected specialty within their profession upon entry into practice, and compare these findings. A 28-item questionnaire was completed by a convenience sample of 202 students with declared majors in the healthcare professions of interest. There was no significant difference in empathy levels between students of all majors who had or who had not indicated a projected specialty, validating findings in previous research (Ward et al., 2009). Empathy levels in nursing students with a projected specialty were significantly higher than those of students in all other majors with projected specialties. Gender and age significantly influenced empathy levels between students of all majors with a projected specialty. These findings expand the current understanding of empathy and what may influence empathy levels in students planning to enter healthcare. Suggestions for future research are described.

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Levels of Empathy in Undergraduate Healthcare Professions Students

Empathy is composed of four key characteristics including the cognitive ability to identify and understand other's perspectives, the emotive ability to experience and share in others' psychological states, the moral altruistic drive that motivates the practice of empathy, and the behavioral ability to communicate empathetic understanding and concern (Ouzouni & Nakakis, 2012). Empathy is a central aspect in ensuring quality communication and maintaining therapeutic communication between healthcare professionals and patients, and over the last 30 years there has been increased interest in studying how empathy influences patient care (Ward et al., 2009). Research on the topic is limited due to a lack of consensus about the definition and measurement of empathy (Ouzouni & Nakakis, 2012; Ozcan, Oflaz, & Bakir, 2012; Ward et al., 2009).

Conceptual Definitions of Empathy

In the context of patient care, empathy can be defined in many ways. Fields et al. (2011) defined empathy as "the skill of understanding what a patient is saying and feeling, and communicating this understanding verbally to a patient" (p. 287). Williams et al. (2014) defined empathy as, "a predominately cognitive attribute that involves an understanding of the patient's experiences, concerns, and perceptive, combined with a capacity to communicate this understanding and an intention to help" (p. 107). Kiermsa, Chen, Yehle, and Plake (2013) defined empathy as, "the ability to understand and view the world from other people's perspectives and to connect with their experiences or feelings" (p. 1). Fields et al. (2011) suggested that empathetic patient care leads to better patient adherence, increased patient satisfaction, more accurate prognosis, and decreased levels of stress in patients. Healthcare

professionals view empathy as a vital attribute that needs to be developed in students entering the healthcare professions (Wilson, Prescott, & Becket, 2012).

A growing concern has been noted regarding the decline of empathy levels in healthcare professions students as they progress through their education, which is thought to be possibly due to a lack of positive role models in the clinical setting, a high volume of material to learn, time pressure, and/or negative experiences during clinical education (Ozcan et al., 2012). Some healthcare educators have questioned if healthcare professions student's empathy levels are declining due to the trend in teaching students an evidence-based practice (EBP) approach to patient care (Cunico, Sartori, Marognolli, & Meneghini, 2012; Fjortoft, Van Winkle, & Hojat, 2011). Cunico et al. (2012) hypothesized that EBP focuses heavily on the scientific, technological, diagnostic, and therapeutic approaches to healthcare, thus leading students to lose the human empathetic perspective in the patient-provider relationship. To address the concern of decreasing levels of empathy in healthcare professions students, these authors suggest that evidenced-based healthcare professions programs must be designed to encourage students to relate to their patients and families as human beings with lives and relationships as well as the need for rigorous evaluation of these programs to ensure that the desired outcomes, increased levels of empathy, are being achieved (Ozcan et al., 2012).

Review of the Literature

A search of the Medline, Social Sciences Citation Index, ClNAHL, OAlster, and ERIC databases was conducted using the terms "empathy", "tool", "scale", "healthcare", "measurement", "nursing", and "students", individually and in combination. The search yielded sources describing six tools that have been developed and used to measure empathy.

Empathy Measurement Tools

Six tools were identified in the literature to measure empathy and provide operational definitions of the concept: the Empathy Construct Rating Scale (ECRS), Interpersonal Reactivity Index (IRI), Empathetic Communication Skills Scale (ECSS), Empathetic Tendency Scale, Balanced Emotional Empathy Scale (BEES), and the Jefferson Scale of Empathy (JSE) which was later modified to the Jefferson Scale of Empathy-Health Profession Student Version (JSE-HPS) specifically for use in health professions students (Hojat et al., 2009a). A brief overview of the first five tools can be found in Table 1 (Appendix A). An in-depth discussion of the JSE and JSE-HPS follows.

Rationale for use of JSE-HPS

Prior to the development of the JSE, no psychometrically sound instrument was available to measure empathy specifically in healthcare professionals (Hojat, Gonnella, & Maxwell, 2009a). The ECRS, the IRI, the ECSS, the Empathetic Tendency Scale, and the BEES were developed to measure empathy levels in the general population (Cunico et al., 2012; Davis, 1980; Dökmen, 1988; La Monica, 1981). In addition to this, there were several other factors that impacted the decision to use the JSE-HPS for this study. First, the researcher had concerns that the number of items in the IRI, the ECRS, and the ECSS would pose a time burden for potential participants and might discourage participation. Second the BEES tool was no longer being distributed for use by other researchers (A. Mehrabian, personal communication, September 12, 2014).

Both the JSE-HPS and the Empathic Tendency Scale were deemed a reasonable length tool (20-items) that students would be willing to complete. The Empathic Tendency Scale was developed for use in the general population, whereas the JSE-HPS was developed specifically for

use in the population of interest. The individual in charge of distributing the JSE-HPS was contacted and the researcher was granted permission to use the tool free of charge for this undergraduate research (K. Maxwell, personal communication, October 2, 2014).

The literature was searched again, using only the terms "Jefferson Scale of Empathy", and "Jefferson Scale of Empathy-Health Profession Students". Studies were evaluated for relevance to the current study. Inclusion criteria were: journal articles published between 2000 and 2014 reporting primary research, published in English, studies utilizing the JSE or JSE-HPS, and studies involving nursing or other healthcare professions. Twenty-two sources were retained. For the purpose of this study, the literature review will focus on the JSE and the JSE-HPS.

Jefferson Scale of Empathy

M. Hojat and associated researchers at the Center for Research in Medical Education and Health Care at Jefferson Medical College of Thomas Jefferson University in Philadelphia developed the JSE in 2001 in response to a need for an instrument to measure empathy specifically in medical students and physicians (Hojat et al., 2009a). Hojat et al. (2001) developed the original, 90-item tool to measure empathy in medical students. The 90-item tool was distributed to 100 clinician-academician physicians with the request to cross out items considered irrelevant to measuring empathy in patient care and add items to the instrument considered important to measure empathy in patient care; fifty-five physicians responded (Hojat et al., 2009a). Items from the 90-item tool that were crossed out by at least five physicians were eliminated, and appropriate suggestions were added. After numerous revisions, 45-items from the original tool were retained (Hojat et al., 2009a). The 45-item instrument was administered to 193 third-year medical students at Jefferson Medical College and 41 physicians in an internal residency program at Thomas Jefferson University Hospital (Hojat et al., 2009a). Factor analysis

was used to identify the best items to include in a subsequent version of the JSE in order to decrease the number of items (Hojat et al., 2009a).

The final version of the JSE was decreased to 20 items; each item is answered using a 7-point Likert-type scale (strongly disagree = 1, strongly agree = 7) and can be completed in less than 10 minutes; ten items are negatively worded and reverse scored (Hojat et al., 2009a). A higher score indicates a higher level of empathy (Hojat et al., 2001). The JSE has been translated into 42 different languages and has been utilized in research internationally. Four versions of the JSE (JSE, JSE Health Professionals Version, JSE Medical Students Version, and JSE Health Profession Student Version) have been developed (Hojat et al., 2009a).

Psychometric Properties of the Jefferson Scale of Empathy

To discover the construct validity of the JSE, researchers performed factor analysis to show the major dimensions that characterize the test scores (Hojat et al., 2009a). Four factors emerged with an eigenvalue greater than one. The factor structure of the JSE was consistent with the multidimensional concept of empathy reported in previous literature (Hojat et al., 2009a). The internal consistency of the reliability of the JSE was examined by calculating the Cronbach's coefficient alpha (0.85). A Cronbach's coefficient alpha of 0.85 is accepted to represent good internal consistency (Polit & Beck, 2013).

Jefferson Scale of Empathy-Health Profession Student Version

The Jefferson Scale of Empathy-Health Profession Student Version (JSE-HPS) is a variant of the original JSE (Hojat et al., 2009a). Revisions to adapt the JSE for administration to students in all healthcare professions, versus solely the medical profession, were completed in response to an increasing number of requests from researchers to use the scale for research in healthcare professions schools outside of the medical profession (Fjortoft et al., 2011). Thirteen

items from the JSE were modified for the JSE-HPS by replacing "physician" with "healthcare provider" (Hojat et al., 2009a). According to Fields et al. (2011), the JSP-HPS is the only tool designed to measure empathy scores specifically in healthcare provider students that has been tested in this population for reliability and validity (M=111.5, SD=12.2, Cronbach's alpha = 0.58 - 0.69).

Studies using the Jefferson Scale of Empathy

Multiple researchers used the JSE to measure empathy levels in healthcare professionals and healthcare profession students – before the development of the JSE-HPS (Hojat et al., 2001, 2002, 2004, 2009b; Ward et al., 2009; Nunes, Williams, Sa, & Stevenson, 2011; Briggs, Fox, & Abell, 2012; Leombruni et al., 2014). Hojat et al. (2002) investigated empathy in medical students and tested two hypotheses: medical students with higher empathy scores would obtain higher ratings of clinical competency and females would obtain higher empathy scores than males. The JSE was administered to 371 third-year medical students (198 males, 173 females) at Jefferson Medical College who completed the empathy scale voluntarily at the beginning of the academic year. Empathy scores were compared with the medical school faculty's ratings of students' clinical competence in each of their six, third-year core classes to examine their associations with empathy scores. Clinical competence was rated with a 4-point scale ranging from 'high honors' (superior rating) through 'excellent' and 'good' to 'marginal competence' (barely passing) (Hojat et al., 2002). Analysis of variance (ANOVA), t-test, and chi-square were used for group data comparisons. Both hypotheses were supported. Lowest mean empathy scores (M=115, SD=11) were obtained by students who received zero high honors ratings in their clinical competence for the six core classes, while the highest mean empathy scores (M=120, SD=*12*) were obtained by students who received three or more high honors ratings for clinical

competence (p=<0.05). Women scored significantly higher mean empathy scores (M=122, SD=10) than men (M=119, SD=11) (p= <0.01) (Hojat et al., 2002).

Hojat et al. (2004) conducted a longitudinal pre- and post-test study to examine changes in empathy among medical students during their third year in school. In most medical schools, the third year is the beginning of formal clinical training where medical students are exposed to the core medical disciplines and experience direct patient care. The researchers of this study hypothesized that medical student's personal orientation towards empathy declines in medical school, particularly in the third year. The findings supported the hypotheses. Third-year medical students (n=125, 64 men, 61 women) took the JSE at the beginning (pre-test) and end (post-test) of their third year of medical school, representing 56% of the total students enrolled. Changes in empathy scores were examined using a t-test for repeated measure design. There was a significant decline in mean total empathy scores from the beginning (M=123.1, SD=9.9) to the end (M=120.6, SD=13.9) of the medical students third year (p = <0.05). The variables of age and gender were also examined, but were found to not have a significant influence on empathy (Hojat et al., 2004).

Hojat's (2004) research was followed by publication of a longitudinal study to examine when the most significant changes occur in medical students' empathy levels (Hojat et al., 2009b). Students who attended Jefferson Medical College in 2002 (n=227) and 2004 (n=229) completed the JSE at five different times: entry into medical school and at the end of each academic year (Hojat et al., 2009b). A t-test showed no statistically significant change in medical student empathy scores from orientation (M=115.1), the end of the first year (M=115.5) and the end of the second year (M=115.1); standard deviation and effect size were not provided. However, a large decline in mean empathy scores occurred in the third year of medical school

(M=109.1), with no significant trend toward improvement in the fourth year (M=109.3); standard deviation and effect size were not provided. The decline in mean empathy scores from orientation to the end of the third year was not statistically significant (p=0.54) (Hojat et al., 2009b).

Ward et al. (2009) administered the JSE at the Jefferson College of Health Professions of Thomas Jefferson University to examine the reliability, validity, and correlates of the JSE in undergraduate nursing students (n=471). The survey response rate was 71% (n=331). The mean total score of the JSE was 114 with a standard deviation of 11.5. Partial correlations between responses to each item and the total score of the scale were all positive and statistically significant (p = <0.05), reaffirming the correct direction of scoring for each item (demonstrated by positive correlations) and the significance of each item in contributing to the total score of the empathy scale (demonstrated by statistically significant correlations). Females (M=115, SD=11.1) scored significantly higher than males (M=107.9, SD=12.3) (p<0.01). These researchers also examined empathy related to students projected specialty in nursing. The highest mean empathy score was obtained by nursing students with a projected specialty of oncology nursing (M = 120.1), and the lowest mean empathy score was obtained by nursing students with a projected specialty of critical care nursing (M=111.1); standard deviations were not provided. The difference between mean empathy scores and projected specialties in nursing was not significant; further research was recommended. The reliability coefficient alpha for the entire scale was 0.77 (demonstrating adequate internal consistency), allowing the researchers to conclude that the JSE is a psychometrically sound instrument for measuring empathy in undergraduate nursing students (Polit & Beck, 2013; Ward et al., 2009).

Nunes et al. (2011) conducted a cross-sectional study to examine empathy levels of undergraduate students in five different health sciences (dentistry, pharmacy, medicine, veterinary medicine, and nursing) before and after their first year of school. All 437 first-year undergraduate students enrolled in the 2009-2010 school year were invited to complete the JSE at the beginning and end of their first year. A total of 355 (81%) students completed the questionnaire at the beginning of their first year and 366 (84%) students completed the questionnaire at the end. To explore whether significant differences existed among gender, empathy mean scores were subjected to independent sample *t*-tests. Females scored significantly higher (M=112.51, SD=12.64) than males (M=105.37, SD=14.3) at t(1) = 4.494, and $p<0.01$; effect size was not provided. A one-way ANOVA was used to compare results among the different healthcare disciplines at both the beginning and end of the students' first academic year. Nursing students had highest empathy scores at both the beginning (M=116.65, SD=10.78) and end (M=109.21, SD=13.0) of the first academic year (Nunes et al., 2011). When comparing mean empathy scores from the beginning to the end of the first academic year, students in all five health-science disciplines showed a decrease in empathy scores from the beginning to the end of their first year in school, with a statistically significant decline in dental (p=0.001), nursing (p=0.02), and medical students (p=0.01) (Nunes et al., 2011).

Briggs et al. (2012) conducted a quasi-experimental study to examine the effects of viewing the film *Wit* on empathy levels in nursing students, the majority of whom were juniors in their first year of upper division nursing courses. *Wit* tells the story of a patient with stage four, metastatic ovarian cancer. The patient speaks directly into the camera to viewers, explaining thoughts about the medical care she receives and her desire for the medical team to empathize with her during over the course of her cancer treatments. The film was chosen due to

the emotional insight it provides on patient emotion and desire for empathy (Briggs et al., 2012). The JSE was administered three times. All 40 students took the pre-intervention tests at the beginning of a class period, followed by a 40-minute lecture on the topic of caring in nursing practice (Briggs et al., 2012). Students then drew random numbers to be assigned to an experimental or control group. The experimental group moved to a different classroom to view the film, while the control group participated in a lecture on "career opportunities in nursing". All students completed the JSE immediately following either viewing the film or listening to the lecture. Seven week later, students completed the JSE a third time, to determine if empathy levels changed or were maintained over time. The pre- and post-test data demonstrated that students exposed to the film *Wit*, as opposed to classroom teaching alone, had significantly higher revealed levels of empathy in the posttest administration of the JSE. There was a statistically significant increase of empathy scores in the experimental group between pre- and post-test #1 (t=2.60, p=0.0133) and pre- to post-test #2 (t=2.10, p=0.0424); degrees of freedom were not provided (Briggs et al., 2012).

Leombruni et al. (2014) examined the psychometrics and confirmed the factor structure of an Italian version of the JSE. A total of 257 out of 390 second-year medical students at the Medical School of the University of Turin took the Italian version of the JSE, yielding a response rate of 65.9%. Female students had significantly higher empathy scores than male students, providing a small effect size (d=0.32); means and standard deviations were not provided for female and male empathy scores. A subsample of the students took the JSE a second time, two weeks later, to assess test-retest reliability (r=0.72). Using Cronbach's alpha, internal consistency for the entire scale was 0.76. The Italian version of the JSE had an acceptable level

of internal consistency ($0.6 \leq \alpha < 7$) and test-retest reliability ($0.7 < r < 0.8$) (Leombruni et al., 2014; Polit & Beck, 2013).

Studies Using the Jefferson Scale of Empathy Health-Profession Student Version

The JSE-HPS was used in five studies to evaluate the level of empathy across a spectrum of different healthcare students (Fields et al., 2011; Fjortoft et al., 2011; Babar et al., 2013; Hsiao, Tsai, & Kao, 2013; Williams et al., 2014). Fields et al. (2011) conducted a descriptive, correlational study for psychometric analysis of the JSE-HPS. This study was part of longitudinal research to examine changes in empathy throughout healthcare provider student's education (Fields et al., 2011). Students in their third and fourth years of the Bachelor of Science in Nursing program at Armstrong Atlantic State University (n=285) completed the JSE-HPS, and a separate demographic survey, at the beginning of the 2009 academic school year. Females (M=112.5, SD=11) had statistically significant higher mean empathy scores than males (M=104.1, SD=17.1) at p=0.0002 and $t(1)$=3.76. There was no significant difference in empathy scores for students between the ages of 20-29 (M=109.7) versus 30-39 (M=113.7); standard deviations were not provided. Empathy scores of students who were 40 years or older (M=118.4) were significantly higher (F=7.9, p=0.0004) than empathy scores of students between the ages of 20-29 and 30-39. The JSE-HPS had a good internal consistency of 0.78. Test-retest reliability coefficient was 0.58 (poor) for 99 students who completed the second empathy scale within three months and 0.69 (questionable) for 30 students who completed the second empathy scale within six months (Fields et al., 2011; Polit & Beck, 2013).

Fjortoft et al. (2011) conducted a pre- and post-test study to determine the validity and reliability of the JSE-HPS for pharmacy students. The JSE-HPS was administered to all 214 first-year students (n=187, 87% response rate) at Chicago College of Pharmacy at Midwestern

University. The JSE-HPS, along with demographic questions, was administered as a pre-test before involving the students in workshop activities designed to promote empathy. Correlational methods and *t*-test for independent groups were used for statistical analysis. Females had significantly higher empathy scores (M=112.8, SD=11.3) than males (M=106.3, SD=12.1) ($p<$ 0.01). The JSE-HPS displayed an adequate degree of reliability coefficient alpha of 0.84, supporting the psychometric soundness of the JSE-HPS for use in pharmacy students (Fjortoft et al., 2011).

Babar et al. (2013) examined the validity and reliability of the JSE-HPS in a sample of dental health students in Malaysia. They also compared empathy levels in first to final year dental students in public versus private universities. The JSE-HPS was administered to students in their first to final year in Bachelor of Dental Surgery programs at two public universities (n=441) and one private university (n=141). Students from the two public universities accounted for 75.8% of the total sample, while students from the private university accounted for 24.2% of the total sample. The mean empathy score was 84.11, and male students had slightly higher empathy scores (M=84.97, SD=11.12) than female students (M=83.78, SD=9.24) (p= >0.05). It is interesting to note that males had slightly higher empathy levels than females, contrary to findings in any other study. Public university students had significantly higher empathy scores (M=84.74, SD=10.48) than private university students (M=82.13, SD=6.97) ($p < 0.001$). Third-year dental students had the lowest empathy scores (M=82.94, SD=9.88) and fourth-year dental students had the highest empathy scores (M=86.36, SD=13.35) but these differences were not statistically significant. The effect size for the impact of gender, public versus private university, and year in school on empathy was not provided. The JSE-HPS was deemed reliable for

evaluating empathy in dental students based on internal consistency supporting the construct validity of the tool and a Cronbach's alpha of 0.70 (Babar et al., 2013).

Hsiao et al. (2013) conducted a cross-sectional study to examine the psychometric properties of a Chinese version of the JSE-HPS. A convenience sample of Taiwanese nursing students (n=613) participated in the study. A total of 423 students were enrolled in the 4-year BSN program and 190 students were in the 2-year RN-to-BSN program. The content validity index of the Chinese version of the JSE-HPS was 0.89. The JSE-HPS displayed a Cronbach's alpha coefficient of 0.93, and test-retest reliability of 0.92 (Hsiao et al., 2013). Exploratory factor analysis was used to evaluate construct validity; the factors of 'perspective taking', 'compassionate care', and 'standing in the patients shoes' accounted for 57.14% of the total variance (Hsiao et al., 2013). The Chinese version of the JSE-HPS tool demonstrated satisfactory psychometric properties to measure empathy in undergraduate nursing students.

Williams et al. (2014) conducted a cross-sectional study to examine empathy levels of students enrolled in the healthcare professions of midwifery, nursing, paramedics, occupational therapy, physiotherapy, medicine, and nutrition at two Australian universities. A total of 1,111 students completed the JSE-HPS tool. Descriptive statistics, *t*-tests, and ANOVA were used to summarize demographics and compare the differences in empathy scores. No significant differences in overall empathy scores were found between participants from the two universities (p=0.3). Females scored significantly higher in empathy (M=110.8, SD=11.67) than males (M=105.3, SD=13.47) (p= <0.0001), and paramedic students had significantly lower empathy scores (M=106.3, SD=12.73) than all other participants except nursing students (M=108.4, SD=12.76) (p<0.0001). The JSE-HPS demonstrated a Cronbach's alpha coefficient of 0.78, demonstrating that the JSE-HPS was reliable in this population (Williams et al., 2014).

Summary of Review of the Literature

Studies using the JSE or the JSE-HPS have examined a variety of different factors affecting empathy levels in undergraduate healthcare professions students. The sources included in this review of the literature examined the psychometric properties of the JSE and JSE-HPS, as well as the variables of gender, year in school, clinical competence and experience, age, ethnicity, religion, marital status, and chosen undergraduate major related to levels of empathy. In previous studies the JSE-HPS has demonstrated adequate to very good internal reliability, with Cronbach's alpha scores ranging from 0.70-0.93 (Babar et al., 2013; Fields et al., 2011; Fjortoft et al., 2011; Hsiao et al., 2013; Williams et al., 2014). Gender has been found to have a statistically significant impact on empathy levels, with females scoring higher then males (Babar et al., 2013; Briggs et al., 2012; Fields et al., 2011; Fjortoft et al., 2011; Hojat et al., 2002; Hsiao et al., 2013; Leombruni et al., 2014; Nunes et al., 2011; Ward et al., 2009; Williams et al., 2014). Hojat et al. (2004), Hojat et al. (2009b), Students have demonstrated a decline in empathy levels as they progress through their education, however specific age (in years) has shown to have no statistically significant impact on empathy (Hojat et al., 2004). Additionally, the variables of ethnicity, religion, and undergraduate major have not been shown to significantly impact empathy levels (Fields et al., 2011; Ward et al., 2009).Ward et al. (2009) found that levels of empathy were not significantly impacted in undergraduates who identified a projected specialty in nursing and recommended that further research be conducted.

Methods

The purpose of the current study was to examine whether there is any relationship between empathy levels in healthcare professions students who have or have not identified a projected specialty focus (upon entry into practice and compare these findings in baccalaureate

nursing, pre-medical, pre-dental, pre-physical therapy (pre-PT), pre-occupational therapy (pre-OT) and psychology majors. Empathy levels related to projected specialty focus were examined due to an identified gap in the literature and the recommendation by Ward et al. (2009) for further investigation of this relationship. Additionally, empathy levels related to projected specialty in undergraduate healthcare students is an area that warrants further research (K. Maxwell, personal communication, September 26, 2015). Potential subjects were recruited from freshman, sophomore, junior, and senior students at Illinois Wesleyan University (IWU) who had declared majors within the previously mentioned healthcare professions of interest for the study. Out of a potential pool of approximately 780 subjects, 232 students completed the survey, yielding a 30% response rate. Data from subjects who finished the entire survey (n=202) were used for analysis.

IWU Institutional Review Board (IRB) approval was obtained before participants were invited to participate in the survey. Potential subjects were sent a message to their IWU student email account. The email invitation is included for review (Appendix B). Potential participants were offered an incentive to participate through the opportunity to submit their name and email after completing the survey for a chance to win one of five $15.00 gift certificates to Chipotle. The drawing to determine winners of the gift certificates was held on December 8, 2014. The opportunity to submit name and email for a chance to win one of five gift certificates was optional; if students did not wish to divulge their identities their responses were kept anonymous. Names and emails that were submitted for the drawing were kept confidential in a file separate from the survey data. This information was destroyed immediately after the drawing was held and the winners had been notified to maintain participant confidentiality.

Potential participants used the link embedded in the email invitation to access the

Qualtrics survey instrument and indicated their consent to participate by clicking the link to the survey after reading an informed consent statement (Appendix C). The survey instrument consisted of eight demographic items followed by the 20-items of the JSE-HPS (Appendix D). The JSE-HPS was chosen as the empathy measurement tool due to its proven reliability and validity in measuring empathy in healthcare professions students (Hojat et al., 2009a). Skip logic, a function of Qualtrics to create paths through a survey based on participant's response to a question, was used to navigate participants to the appropriate question regarding their projected specialty based on which academic major they disclosed. Demographic items included academic major, projected specialty within academic major, gender, age, year in school, spiritual identification, religious identification, and ethnic identification.

Data collection began on November 5, 2014. A second and third invitation was sent to all potential participants at 7-days, and 14-days after the initial to maximize participant response rate. The link to the survey instrument on Qualtrics was closed on December 1, 2014. Data was retrieved from Qualtrics by the faculty supervisor for this project. The original back-up copy was stored on the faculty supervisors' password-protected computer. A copy of the data was transferred to a USB flash drive for use by the student investigator for data analysis. Data analysis included descriptive statistics, frequencies, means, analysis of variance (ANOVA), and Games-Howell post-hoc testing using SPSS version 22 (2013). All data will be stored in a cabinet in the faculty supervisor's private, locked office on the IWU campus for a period of four years, and then purged/destroyed per university IRB policy.

Results

Demographic Characteristics

The majority of participants in the sample were female (n=178, 88%). Participants' age ranged from 17-26 years, with a mean age of 19.9 years. Participants in their junior year accounted for 33.7% (n=68) of the sample. Sophomores accounted for 25.7% (n=52). The majority of the sample was Caucasian (n=169, 84%), followed by Asian (n=16, 8%). When asked about spirituality, 71.8 % (n=145) of participants indicated that they consider themselves spiritual, while 28.2% (n=56) indicated that they do not consider themselves spiritual. Regarding religious preference, a majority of the sample identified as Christians (n=142, 70.3%), with the next largest category falling under participants who do not practice a religion (n=48, 23.8%). Details on gathered demographic data are found in Table 2 (Appendix E). A majority of the participants identified a major of nursing (n=114, 54.0%), followed by pre-medical (n=38, 18.0%), psychology (n=33, 15.6%), pre-OT (n=9, 4.3%), pre-PT (n=4, 1.9%), and pre-dental (n=2, 0.9%). Out of all majors, 157 participants (78%) identified a projected professional specialty upon entry into practice of their chosen profession. Details on the breakdown of selected specialties and mean JSE-HPS scores within majors is found in Table 3 (Appendix F).

Comparison of Empathy Scores

Mean JSE-HPS scores were compared using analysis of variance (ANOVA) among demographic characteristics, majors, and students who had chosen a projected specialty versus those who had not. Demographic characteristics, majors, and projected specialties were then examined to identify if they had a statically significant impact on mean JSE-HPS scores. Overall, the findings demonstrated no significant difference in empathy levels between students of all majors who have or who have not indicated a projected specialty, $F(5, 196) = 1.582$, $p=0.167$,

d=2.49. For the population as a whole, the JSE-HPS demonstrated a Cronbach's alpha of 0.83, representing good reliability for undergraduate health professions IWU students.

Comparison of empathy scores to demographics for the entire sample. The overall mean JSE-HPS score for all participants was 114, *SD*=12.27. When comparing mean JSE-HPS scores between males (*M*=106, *SD*=14.49) and females (*M*=115, *SD*=11.59), females scored significantly higher overall $F(1,155) = 4.74$, $p=0.001$, $d=0.05$; data and a graphic representation found in Tables 4, 5, and figure 1 (Appendix G). Participants in the junior class as a whole had the highest mean empathy score (*M*=117, *SD*=10.2) and participants in the freshman class as a whole had the lowest (*M*=109, *SD*=13.18); the difference in mean empathy scores between years in school was significant $F(3,198) = 3.49$, $p=0.017$, $d=0.05$. A post-hoc Games-Howell test was run to identify which specific years in school significantly impacted mean empathy scores. This revealed that there was a significant difference in empathy scores between freshman and junior students ($p=0.013$); data and a graphic representation found in Tables 6, 7, 8, and figure 2 (Appendix H). Participants who indicated they consider themselves spiritual had a higher mean empathy score (*M*=115, *SD*=11.54) than participants who do not consider themselves spiritual (*M*=111, *SD*=13.65); the difference in empathy scores statistically significant $F(1,199) = 4.85$, $p=0.029$. $d=0.02$; data and a graphic representation found in Tables 9, 10, and figure 3 (Appendix I). The variables of age (Tables 11 and 12, Appendix J), ethnicity (Tables 13 and 14, Appendix K), and religion (Tables 15 and 16, Appendix L) did not have a significant relationship with empathy scores.

Comparison of empathy scores to major in sample with projected specialty. When comparing nursing majors to other majors (pre-medicine, psychology, pre-PT, pre-OT, pre-dental), nursing majors with a projected specialty (n=86) had a significantly higher mean

empathy score (M=116, SD=11.32) than students of all other majors who indicated a projected specialty (n=71) (M=112, SD=12.82) $F(1,155) = 4.74$, p=0.031, d=0.03; data and a graphic representation found in Tables 17, 18, and figure 4 (Appendix M).

Due to limitations in the number of participants who identified with the majors of psychology, pre-PT, pre-OT, and pre-dental, those majors were combined into one group (Psych/PT/OT/Dent) in order to complete additional comparisons among mean empathy scores. When the mean JSE-HPS scores were examined separately for nursing, pre-medical, and psych/PT/OT/Dent majors who indicated a projected specialty, nursing majors still had higher mean empathy scores (M=116, SD=11.32) than all other majors (pre-med M=110, SD=14.1; Psycho/PT/OT/Dental M=113, SD=11.61), but the difference was not statistically significant; $F(2, 154) = 2.88$, $p > 0.05$, d=0.04; data and a graphic representation found in Tables 19, 20, and figure 5 (Appendix N).

Comparison of empathy scores to demographics in sample with projected specialty. When individual demographic variables were analyzed in students who had identified a projected specialty using ANOVA testing, findings were inconsistent with the initial results comparing empathy scores to demographic variables in the sample as a whole, regardless of whether students had identified a projected specialty or not. Age had a significant impact on empathy scores in students who indicated a projected specialty but not in the sample as a whole. Ages of students with projected specialties ranged from 18-26 years (n=157). Mean empathy scores ranged from 107 to 124 (SD=12.16), with the overall highest mean empathy scores obtained by students ages 20, 21, and 26; $F(5, 151)$ 2.76, p=0.021, d=0.08; data and a graphic representation found in Tables 21, 22, and figure 6 (Appendix O). Due to an uneven dispersion in the number of students in each age group (18-26 years), a post-hoc test could not be run. So, it is inconclusive

which specific age (years) has a significant impact on empathy scores. However, mean empathy scores ranged from 107 to 124 (SD=12.16), with the overall highest mean empathy scores obtained by student's ages 20, 21, and 26.

Similarities between demographics compared to mean empathy scores in students with an identified projected specialty and the sample as a whole, regardless if students had identified a projected specialty or not were noted. The variables of gender, year in school, and spirituality continued to have significant impact on empathy. Female students who indicated a projected specialty had significantly higher empathy scores (M=115, SD=11.58) than male students who indicated a projected specialty (M=107, SD=14.41) $F(1, 155) = 7.39$, p=0.007, d=0.05; data and a graphic representation found in Tables 23, 24, and figure 7 (Appendix P). Differences in mean empathy scores were statistically significant based on year in school for students who indicated a projected specialty $F(3, 153) = 4.40$, p=0.005, d=0.08 . Empathy levels were highest in junior students (n=56) (M=117, SD=9.88), followed by seniors (n=34) (M=115, SD=9.76), sophomores (n=37) (M=113, SD=14.3), and freshman (n=30) (M=108, SD=13.61); data and a graphic representation found in Tables 25, 26, and figure 8 (Appendix Q).

Differences in empathy scores were statistically significant between students who indicated a projected specialty and saw themselves as spiritual (n=112) (M=116, SD=11.06) and those who did not (n=44) (M=110, SD=13.97) $F(1, 154) = 7.14$, p=0.008, d=0.04; data and a graphic representation found in Tables 27, 28, and figure 9 (Appendix R). The variables of religion (Tables 29 and 30, Appendix S) and ethnicity (Tables 31 and 32, Appendix T) did not significantly impact mean JSE-HPS scores in students who had chosen a projected specialty. No variables significantly impacted mean JSE-HPS scores in students who had not chosen a projected specialty.

Discussion

This cross-sectional study examined whether relationships exist between empathy levels in healthcare professions students who had or had not identified a projected specialty upon entry into practice. The findings demonstrated no significant difference in empathy levels between students of all majors who have or who have not indicated a projected specialty. To the researchers knowledge, this was the first study in which empathy levels related to students across multiple healthcare professions majors with or without a projected specialty in their selected major was examined. One previous study (Ward et al., 2009) examined empathy related to students projected specialty in nursing, however nursing was the only healthcare profession examined and the authors suggested the need for further nursing research.

The cohort of healthcare professions students at IWU had similar, to slightly higher mean empathy scores (M=114, SD=12.27), compared to previous studies. Mean empathy levels in previous studies ranged from 85 to 117 (Hojat et al., 2002; Fields et al., 2011; Fjortoft et al., 2011; Nunes et al., 2011; Ward et al., 2009; Williams et al., 2014). IWU is an undergraduate liberal arts college, which may have contributed to this finding. A liberal arts education aims to develop social, intellectual, and practical skills through a providing a broad knowledge of culture and society worldwide (Association of American Colleges & Universities, 2013). Previous studies were not conducted at liberal arts colleges, raising questions about if or how a liberal arts education affects empathy in undergraduate healthcare professions students; further research in this area is warranted.

As noted in previous studies (Fields et al., 2011; Hojat et al., 2002; Hojat et al., 2004; Hojat et al., 2009b; Hsiao et al., 2013; Leombruni et al., 2014; Nunes et al., 2011; Ward et al., 2009; Williams et al., 2014), female subjects in the current study were found to have

significantly higher empathy levels than males. Williams et al. (2014) speculated that the traditional role of females as caregivers may explain the variations between empathy scores, due to females perhaps being more perceptive to emotions, or males looking at situations rationally versus emotionally. However, it is worth noting that the JSE and JSE-HPS may contain a bias toward females and how females perceive empathy. It is possible that males and females perceive and exhibit empathy differently and the JSE empathy tools are unable to account for this difference. This would result in an inaccurate measurement of empathy scores in males. Further research is recommended to determine if the JSE empathy tools are able to accurately measure perception of empathy in both males and females.

While Babar et al. (2013), Hojat et al. (2004), Hojat et al. (2009b), and Nunes et al. (2011) found that empathy levels decline as students' progress through undergraduate and/or graduate school, the IWU cohort displayed a rise in empathy levels among students in their third year, with fourth year empathy levels remaining high. A possibility for this difference could be due to the fact that the IWU cohort included participants from various majors that have not yet been exposed to clinical experience, whereas other studies only looked at medical or nursing students already immersed in clinical rotations. Alternative factors that may contribute to the rise in IWU students' empathy levels as they progress through school could include a positive perception of clinical experiences and classroom or clinical mentors.

Previous studies have not included the demographic element of spirituality related to empathy. The relationship of religion to empathy has been explored, however it was not found to be statistically significant (Fields et al., 2011). In the current study, participants who indicated that spirituality was important had significantly higher empathy scores (M =115, SD=11.54) than those who did not (M=110.87, SD=13.65), warranting further investigation F(1, 199) = 4.85,

p=0.029. In future studies, researchers might consider incorporating the demographic element of 'spirituality' in addition to 'religion' to address subjects who may or may not practice a specific religion.

As demonstrated in previous studies (Fields et al., 2011; Hojat et al., 2009b; Ward et al., 2009), ethnicity did not have a significant impact on empathy scores in the current study. When comparing the relationship of demographic factors to empathy levels in students with a selected specialty, the following was noted: nursing majors had significantly higher empathy levels than all other majors; females had significantly higher empathy levels than males; older students had significantly higher empathy levels than younger students; students in their junior year had significantly higher empathy levels than students in their freshman year; and students that considered themselves spiritual had significantly higher empathy scores than students that did not consider themselves spiritual. Due to a limited sample size and diversity, conclusions cannot be formulated that explain why major, gender, age, year in school, and spirituality significantly influenced students' empathy scores.

Limitations

This study had several limitations. First, the sample size (n=202) only accounted for 26% of the estimated target population. Additionally, subjects were obtained from a convenience sample from only one university, which resulted in an uneven distribution of majors, gender, religious identification, and ethnic identification. The majority of the sample was comprised of nursing majors, females, Christians, and Caucasian students. Both a convenience sample and a sample of limited diversity limit the generalizability of results to other populations (Polit & Beck, 2013). A possible explanation for the uneven sample could be attributed to the fact that the researcher was not able to have face-to-face interaction in recruitment efforts with the entire

target population before the survey was distributed via email. This may have limited potential participants' motivation to complete the survey. The JSE-HPS is a self-report questionnaire; it was not used to measure participants' actual empathy in the clinical setting. Instead, scores from the tool provide insight into participants' current attitudes regarding empathy (McKenna et al., 2012). An additional concern with the JSE-HPS is that participants may be biased in their answers, limiting the validity of the empathy scores.

Conclusions and Recommendations for Future Research

Empathy has been established as an essential element in the healthcare provider-patient relationship (Babar et al., 2013; Ward et al., 2009). Empathy allows the healthcare provider to understand the patient's experiences, feelings, and concerns (Babar et al., 2013). Healthcare provider's practice of empathy is linked to increased patient satisfaction and compliance, and lower rates of malpractice litigation (Fields et al., 2011). However, researchers have discovered that students in healthcare professions experience a decline in empathy as they progress through their education (Babar et al., 2013).

The findings from this study support previous findings about empathy levels in undergraduate healthcare professions students by strengthening evidence that gender and age can have a statistically significant impact on empathy in undergraduate students, while ethnicity and religion do not have a statistically significant impact. Additionally, findings from this study contradicted those of previous research demonstrating that empathy levels decrease as students progress through education. The current study found that empathy levels increased as IWU students progress through education; this warrants further research.

The findings of this current study indicated no statistically significant difference in empathy levels between students who have or who have not indicated a projected specialty upon

entry into their chosen profession. Due to the limitations of this study, the findings regarding the research question are inconclusive and cannot be used to form definitive statements regarding the relationship between undergraduates indicating or not indicating a projected specialty and the subsequent influence on empathy levels.

The variables of major, gender, age, year in school, and spirituality significantly influenced students' empathy scores that had selected a specialty. In order to address subjects who may or may not practice a specific religion, researchers might consider adding the demographic element of 'spirituality' in future studies. Additionally, future studies might examine the accuracy of the JSE empathy tools in measuring empathy for both males and females to ensure there is no bias within the tools favoring female's perception of empathy. Finally, it would be interesting to examine the influence of attending a liberal arts college on healthcare professions students' empathy by comparing empathy levels of students at liberal arts colleges against empathy levels to empathy levels of students at public or private universities.

The current study opens up a new pathway for future research, posing questions as to how, or if, projected specialty influences undergraduate empathy. In order to explore this question further, it is recommended that future studies look at healthcare professions undergraduates across a variety of majors, and gather a larger, more diverse sample from multiple universities.

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Appendix A

Table 1: Tools Available to Measure Empathy

Empathy Measurement Tool	Design of Tool	Reliability and/or Validity
Interpersonal Reactivity Index (Davis, 1980)	• 28-item self-report tool • Measures four dimensions of empathy: o Perspective taking o Fantasy o Empathic concern o Personal distress • Subscales rated with a 5-point Likert-type scale with responses ranging from *describes me well* (5) to *does not describe me well* (1) • Higher scores in each subscale reflect higher levels of empathy	• Internal reliability from 0.71 to 0.77 • Test-retest reliability from 0.62 to 0.71 (Davis, 1983)
Empathy Construct Rating Scale (La Monica, 1981)	• 100 items • Evaluate a person's feelings or actions toward another person • Measures empathy in three ways: o Empathy of self o Empathy of a peer o Client evaluation of caretaker's empathy • Each statement rated using a 6-point Likert-type scale (-3 = extremely unlike, +3 = extremely like) o Based on degree to which the statement is like or unlike their perceptions of themselves, peer, or caretaker.	Reliability • Coefficient alpha's of .97 and .98 • Split-half method corrected by Sparman-Brown Formula, resulted in r=.89 and .96 Construct validity • Cronbach's alpha = .96 to .98
Empathic Communication Skills Scale (Dökmen, 1988)	• 72 scenarios to measure level of empathy in participant's verbal response • Three response stages: o 'You' state = highest empathy o 'I' stage o 'They' stage = lowest empathy • After responding to all 72 statements, scores are calculated o Higher scores reveal a higher level of empathy	• Test-retest reliability (r = 0.91) • Cronbach's alpha = 0.83 • Validity testing: no significant difference between participants with high or low empathy (t=6.77, SD=26, P > 0.001). (Dökmen, 1988)

Empathic Tendency Scale (Dökmen, 1988)	• 20-items
	• Measures potential of a person's ability to establish empathic relationships in daily life
	• Rated with a 5-point Likert-type scale
	  o Scores range from 20 to 100
	  o Higher scores indicate a higher level of empathy.
		• Test-retest reliability (r = 0.82)
		• Cronbach's alpha = 0.88
		(Dökmen, 1988)

Balanced Emotional Empathy Scale (Cunico et al., 2012)	• 30-item tool • Measure empathy levels in terms of susceptibility to becoming involved in other's emotional feelings and tendency to develop positive interpersonal relationships. • Each item scored using a 7-point Likert-type scale to indicate level of disagreement (-3) or agreement (+3).	No information available

Appendix B

Email Invitation Asking Participants to Complete Survey

Hello,

My name is Ashley Tegge. I am a senior nursing student at IWU, and I am writing to ask you to participate in my Honors Research project "Comparing Levels of Empathy in Baccalaureate Students with a Projected Professional Focus in Healthcare".

You have received this invitation to participate in my study because you are an undergraduate student at IWU with a declared major of nursing, pre-med, pre-dental, pre-PT, pre-OT, or psychology.

The purpose of my study is to measure empathy levels among undergraduate students with different declared majors in healthcare. The specific aims of my study are to identify whether there is a correlation between empathy levels and various factors such as intended specialty focus, age, gender, year in school, religious preference, spiritual identification and cultural identification in undergraduate students with a declared major in the healthcare professions. My research is being supervised by Dr. Noël Kerr, an Assistant Professor in the School of Nursing.

If you agree to participate in the study, you will be asked to complete an on-line survey, which will take approximately 15-minutes of your time to complete.

The records of this study will be kept private. The data will be confidential and only Professor Kerr and Ashley Tegge will have access to the data.

After completing the survey, you will be given the opportunity to enter your name and email address for the chance to win **one of five $15 dollar gift cards** to Chipotle.

To access the survey, please click the following link:

If you have any questions regarding the study, please do not hesitate to contact me at the email or phone number listed below my name.

Best,

Ashley Tegge

ategge@iwu.edu

(630) 484-3886

Appendix C

Informed Consent

Illinois Wesleyan University
Informed Consent

Comparing Levels of Empathy in Baccalaureate Students with a Projected Professional Focus in Healthcare

You are invited to be a participant in a research study that will measure empathy levels among undergraduate students with different declared majors in healthcare. The specific aims of this study are to identify whether there is a correlation between empathy levels and various factors such as intended specialty focus, age, gender, year in school, religious preference, spiritual identification, and / or cultural identification in undergraduate students with a declared major in the healthcare professions.

You were selected as a possible participant because you are an undergraduate student at Illinois Wesleyan University (IWU) who has a declared major of nursing, pre-med, pre-dental, pre-physical therapy, pre-occupational therapy, or psychology. The study is being conducted as an Honor's Research project by Ashley Tegge, a senior nursing student at IWU. This research is being supervised by Dr. Noël Kerr, an Assistant Professor in the School of Nursing. We ask that you read this document and ask any questions you may have before agreeing to be in the study.

If you choose to participate in this study, you will fill out a 28-item, electronic survey which will require approximately 15-minutes of your time to complete. You will be sent a second and third invitation to participate via email 7-days and 14-days after the initial invitation was sent out.

You may choose whether or not you want to participate in this study and you may withdraw your consent and discontinue participation at any time. Whatever decision you make, there will be no penalty to you.

POTENTIAL RISKS
The risks associated with the study are no greater than those experienced in everyday life. There could be survey items that you are uncomfortable answering or to which you would simply prefer not to respond. Your participation in this study is strictly voluntary. You will be under no obligation to answer any question that you do not want to answer, and you may still remain in the study.
POTENTIAL BENEFITS
After completing the survey, you will be given the opportunity to enter your name and email address for the chance to win one of five $15 dollar gift cards to Chipotle. Your name and your email address will not be tied to your response to the survey in any way. The drawing will be held on December 8, 2014 ("Reading Day") and the winners will be notified by email to pick up their gift certificates in the office of the Administrative Assistant (Office

#224) in the School of Nursing.

Your responses will be used for research purposes only and will be strictly confidential. Completed survey forms will be returned via encrypted electronic transfer to Qualtrics, where data are stored on a secure server, in a secure, locked area and where other safeguards are in place to prevent interference or access from outside intruders. The student Primary Investigator (PI) and the faculty supervisor are the sole proprietors of the data. Once data collection is complete, the data will be downloaded to the faculty supervisors password protected computer. All back-up files containing identifiable information or associated linking material will be kept in a locked file drawer in the faculty supervisor's office, and will only be accessible by the student PI and the faculty supervisor. Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Your individual identifying information will not be released to other researchers, to IWU, or to other organizations. Once the study has been completed, the identifiable records (hard copy and electronic copy) will be destroyed. We will not include any information that will make it possible to identify a participant in any sort of report that is published or presentation that is given.

Your participation in this study is voluntary, and your completion of the online survey will demonstrate your consent to participate in the study.

If you have any questions about this study or about the informed consent process, you may contact Ashley Tegge at: (630) 484-3886, or ategge@iwu.edu, or Dr. Noël Kerr at: (309) 363-8099 or nkerr@iwu.edu
If you have questions or concerns regarding this study and would like to speak with someone other than the researcher(s), you may contact Dr. Brian Brennan, Chair, IWU Institutional Review Board at 309-556-3711, or bbrenna1@iwu.edu

Please print out this screen or use the "Print Screen" key on your computer keyboard to make a copy of this consent form for your records.

If you agree to participate in this study, click the "Next" button located below to access the survey...

Appendix D

Survey Tool: Including Jefferson Scale of Empathy – Healthcare Provider Student Version

What is your major area of study at IWU?

- ❍ Nursing
- ❍ Pre-Medical
- ❍ Psychology
- ❍ Pre-Physical Therapy
- ❍ Pre-Occupational Therapy
- ❍ Pre-Dental
- ❍ Other

Which specialty area in nursing do you think you want to go into?

- ❍ Medical-Surgical
- ❍ Critical Care
- ❍ Maternal-Child
- ❍ Emergency and Trauma
- ❍ Geriatric
- ❍ Oncology
- ❍ Hospice/Palliative Care
- ❍ Mental health/Psychiatric
- ❍ Neonatal/Pediatrics
- ❍ Perioperative (OR, ambulatory, PACU)
- ❍ Community Health
- ❍ Other
- ❍ I have yet to decide a specialty area

Which specialty area in medicine do you think you want to go into after finishing medical school?

- ❍ Family Medicine
- ❍ Internal Medicine
- ❍ Pediatrics
- ❍ Obstetrics/Gynecology
- ❍ General Surgery
- ❍ Neurology
- ❍ Hematology/Oncology
- ❍ Cardiology
- ❍ Orthopedic Surgery
- ❍ Dermatology
- ❍ Pulmonology
- ❍ Sports Medicine
- ❍ Psychiatry
- ❍ Other
- ❍ I have yet to decide a specialty area

Which specialty area in psychology do you think you want to go into?

- ❍ Health Psychology
- ❍ Clinical Psychology
- ❍ Counseling Psychology
- ❍ Developmental Psychology
- ❍ Child/Adolescent Psychology
- ❍ Social Psychology
- ❍ School Psychology
- ❍ Industrial/Organizational Psychology
- ❍ Other
- ❍ I have yet to decide a specialty area

Which specialty area in physical therapy do you think you want to go into?
- ❍ Cardiovascular and Pulmonary
- ❍ Clinical Electrophysiology
- ❍ Geriatrics
- ❍ Neurology
- ❍ Orthopaedics
- ❍ Pediatrics
- ❍ Sports
- ❍ Women's Health
- ❍ Other
- ❍ I have yet to decide a specialty area

Which specialty area in occupational therapy do you think you want to go into?
- ❍ Pediatric OT
- ❍ Geriatric OT
- ❍ Mental Health OT
- ❍ Physical Rehabilitation OT
- ❍ Work and Industry OT
- ❍ Neurology OT
- ❍ Orthopedic OT
- ❍ Cardio-Respiratory OT
- ❍ Other
- ❍ I have yet to decide a specialty area

Which specialty area in dentistry do you think you want to go into after finishing dental school?
- ❍ Dental Public Health
- ❍ Endodontics
- ❍ Oral/Maxillofacial Pathology
- ❍ Oral/Maxillofacial Radiology
- ❍ Oral/Maxillofacial Surgery
- ❍ Orthodontics/Dentofacial Orthopedics
- ❍ Periodontics
- ❍ Pediatric Dentistry
- ❍ Prosthodontics
- ❍ Other
- ❍ I have yet to decide a specialty area

What gender do you identify as?
- ❍ Male
- ❍ Female

How old are you?
- ❍ 17
- ❍ 18
- ❍ 19
- ❍ 20
- ❍ 21
- ❍ 22
- ❍ 23
- ❍ 24
- ❍ 25
- ❍ > 25

What is your year in school?
- ❍ Freshman
- ❍ Sophomore
- ❍ Junior
- ❍ Senior

Is spirituality important to you?
- ❍ Yes
- ❍ No

Which one of the following religions do you practice on a regular basis?
- ❍ Christianity
- ❍ Judaism
- ❍ Islam
- ❍ Buddhism
- ❍ Hinduism
- ❍ Other
- ❍ I don't practice a specific religion

Which one of the following ethnic groups do you identify with?
- ❍ White
- ❍ African
- ❍ Hispanic or Latino
- ❍ Asian
- ❍ Middle Eastern
- ❍ Native American or Alaskan Native
- ❍ Native Hawaiian or other Pacific Islander
- ❍ Other

JSE-HPS

	1- Strongly Disagree	2	3	4	5	6	7- Strongly Agree
1. Health care providers' understanding of their patients' feelings and the feelings of their patients' families does not influence treatment outcomes.	○	○	○	○	○	○	○
2. Patients feel better when their health care providers understand their feelings.	○	○	○	○	○	○	○
3. It is difficult for a health care provider to view things from patients' perspectives.	○	○	○	○	○	○	○
4. Understanding body language is as important as verbal communication in health care provider - patient relationships.	○	○	○	○	○	○	○
5. A health care provider's sense of humor contributes to a better clinical outcome.	○	○	○	○	○	○	○
6. Because people are different, it is difficult to see things from patient's perspectives.	○	○	○	○	○	○	○
7. Attention to patient's emotions is not important in patient interview.	○	○	○	○	○	○	○
8. Attentiveness to patients' personal experiences does not influence treatment outcomes.	○	○	○	○	○	○	○
9. Health care providers should try to stand in their patients' shoes when providing care to them.	○	○	○	○	○	○	○
10. Patients value a health care provider's understanding of their feelings which is therapeutic in its own right.	○	○	○	○	○	○	○
11. Patients' illnesses can be cured only by targeted treatment; therefore, health care providers' emotional ties with their patients do not have a significant influence in treatment outcomes.	○	○	○	○	○	○	○
12. Asking patients about what is happening in their lives is not helpful in understanding their physical complaints.	○	○	○	○	○	○	○
13. Health care providers should try to	○	○	○	○	○	○	○

understand what is going on in their patients' minds by paying attention to their non-verbal cues and body language.							
14. I believe that emotion has no place in the treatment of medical illness.	❍	❍	❍	❍	❍	❍	❍
15. Empathy is a therapeutic skill without which a health care provider's success is limited.	❍	❍	❍	❍	❍	❍	❍
16. Health care providers' understanding of the emotional status of their patients, as well as that of their families is one important component of the health care provider - patient relationship.	❍	❍	❍	❍	❍	❍	❍
17. Health care providers should try to think like their patients in order to render better care	❍	❍	❍	❍	❍	❍	❍
18. Health care providers should not allow themselves to be influenced by strong personal bonds between their patients and their family members.	❍	❍	❍	❍	❍	❍	❍
19. I do not enjoy reading non-medical literature or the arts.	❍	❍	❍	❍	❍	❍	❍
20. I believe that empathy is an important factor in patients' treatment.	❍	❍	❍	❍	❍	❍	❍

Appendix E

Table 2: Breakdown of Demographics

Variable	N	Percent
Gender		
Male	24	12.0
Female	178	88.0
Age		
17	1	0.5
18	30	14.9
19	48	23.8
20	62	30.7
21	48	23.8
22	11	5.4
23	1	0.5
26	1	0.5
Year		
Freshman	40	19.8
Sophomore	52	25.7
Junior	68	33.7
Senior	42	20.8
Ethnicity		
Caucasian	169	84.0
African American	2	1.0
Hispanic/Latino	8	4.0
Asian	16	8.0
Middle Eastern	2	1.0
Other	5	2.0
Religion		
Christianity	142	70.3
Judaism	3	1.5
Islam	1	0.5
Buddhism	2	1.0
Hinduism	2	1.0
Other	4	2.0
Don't practice	48	23.8
Spirituality		
Yes	145	71.8
No	56	28.2

Appendix F

Table 3: Breakdown of Majors and Specialties

Variable	N
Nursing	**114**
Medical-Surgical	6
Critical care	9
Maternal child	12
Emergency/trauma	10
Geriatric	1
Oncology	8
Mental health/psych	5
Neonatal/peds	28
Perioperative	2
Community health	3
Other	2
Yet to decide	28
Pre-Medicine	**38**
Family Medicine	1
Internal med	3
Pediatrics	8
OB/GYN	3
General surgery	2
Neurology	4
Hematology/oncology	3
Orthopedic surgery	2
Dermatology	1
Psychiatry	3
Other	3
Yet to decide	5
Psychology	**33**
Health	1
Clinical	9
Counseling	1
Child/adolescent	4
Social	1
School	1
Industrial/organizational	1
Other	8
Yet to decide	7

Pre-PT	**4**
Sports	3
Yet to decide	1
Pre-OT	**9**
Pediatric	7
Physical rehab	1
Yet to decide	1
Pre-Dental	**2**
Prosthodontics	1
Yet to decide	1

Appendix G

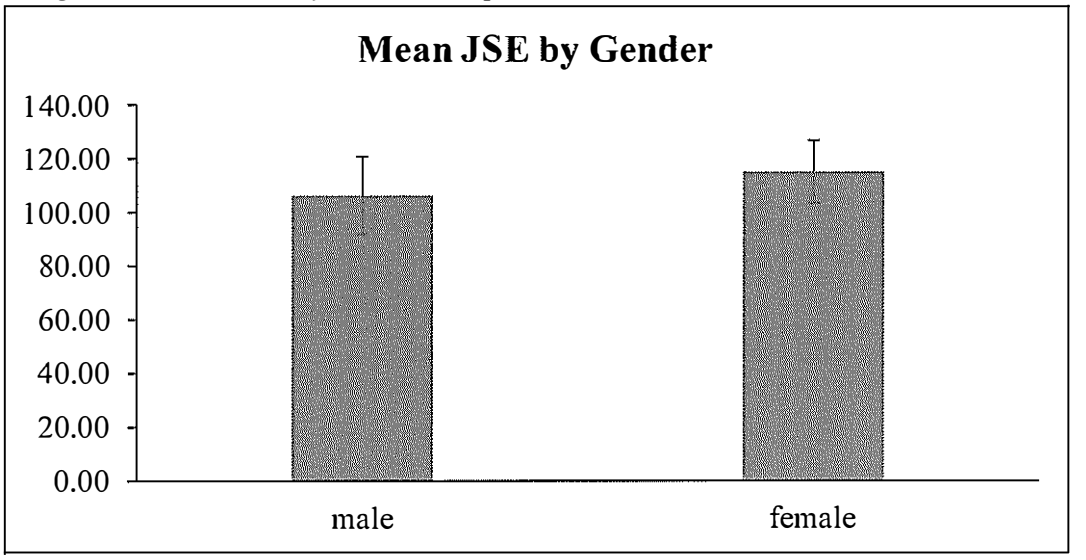
Table 4: Mean JSE by Gender

Gender	Mean	N	Std. Deviation
Male	106.17	24	14.490
Female	115.02	178	11.589
Total	113.97	202	12.270

Table 5: 1-Way ANOVA JSE by Gender

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1656.475	1	1656.475	11.583	.001
Within Groups	28602.283	200	143.011		
Total	30258.757	201			

Figure 1: Mean JSE by Gender Graph



Appendix H

Table 6: Mean JSE by Year

Year	Mean	N	Std. Deviation
Freshman	109.03	40	13.184
Sophomore	113.42	52	14.800
Junior	116.62	68	10.201
Senior	115.05	42	9.650
Total	113.97	202	12.270

Table 7: 1-Way ANOVA Mean JSE by Year

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1519.127	3	506.376	3.489	.017
Within Groups	28739.631	198	145.150		
Total	30258.757	201			

Figure 2: Mean JSE by Year Graph

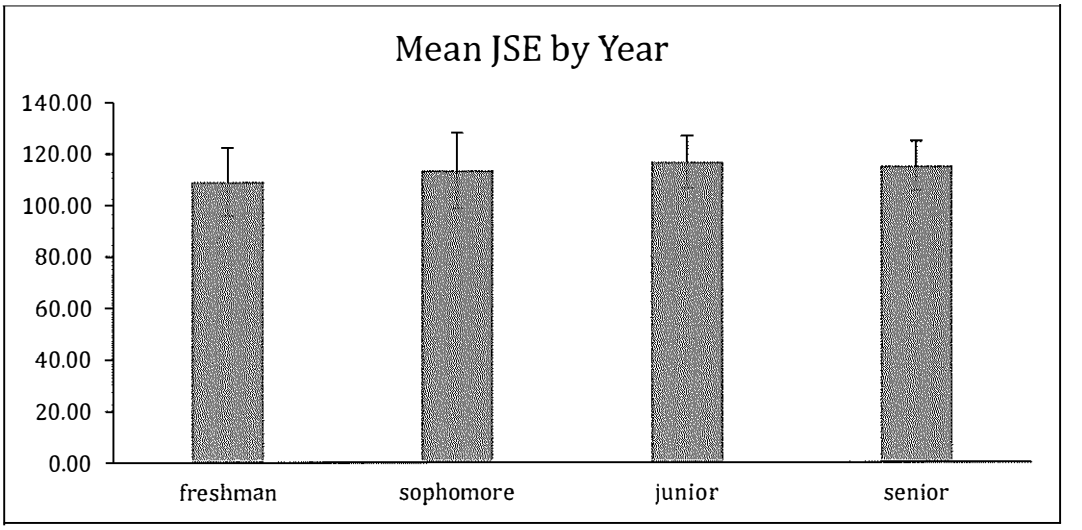


Table 8: Post-Hoc Games-Howell for Mean JSE by Year in School

(I) Year		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
freshman	sophomore	-4.398	2.925	.440	-12.06	3.26
	junior	-7.593*	2.424	.013	-13.98	-1.20
	senior	-6.023	2.562	.096	-12.76	.72
sophomore	freshman	4.398	2.925	.440	-3.26	12.06
	junior	-3.195	2.396	.545	-9.47	3.08
	senior	-1.625	2.536	.919	-8.26	5.02
junior	freshman	7.593*	2.424	.013	1.20	13.98
	sophomore	3.195	2.396	.545	-3.08	9.47
	senior	1.570	1.936	.849	-3.50	6.64
senior	freshman	6.023	2.562	.096	-.72	12.76
	sophomore	1.625	2.536	.919	-5.02	8.26
	junior	-1.570	1.936	.849	-6.64	3.50

Appendix I

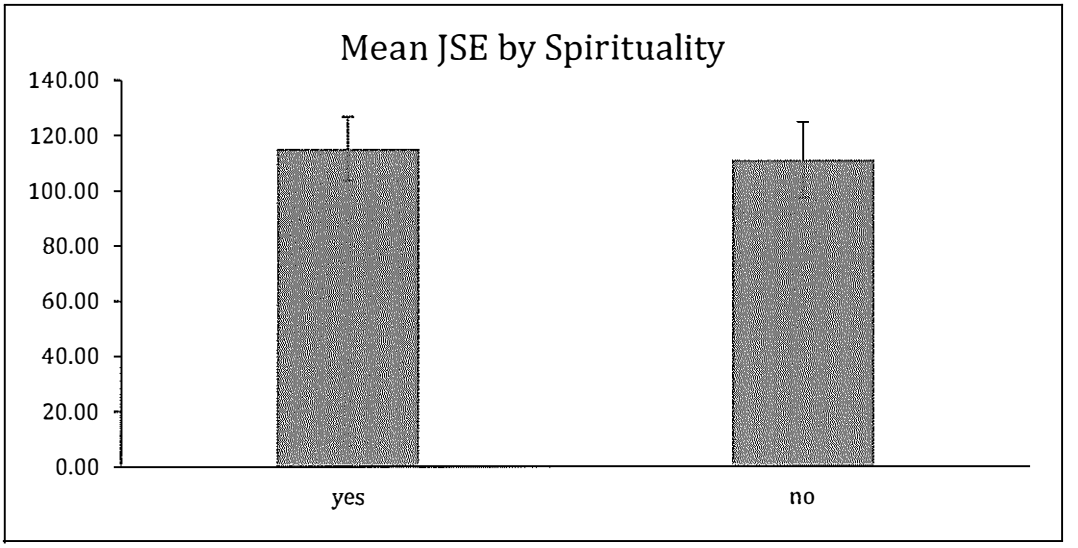
Table 9: Mean JSE by Spirituality

Spirituality	Mean	N	Std. Deviation
Yes	115.09	145	11.543
No	110.88	56	13.653
Total	113.92	201	12.280

Table 10: 1-Way ANOVA Mean JSE by Spirituality

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	717.603	1	717.603	4.851	.029
Within Groups	29439.959	199	147.939		
Total	30157.562	200			

Figure 3: Mean JSE by Spirituality Graph



Appendix J

Table 11: Mean JSE by Age

Age	Mean	N	Std. Deviation
17	131.00	1	0
18	108.07	30	12.487
19	112.42	48	14.729
20	115.71	62	11.081
21	116.52	48	10.271
22	113.64	11	10.152
23	111.00	1	0
26	124.00	1	0
Total	113.97	202	12.270

Table 12: 1-Way ANOVA JSE by Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2061.925	7	294.561	2.027	.054
Within Groups	28196.832	194	145.344		
Total	30258.757	201			

Appendix K

Table 13: Mean JSE by Ethnicity

Ethnicity	Mean	N	Std. Deviation
Caucasian	114.41	169	11.909
African American	102.50	2	7.778
Hispanic / Latino	115.88	8	9.568
Asian	109.25	16	15.919
Middle Eastern	103.50	2	7.778
Other	119.80	5	14.149
Total	113.97	202	12.270

Table 14: 1-Way ANOVA Mean JSE by Ethnicity

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1070.254	5	214.051	1.437	.212
Within Groups	29188.503	196	148.921		
Total	30258.757	201			

Appendix L

Table 15: Mean JSE by Religion

Religion	Mean	N	Std. Deviation
Christianity	114.06	142	11.850
Judaism	109.33	3	13.577
Islam	128.00	1	
Buddhism	120.50	2	4.950
Hinduism	126.00	2	5.657
Other	119.50	4	5.686
Don't practice	112.46	48	13.890
Total	113.97	202	12.270

Table 16: 1-Way ANOVA Mean JSE by Religion

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	869.125	6	144.854	.961	.453
Within Groups	29389.633	195	150.716		
Total	30258.757	201			

Appendix M

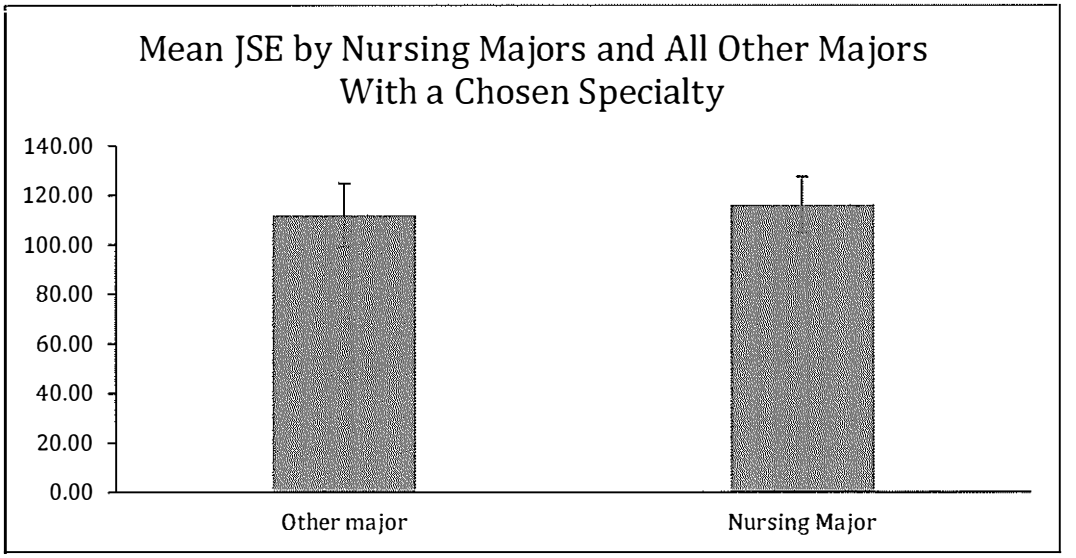
Table 17: Mean JSE by Nursing Majors and all Other Majors with a Chosen Specialty

	N	Mean	Std. Deviation
Other major	71	111.89	12.815
Nursing Major	86	116.08	11.320
Total	157	114.18	12.161

Table 18: 1-Way ANOVA Mean JSE by Nursing Majors and all Other Majors with a Chosen Specialty

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	684.114	1	684.114	4.736	.031
Within Groups	22387.529	155	144.436		
Total	23071.643	156			

Figure 4: Mean JSE by Nursing Majors and All Other Majors With a Chosen Specialty Graph



Appendix N

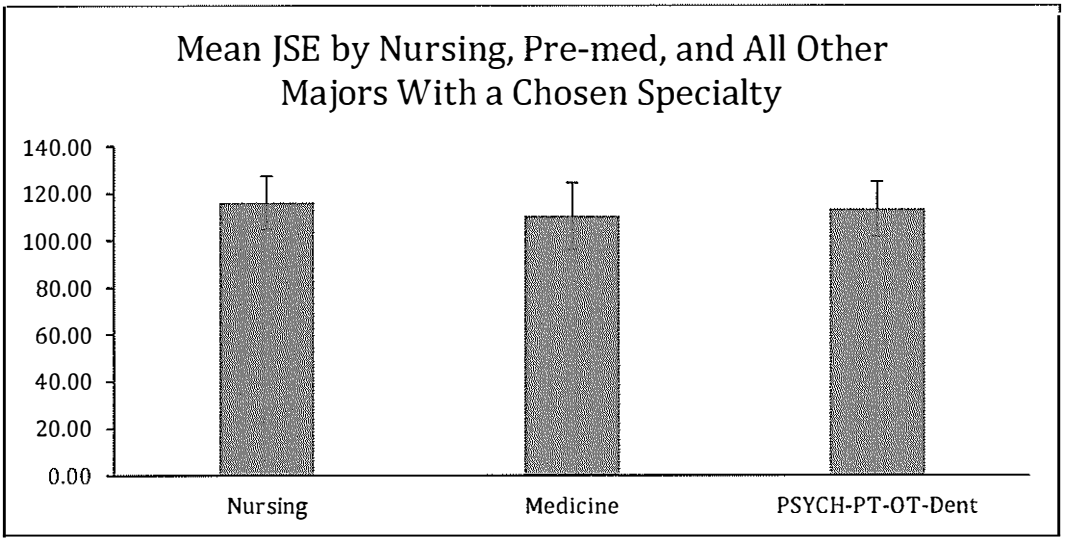
Table 19: Mean JSE by Nursing, Pre-Med, and All Other Majors With a Chosen Specialty

	N	Mean	Std. Deviation
Nursing	86	116.08	11.320
Medicine	33	110.33	14.099
PSYCH-PT-OT-Dent	38	113.24	11.607
Total	157	114.18	12.161

Table 20: 1-Way ANOVA Mean JSE by Nursing, Pre-Med, and All Other Majors With a Chosen Specialty

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	833.011	2	416.506	2.884	.059
Within Groups	22238.632	154	144.407		
Total	23071.643	156			

Figure 5: Mean JSE by Nursing, Pre-Med, and All Other Majors With a Chosen Specialty Graph



Appendix O

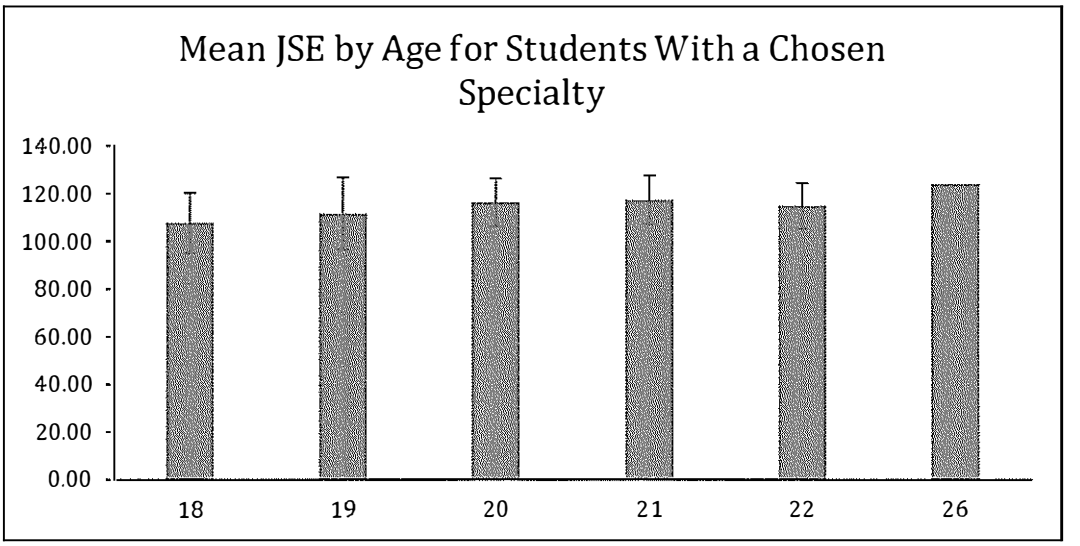
Table 21: Mean JSE by Age for Students With a Chosen Specialty

	N	Mean	Std. Deviation
18	23	107.65	12.615
19	36	111.61	15.144
20	48	116.33	10.146
21	40	117.30	10.166
22	9	114.78	9.654
26	1	124.00	
Total	157	114.18	12.161

Table 22: 1-Way ANOVA Mean JSE by Age for Students With a Chosen Specialty

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1929.248	5	385.850	2.756	.021
Within Groups	21142.395	151	140.016		
Total	23071.643	156			

Figure 6: Mean JSE by Age for Students With a Chosen Specialty Graph



Appendix P

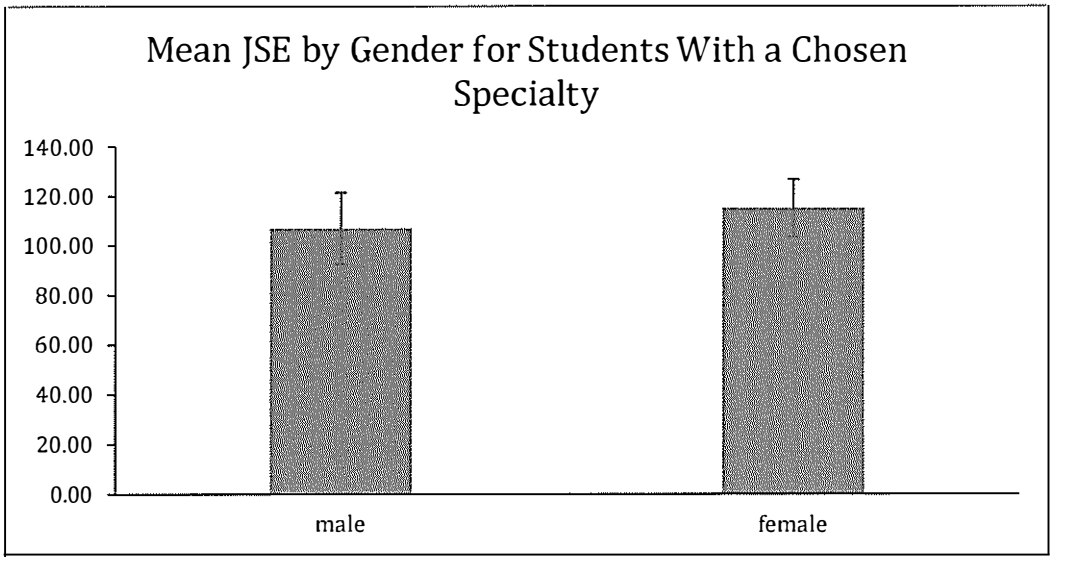
Table 23: Mean JSE by Gender for Students With a Chosen Specialty

	N	Mean	Std. Deviation
Male	18	107.00	14.414
Female	139	115.12	11.575
Total	157	114.18	12.161

Table 24: 1-Way ANOVA Mean JSE by Gender for Students With a Chosen Specialty

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1049.485	1	1049.485	7.387	.007
Within Groups	22022.158	155	142.078		
Total	23071.643	156			

Figure 7: Mean JSE by Gender for Students With a Chosen Specialty Graph



Appendix Q

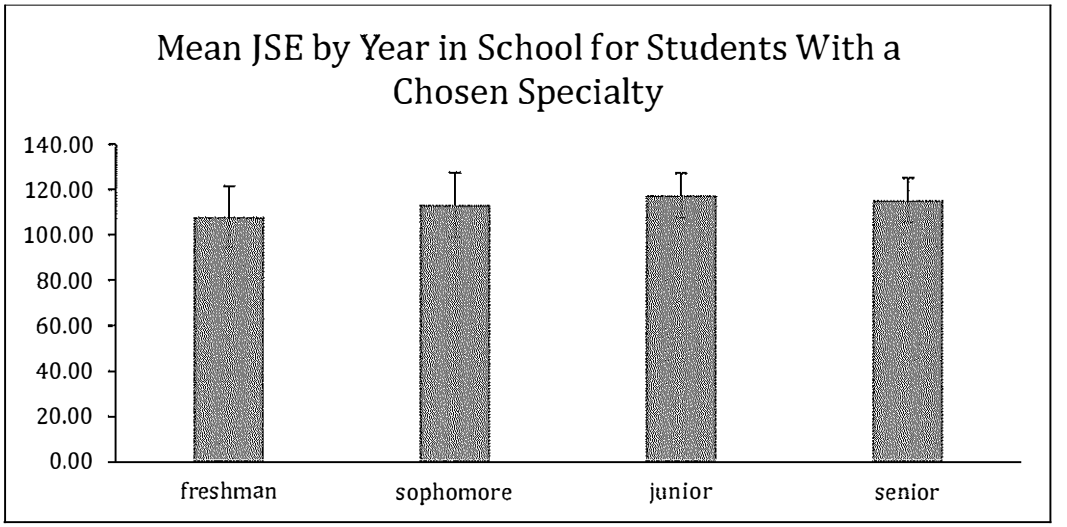
Table 25: Mean JSE by Year for Students With a Chosen Specialty

	N	Mean	Std. Deviation
Freshman	30	107.97	13.612
Sophomore	37	113.22	14.295
Junior	56	117.43	9.879
Senior	34	115.38	9.758
Total	157	114.18	12.161

Table 26: 1-Way ANOVA Mean JSE by Year for Students With a Chosen Specialty

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1832.663	3	610.888	4.401	.005
Within Groups	21238.981	153	138.817		
Total	23071.643	156			

Figure 8: Mean JSE by Year for Students With a Chosen Specialty Graph



Appendix R

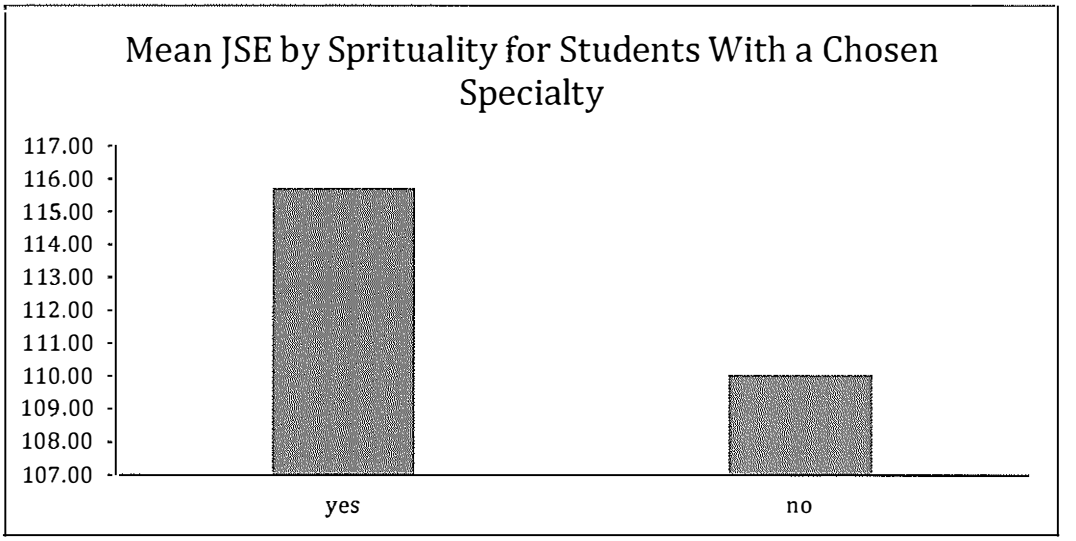
Table 27: Mean JSE by Spirituality for Students With a Chosen Specialty

	N	Mean	Std. Deviation
yes	112	115.72	11.055
no	44	110.05	13.970
Total	156	114.12	12.175

Table 28: 1-Way ANOVA Mean JSE by Spirituality for Students With a Chosen Specialty

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1018.357	1	1018.357	7.143	.008
Within Groups	21956.329	154	142.574		
Total	22974.686	155			

Figure 9: Table 24: Mean JSE by Year for Students With a Chosen Specialty Graph



Appendix S

Table 29: Mean JSE by Religion for Students With a Chosen Specialty

	N	Mean	Std. Deviation
Christianity	110	114.16	11.289
Judaism	2	108.50	19.092
Islam	1	128.00	
Buddhism	2	120.50	4.950
Hinduism	1	122.00	
Other	3	120.33	6.658
Don't practice	38	113.16	14.844
Total	157	114.18	12.161

Table 30: 1-Way ANOVA Mean JSE by Religion for Students With a Chosen Specialty

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	549.869	6	91.645	.610	.722
Within Groups	22521.774	150	150.145		
Total	23071.643	156			

Appendix T

Table 31: Mean JSE by Ethnicity for Students With a Chosen Specialty

	N	Mean	Std. Deviation
Caucasian	133	114.26	12.224
African American	1	108.00	
Hispanic / Latino	6	116.17	9.368
Asian	13	111.08	13.895
Middle Eastern	1	109.00	
Other	3	124.33	5.859
Total	157	114.18	12.161

Table 32: 1-Way ANOVA Mean JSE by Ethnicity for Students With a Chosen Specialty

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	523.912	5	104.782	.702	.623
Within Groups	22547.731	151	149.323		
Total	23071.643	156			