# RESEARCH



# Empathy and cultural competence remains stable for medical students: do the humanities have an effect?

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# Abstract

There is a paucity of rigorous longitudinal data regarding the relationship between humanities and their effect on multiple psychometrics. Using an observational art course, we assessed pre- and post-course metrics and longitudinal impacts with 120 preclinical medical students taking the "Art of Observation" between 2016 and 2019. Jefferson Scale of Empathy (JSE) and Jeffreys Transcultural Self-Efficacy Tool (TSET) were assessed annually for four years. Budner Tolerance of Ambiguity (TOA) Scale was administered before and after the course. The JSE showed no drop in empathy as students progressed from first to fourth year (p=0.374). The TSET showed statistically significant increases in cultural self-efficacy (p<0.001) in the cognitive and practical components but no change in the affective component of the scale. After the art course, TOA significantly improved on two [solubility (p=0.009) and complexity (p=0.21)] of the three subscales, but not novelty (p=0.62). Empathy and cultural self-efficacy remained consistently high throughout medical school and did not decrease during the clinical years in an institution prioritizing the humanities and community engagement. Comfort with cultural competency generally improved throughout training. After taking an art course that emphasizes cognitive flexibility and a multiple perspectival approach, students demonstrated greater tolerance for ambiguity.

**Keywords** Medical humanities, Empathy, Cultural competency, Tolerance for ambiguity, Art, Professional identity formation

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# Introduction

As we enter a world with more emphasis on artificial intelligence and algorithms, one in which social upheaval and corporatization pervades society, physician empathy has never been more important. Empathy, that ability to perceive and resonate with the emotions of others, is the cornerstone of the physician-patient relationship [1,2]. It is important to the giver and the receiver. Empathy has been shown to improve patient satisfaction, reduce patient anxiety, stress and depression, increase patient's openness about sharing symptoms to the physician during the encounter, and improve patient outcomes [2–12]. For physicians, compassion and empathy for our patients improves our subjective wellbeing and decreases



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burnout, which has been at record levels post-pandemic with two-thirds of physicians reporting at least one symptom of burnout [4,13-15].

Many early studies suggested a decline in empathy during the course of medical education. A multi-institutional, cross-sectional study looking at medical students' Jefferson Scale of Empathy - Student Version (JSE-S) scores across the four years of medical school showed a statistically significant decline in empathy scores between the preclinical and clinical phase of medical education [16]. Other studies in North America have supported that empathy declines among both medical students and residents [17-19]. Given the rigors of medical training and the suffering trainees witness, it was seen as understandable that medical students would become less empathic as a coping mechanism to protect against extreme distress. The fast-paced, stressful environment of the modern medical workplace also can disrupt emotional self-regulation [20]. Additionally, education in cultural competency is our moral imperative as we seek to optimize care delivery and communication with all populations, especially given the recent and escalating growth in global migration. Educating students to be culturally sensitive requires a multidisciplinary approach and complementary educational techniques such as those afforded by the humanities.

A proposed remedy to this dilemma has been to incorporate the humanities into medical education [21]. Exposure to the humanities has been shown to not only significantly and positively correlate with empathy and emotional appraisal, but also, negatively correlate with certain qualities that lead to physician burnout [20]. Due to the suggested benefits of humanistic engagement, the Association of American Medical Colleges is currently undergoing a widespread effort to better integrate humanities into the curriculum of medical education [21]. Research has suggested that humanities coursework improves empathy scores and may have other additional benefits for medical students [22].

However, the integration of humanities coursework into medical education is not without its opposition. Critics argue that there is an already full curriculum and a lack of objective outcome measures to justify the integration. Indeed, research on the relationship between the humanities and empathy is limited. Particularly, there is a lack of robust pre-and-post intervention data. Additional conjectures about the role for the humanities has surfaced because the assumed causality of medical training leading to empathy decline has been called into question [23–25]. Studies from other countries and in North America have not consistently replicated findings from the earlier empathy studies. Some studies reported no variations in empathy over the course of training while others actually reported increased empathy throughout medical education [26-31].

Other psychometrics beyond empathy may also have utility in assessing the impacts of these courses and experiences. Tools assessing mindfulness, burnout, creativity, wisdom, and others could be strategically deployed to assess benefits of specific coursework. Other important skills include the ability to value cultural differences which requires not only a deep self-realization but the ability to interact effectively with those from cultures that may be vastly different from our own. Tolerating and accepting that patient needs, wants, and motivations may differ based on cultural expectations requires physicians to cultivate an appreciation for these differences. It demands a consideration that cultural competency goes beyond a superficial gleaning of customs and reflects instead a different worldview that must be considered in clinical decision-making. As such, cultural competency can be seen as an extension of empathy that requires health professionals to be understanding of different perspectives [32].

Cooper Medical School of Rowan University (CMSRU) incorporates humanities into the medical school curriculum through mandatory preclinical courses called the "Selectives in the Medical Humanities" which include art, ethics, sociology, music, dance, sociology, creative writing, and medical improvisation. (CMSRU 2023) These courses are meant to cultivate the attributes of empathic, effective healers such as reflective capacity, narrative competence, critical thinking, and visual literacy. Taking a subset of all the students (those taking an art course), we assessed if there were changes in empathy and cultural competency as assessed by the JSE-S and the TSET over the course of training. We also tested tolerance for ambiguity directly before and after the course to determine change.

#### Methods

#### Study design

We conducted a retrospective study using a convenience sample of 120 first (M1) and second (M2) year students taking the course "The Art of Observation," between the year 2016 and 2019. A cross-sectional design was employed as randomization was not possible in the medical curriculum. "The Art of Observation" is a 12-hour gallery-based class involving visual thinking strategies and identifying biases that involves recognizing unseen biases and creating unbiased visual inventories of facts, addresses emotional intelligence, and embraces multiple sometimes conflicting reflections and interpretations on works of art. Each course is open to about 20 students per semester. The sample size thus represents several semesters of students. Power analysis was not performed since most extant studies in the humanities involve a significantly smaller sample size [24]. The Humanities are required courses with M1 and M2 students entering into a lottery to select their classes. Almost all students will enroll in one of their top three selections. Students choose from 7 to 8 courses each semester out of a total of 26. (See Table 1)

# Definitions

Empathy in patient care is considered "a cognitive attribute that involves an ability to understand the patient's pain, suffering, and perspective combined with a capability to communicate this understanding and an intention to help." [40] Ambiguity tolerance is an individual's systematic, stable tendency to react to perceived ambiguity with greater or lesser intensity [41].

Within the Jeffrey's Cultural Competence and Confidence (CCC) model, cultural competence is defined as a multidimensional learning process that integrates transcultural skills in three dimensions, cognitive, practical, and affective. Transcultural-self-efficacy (TSE) is a major component of cultural competence and is the perceived confidence for learning or performing the skills needed for culturally congruent care [42]. In practice, culturally congruent care involves the use of culturally based knowledge in sensitive and responsive ways. For the purposes of this study, empathy, cultural competency, and tolerance for ambiguity are assessed by the tools listed below.

## **Empathy scales**

We used three different tools to assess changes in empathy:

 Table 1
 Humanities courses at the Cooper Medical School of

 Rowan University
 Provide the Cooper Medical School of

Humanities Courses at CMSRU					
The Art of Observation	Medical Improvisation				
Observational Drawing	Theater and the Role of Role-Playing				
Communication that Counts	Script Writing				
Applied Medical Bioethics	Medical Cineforum				
Medical Ethics and Medically-related Law	Emotional Intelligence				
Mindfulness	Social Mission of the School				
Social Determinants of Health	Opera and Disease				
Racism in Medicine	Exploring Disease through Composition				
Narrative Medicine	Writing to Persuade and Convince				
Audio Storytelling and Communication	Dance and Medicine				
A Biopsychosocial Approach to Death, Dying, and Bereavement	Dance and Cross-cultural Understanding				
Health and Climate Change	Early Relational Health				
Spirituality and Religion in Medicine	Reflections on Gross Anatomy				

- The Jefferson Scale of Empathy.
- The Jeffrey Transcultural Self-Efficacy Tool.
- The Budner Tolerate for Ambiguity tool.

We used the Jefferson Scale of Empathy - Student Version (JSE-S) because of its validation and wide use in medical education studies. The JSE-S uses a 20-item scale to measure empathic attributes in health professionals and produces a score from 20 to 140 possible points. All students receive JSE-S four times during the course of medical education: (1) beginning of M1 year, (2) beginning of M2 year, (3) beginning of M3 year, and (4) end of M4 year.

We also employed the Jeffrey's Transcultural Self-Efficacy Tool (TSET) which is based on Bandura's social cognitive framework [32]. All students also take the TSET annually at the beginning of each year.

Participation in the Budner Tolerance for Ambiguity scale was voluntary and occurred directly before and after the Art of Observation selective, thus having a different timing structure from the other measures. Prior studies have suggested low internal reliability and lack of a replicable factor structure for the Budner tolerance for ambiguity scale [33]. However, the scale is still the most well-known and widely used measure of ambiguity tolerance.

# Statistical analysis

Due to the comparatively small sample size, nonparametric statistics were used. Continuous variables are presented using median and 25–75% interquartile range and categorical variables are presented as percentages. Total scores and domain scores were calculated for both the TSET and the JSE-S surveys according to the published directions of each survey. The differences between the various standard effect size of the TSET and the JSE-S was assessed using Friedman test (non-parametric comparison of matched samples). Pre- and post-scores of the Budner Tolerance for Ambiguity scale were analyzed using a Wilcoxon test. A p-value of 0.05 (two-tailed) was used to determine statistical significance. All analyses were done using SPSS IBM 24.0 software, Chicago, Illinois, USA.

# Results

Sample sizes were similar between the classes as each class accommodates about 20 students. The class distribution were: 18 for class of 2019, 39 for 2020, 38 for 2021 and 21 for 2022. (Appendix Table 1)

There was no significant difference in the Jefferson Empathy score as students progressed from M1 (120[110–126], M2 (116[105-125.25], M3 (119.5[109.25–125]), and M4 years (118.5[107.5–129]) (Friedman test P=0.374). (Appendix Table 2 Total Jefferson Empathy scores)

#### Table 2 Jefferson Transcultural Self Efficacy tool M1 to M4

	· · · · · · · · · · · · · · · · · · ·	M 1	M 2	M 3	M 4	P Value
	All students	116	116	116	116	
Cognitive component						
	Completed	104	83	105	59	
	Median [IQR]	6 [4.7–7.4]	7.16 [6–8]	7 [6.1-8]	8 [7-8.88]	< 0.001
Practical Component						
	Completed	101	83	103	55	
	Median [IQR]	6.7[5.3-7.7]	7.8 [6.2-8]	7[6-8.1]	8[7–9]	< 0.001
Affective component						
	Completed	103	81	107	56	
	Median [IQR]	8 [7.4-9]	8 [7.2–8.7]	8.1 [7.2–8.8]	8.2 [7.6–9.2]	NS

 Table 3
 Budner Tolerance for Ambiguity subscales before and after course

	Pre-course	Post-Course	P value
Novelty			
Completed	116	99	
Median [25–75% IQR]	16 [13–19]	16[13–18]	NS
Solubility			
Completed	115	99	
Median [25–75% IQR]	9[7-11]	8[6-10]	0.009
Complexity			
Completed	116	98	
Median [25–75% IQR]	28[25-31.8]	27[22-31.3]	0.021
Total Score			
Completed	115	98	
Median [25–75% IQR]	53[47–59]	50[44.8–56.3]	< 0.001

The Jeffrey's Transcultural Self-Efficacy Tool demonstrated slight but statistically significant increases (Friedman test<0.001) in the cognitive and practical components but no change in the affective component of the scale. (Table 2) (Appendix Table 3a-3c Jeffrey's Transcultural Self-Efficacy scores).

After participating the Art of Observation course, there was a significant improvement in the overall Budner's Tolerance for Ambiguity score (Wilcoxon test for total, p<0.001) as well as for two of the three subscales [33]. Wilcoxon test for novelty was non-significant (p, 0.62) but was significant for solubility (p=0.009) and complexity (p=0.21). (Table 3) (Appendix Table 4a-4b Budner's Tolerance for Ambiguity pre- and post-tests).

# Discussion

This study incorporates both elements of longitudinal psychometric testing and pre/port intervention surveys to assess important curricular elements impacting our students' cognitive, emotional, and social development. In a medical school where humanities, community engagement, and service learning are prioritized and function as mandatory elements of the pre-clinical curriculum, empathy scores on the Jefferson Empathy Scale remained stable over the 4 years of medical education and were consistently high, ending at an average of 129 (out of 140) along with improved transcultural self-efficacy and a direct post-humanities improvement in tolerance for ambiguity. This may reflect recruitment of individuals who are exceptionally empathic and thus with more empathic resiliency to withstand the stressors of medical education. However, it could also suggest that the overall educational milieu with a bipartite emphasis on humanities and community benefit impacts empathy and other important aspects of future physicians' character. Emphasis on humanistic pursuits may mitigate factors such as high work load or a "hidden curriculum."34<sup>,3525]</sup> Thus, a dual emphasis on the theoretical (coursework in humanities) and the practical (community service/engagement) may result in greater than additive benefits in students' empathy and cultural sensitivity. These intangible factors may positively influence the students' experiences and hence their professional identity formation.

Over the four years, two of the three subscales on cultural self-efficacy increased, suggesting gains in confidence especially for the cognitive and practical aspects of cultural competency. The scale specifically measures how confident students are in providing culturally congruent care for patients from different backgrounds [32]. Cultural competence is considered "a multidimensional learning process that integrates transcultural skills in all three dimensions (cognitive, practical, and affective) and involves transcultural self-efficacy." Physicians need to understand the cultural care beliefs and values of their patients in order to administer care that is aligned with their cultural expectations [36]. Working with culturally diverse patients can be challenging with a potential to result in miscommunication and interpersonal conflicts [37–39]. Thus developing the skill to navigate differences and put oneself in the shoes of another with potentially vastly different beliefs and perspectives is critical in effective and empathic care. Confidence does not necessarily mean competence and, as with many complex and subtle aspects of human interaction, assessing true cultural competence in practice may be best determined at the bedside rather than through a scale. However, the improvement in transcultural self-efficacy in parallel with the stable high empathy scores is encouraging, implying maintenance of or perhaps even gain in these interpersonal skills.

Tolerance for ambiguity was one other metric chosen for testing in this cohort given the importance of acknowledging the gray areas in many clinical scenarios. It assesses the level of comfort with uncertainty, unpredictability, and multiple demands as well as the ability to make decisions using intuition. Embracing the humanities has been considered to require a good deal of comfort with uncertainty and with interpretation. It also demands embracing complexity and viewing situations not as monoliths but rather from a multiple perspectives approach. These characteristics would be similarly desirable in physicians and is a necessity in clinical care and in working with communities. After taking the course on art observation and interpretation that demands engaging with complex, ambiguous works of art, tolerance for ambiguity significantly increased and was correlated temporally with exposure to the humanities.

Impacts of the humanities are likely multifactorial, complex, and elusive, making it hard to pin down to a single psychometric. It may also not be temporally contained to the preclinical experience. For example, students who deeply observe art and try to understand the hidden story may not be able to apply the lessons learned till they sit across from a patient in a hospital bed, having to piece together their life story in a few minutes. Similarly, other humanities courses such as medical improvisation may make more sense when students are interviewing patients. Lessons learned from discussions on ethics will be best applied when students face challenging, complex situations where there is no multiple choice answer. The wisdom from literature, music, and the stage can be realized when medical students break out from the cocoon of the preclinical years and understand medicine in all its complexity.

There is still a role for pursing the question of how the humanities impact clinicians more broadly and many potential targets for investigation beyond empathy, cultural awareness, and tolerance for ambiguity. The desire to administer rigorous and comprehensive psychometrics must be balanced however with the operational aspects of medical education, namely that it is not practical to have 20 min of psychometrics for 2 h of content. These pragmatic concerns do not obviate the need for further light to be shown on the subject. Performance in standardized clinical encounters or assessments in the clinical environment can supplement more formulaic testing. Observations and evaluations of clinical reasoning can determine the degree to which creativity, adaptability, and mental flexibility enter into their rationale. Qualitative research through interviews and focus groups at various stages of training and following cohorts of students receiving specific humanities training may identify themes and trends more longitudinally.

As with many medical education studies, a randomized controlled design was not possible since students were not assigned to given courses. Additionally, there is no control group since all medical students are required to take humanities courses. The pre/post design was meant to have the students function as their own controls with the intervention of the course to assess change in outcomes. The Art of Observation was selected as representative of the humanities offered since there was not capacity to administer all psychometrics to every student going through every humanities course. However, there is always the possibility that different humanities courses would yield different results. Bias could potentially be introduced if more students chose this selective because of its inherent characteristics. Other selectives in the humanities do operate under similar principles and the lottery system employed may minimize bias as students are evenly distributed among the courses. Overlap between scales assessing wisdom, creativity, mindfulness, or other assessments may similarly have utility in approaching the humanities. Other limitations of the study include the finite data set with a subset of students. The students' level of engagement with the material should be considered as they may connect with the course content at differing levels. Just signing up for a course does not necessarily guarantee deep engagement nor integration of the content. The question of real-world validity of these psychometrics is another that has yet to be satisfactorily resolved [40-42]. Additionally, while comfort with uncertainty is important in medicine, an increased score may also be seen as a measure of cautiousness or need for clarity which is of course valuable as physicians need to balance all information and not act prematurely. Future studies comparing various humanities subjects as well as the possibility of a "dose-response" effect should be assessed.

There are of course many experiences outside of the 12-hour humanities courses each semester that medical students encounter. However, the continued exposure may foster an environment that is conducive to a multiperspectival approach and one that appreciates multiple modalities of problem solving. Thus, even when a student is not actively engaged in a humanities course, they may reference the different approach to categorization or resolution, seeing possibilities beyond the accepted or traditional. It is encouraging that, given the work of medical schools in the past years to optimize the learning environment, empathy has not lagged among medical students as they progress through their training. Certainly, there is much more work to be done to further identify and enhance those characteristics of training that most successfully imbue our students with positive and adaptive skills. However, emphasizing a multilayered curriculum with prioritization of the humanities, ethics, and community benefit has the potential to inoculate students against the stress of the field such that they retain and expand beneficial traits and abilities. These courses should continue to be embedded in the curriculum and remain as a cornerstone to a well-rounded medical education.

## **Supplementary Information**

The online version contains supplementary material available at https://doi.or g/10.1186/s12909-024-06040-7.

Supplementary Material 1 Supplementary Material 2

Supplementary Material 3

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#### Author contributions

EC contributed to conceptualization, Supervision, Manuscript preparation and revision, and data interpretation. JSR contributed to data analysis. MG contributed to data collection.SS completed the IRB, wrote the first draft of the manuscript, helped with data analysis, visualization of data, and worked on revisions.

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#### Data availability

Deidentified data are reported as supplements to this article.

#### Declarations

#### Ethics approval and consent to participate

This study was not submitted to an ethics committee. However, the proposal was submitted to the institutional review board (IRB) of Cooper Medical School of Rowan University. The need for informed consent was waived by the Institutional Review Board of Cooper Medical School of Rowan University

#### **Consent for publication**

Not applicable.

#### **Competing interests**

The authors declare no competing interests.

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