Comparing the Effects of Narrative Nonfiction and Literary Fiction on Empathy Retention in Medical Students

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Abstract

Integration of medical humanities into medical student curricula has been shown to improve medical student empathy and resilience. The purpose of this study is to determine if narrative nonfiction pieces help students retain equal or more empathy skills compared to reading literary fiction. Previous studies show that interventions that utilize medical humanities can vary in medium and genre, and face the challenge of small sample size and confirmation bias due to a lack of randomized trials. In contrast, this study compares the reading of Narrative Nonfiction and Literary Fiction in building empathy in second year medical students randomized to each genre. Participants were asked to read selections from their assigned genre during the intervention period. Baseline, pre-intervention, and post-intervention assessments were measured by the Reading the Mind in the Eyes – Revised. Results demonstrated a statistically significant decrease in empathy across the overall study period, and there was no empathy retention difference between genres. Additionally, female gender identity and increased engagement in the arts and humanities prior to medical school were correlated with higher empathy scores across time. These findings indicate the need for longitudinal and personalised learning in medical humanities for more thorough studies and maximised benefits on empathy retention.

Introduction

Curricular activities that focus on empathy building can increase medical student and physician resilience (and therefore decrease burnout).[1] Few studies have been performed to assess the outcomes of exposing medical students to narrative literature and other literary genres.[2]

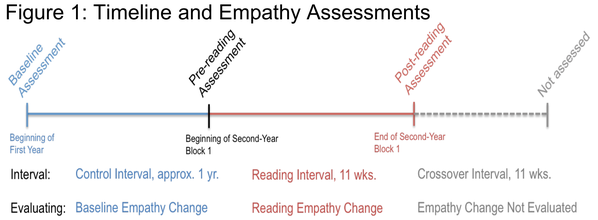
The dual nature of narrative to be able to provide many levels of 'truth' makes a useful tool in developing empathy because it forces perspective-taking by the reader in order to simultaneously develop and accept these many levels of 'truth,' especially in the realm of diverse patient perspectives with regard to experiences and values for their care.[3]

There is a need to assess the types of literature that is being presented and taught in a medical humanities curriculum and determine the mechanism of their effectiveness. Kidd and Castano published an article in 2013 asserting that reading literary fiction can improve a person's ability to empathize.[4] This genre of Nonfiction was unexamined this study, leaving significant opportunity and impetus for further exploration.

Methods

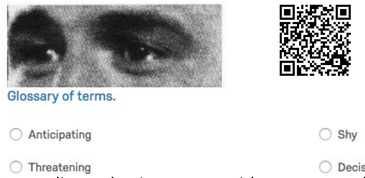
Medical students at the University of Arizona College of Medicine – Phoenix took Reading the Mind in the Eyes – Revised[5] (MIE) assessments as measures of empathy at baseline, pre-reading, and post-reading time points. Changes in empathy were calculated during these intervals.

Figure 1: Timeline and Empathy Assessments



The MIE utilizes 36 images of facial expressions and requires subjects to identify the emotion. Foil words have similar emotional valence as the target words in order to test the ability of the subject to make these subtle distinctions. Average scores for general population are 26-28, with scores above 30 indicating higher emotional intelligence and empathetic recognition.

Figure 2: Sample Reading the Mind in the Eyes – Revised



The reading selections were either excerpts from books related to medicine or anthologies of medical narratives. Participants were asked to read at least 30 pages from their genre.

Table 1: Narrative Nonfiction Selections

Title	Author	Pages
An Anthropologist on Mars (excerpt)	Oliver Sacks	23
Black Man in a White Coat	Damon Tweedy	5
Doctor, Talk to Me	Anatole Broyard	10
Drinking: A Love Story	Caroline Knap	19
The Story of My Life	Helen Keller	19
What Doctors Feels	Danielle Ofri	22

Table 2: Literary Fiction Selections

Title	Author	Pages
All Boy	Lori Ostlund	17
Bless Me, Última (excerpt)	Rudolpho Anaya	23
Into Silence	Marlin Barton	22
Ordinary People	Judith Guest	26
Someone Ought to Tell Her There's Nowhere to Go	Danielle Evans	18
The Bonesetter's Daughter	Amy Tan	9

Wilcoxon Rank Sum was performed to compare continuous variables. Linear regression was used to ascertain mean differences in the change in scores between time points adjusting for all other variables in the model. Additionally, a linear mixed model was utilized to determine mean differences in scores over time for the Overall class, Fiction, and Nonfiction subgroups.

Results

There was no significant difference between baseline empathy scores between the two genre groups. These scores are also consistent with the mean scores of the general population.[4]

Following the eleven-week reading intervention, the difference between baseline empathy score and post-reading empathy score was found to be significant over time for both the Overall class and in those randomized to each genre group.

Table 3: Empathy Scores and Empathy Changes Across Time Points

	Overall N=65	Nonfiction N=33	Fiction N=32	P-value
Baseline Raw Score (mean, SD)	26.7 (4.57)	26.1 (5.56)	27.4 (3.25)	0.58
Pre-Read Raw Score (mean, SD)	25.9 (4.57)	26.2 (4.04)	25.6 (5.10)	0.91
Post-Read Raw Score (mean, SD)	24.6 (5.60)	24.2 (5.79)	25.0 (5.45)	0.46
Baseline Empathy Change (mean, SD)	-0.83 (4.54)	0.08 (4.79)	-1.76 (4.15)	0.16
Reading Empathy Change (mean, SD)	-1.32 (3.84)	-2.03 (4.15)	-0.59 (3.40)	0.22
Study Period Empathy Change (mean, SD)	-2.15 (5.19)	-1.95 (5.69)	-2.36 (4.69)	0.56

Table 4: Mean Differences in Scores Over Time

Variables	Overall		Nonfiction		Fiction	
	Beta (95% CI)	P-value[1]	Beta (95% CI)	P-value[2]	Beta (95% CI)	P-value[3]
Genre						
Nonfiction	REF		N/A		N/A	
Fiction	0.002 (-2.17, 2.18)	0.99				
Age, years						
≤25	REF		REF		REF	
>25	-0.38 (-2.55, 1.78)	0.72	2.23 (-1.21, 5.68)	0.20	-3.49 (-6.32, -0.65)	0.016
Gender						
Female	REF		REF		REF	
Male	-2.75 (-4.92, -0.59)	0.012	-3.80 (-7.05, -0.56)	0.021	-0.57 (-3.58, 2.43)	0.71
Undergrad Major						
STEM	REF		REF		REF	
Social Sciences	-0.34 (-3.29, 2.61)	0.82	-0.61, -6.49, 5.25)	0.83	0.60 (-2.87, 4.08)	0.73
Both	-0.11 (-4.51, 4.28)	0.96	-0.11 (-6.60, 6.38)	0.97	-1.29 (-6.87, 4.27)	0.65
Engaged in Arts/Humanities Before Medical School						
	REF		REF		REF	
Never	5.41 (-4.29, 15.1)	0.27	9.14 (-7.46, 25.8)	0.28	10.6 (-3.12, 24.4)	0.13
Rarely	8.30 (-0.92, 17.5)	0.078	10.2 (-2.63, 23.1)	0.12	15.3 (2.09, 28.4)	0.023
Sometimes	9.21 (0.23, 18.2)	0.045	12.5 (-0.37, 25.5)	0.057	18.0 (4.41, 31.7)	0.009
Often	7.97 (-1.05, 17.0)	0.083	9.24 (-2.07, 20.6)	0.11	20.6 (6.79, 31.4)	0.003
Very Often						
Time Points						
Baseline	REF		REF		REF	
Pre-Read	-0.83 (-1.93, 0.26)	0.14	0.08 (-1.57, 1.72)	0.92	-1.76, (-3.17, -0.36)	0.014
Post-Read	-2.15 (-3.25, -1.05)	<0.001	-1.95 (-3.61, -0.30)	0.021	-2.35 (-3.76, -0.95)	0.001

Additionally, increased engagement in the arts and humanities prior to medical school consistently correlated with higher scores across time points. Participants who marked their engagement in arts and humanities prior to medical school as Often scored an average of 9.21 points higher in the Overall class than those who reported engagement as Never. This was a significant finding in the Overall class, Nonfiction, and Fiction groups.

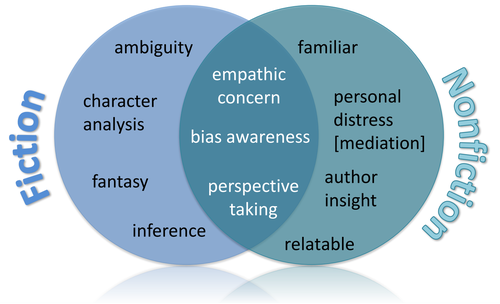
The difference in score at the Post-read time point compared to the Baseline score was 2.15 points lower for the Overall class, demonstrating a statistically significant empathy decrease over the course of the Study Period. This was also reflected in the genre subgroups.

Discussion

Empathy scores decreased over time for the Overall class, Fiction, and Nonfiction groups. This is consistent with prior studies that demonstrate overall empathy decreases during medical school, but does not support previous research on interventions using literary studies found to increase or retain empathy in medical students. However, there are many challenges in assessing the effectiveness of these interventions. Studies that have found positive results in empathy-building/retention have often utilised voluntary participation and more subjective empathy scoring systems based on personal evaluation of ones ability in perspective-taking or empathising. This project has aimed to avoid potential selection and recall bias by building the reading intervention into the medical curriculum and using a more objective empathy assessment tool. Therefore, our negative findings may be a reflection of the need for more accurate study design and assessment criteria in this field.

It is also important to note that the findings are limited by assessments at only three time points with a single reading intervention that consisted of a 30-page assignment. Although participants engaged in a discussion session of the literary material as part of the curriculum, the Post-reading empathy assessment was conducted immediately prior to the session in order to avoid confounding factors of benefit from the discussion rather than the text itself. Feedback from the session was generally positive, and it may be that debriefing and active analysis of the reading material contribute more to empathy skills than reading alone. However, participants did struggle more with Fiction than Nonfiction in the discussion, but it is likely that both these genres still offer benefit in empathy-building, albeit via different skill sets.

Figure 3: Skill Development in Fiction and Nonfiction



Conclusions and Future Directions

Interventions utilising literary studies have previously been shown to build or retain empathy in medical students, but this was finding was not supported in this study that incorporated a single reading intervention into medical curriculum. More longitudinal studies and understanding of the skill development provided by the humanities needs to be conducted to better understand how this field should be best-utilised for empathy retention in medical curricula. Integration of health humanities should start at the pre-medical level and continue with training.

Additionally, given the positive feedback from the discussion sessions, it may be more important to pair reading with active analysis in order to help students develop the necessary skills for empathy-building. Careful selection and paring of Fiction and Nonfiction reading options can perhaps maximise the potential benefit from each genre.

References

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