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# Evaluating longitudinal empathy changes from a supplemental mindfulness curriculum in four-year medical education program

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# Background

# Figure 1: Burnout Rates in Medical Students Medical students are at increased risk for burnout, depression, and depersonalization compared to the general population

- 13.5% absolute increase in prevalence of depression after beginning medical school
- 11.1% report suicidal ideation during medical school

# Figure 2: Empathy Trends in Medical Students Empathy and

Empathy and mindfulness ratings significantly decrease throughout medical education

Most noticeable in pre-

clinical to clinical transition (second to third year)

# 115.4 115.7 115.8 114.3 114.8 114.8 110.5 109.2 100.5 108.5

Rotenstein et al. 2016

### What is SELECT?

WHO: MD SELECT students taught by in-house faculty WHAT: Emotional Intelligence Framework of 12 Competencies WHEN: Longitudinal Four-Year Program

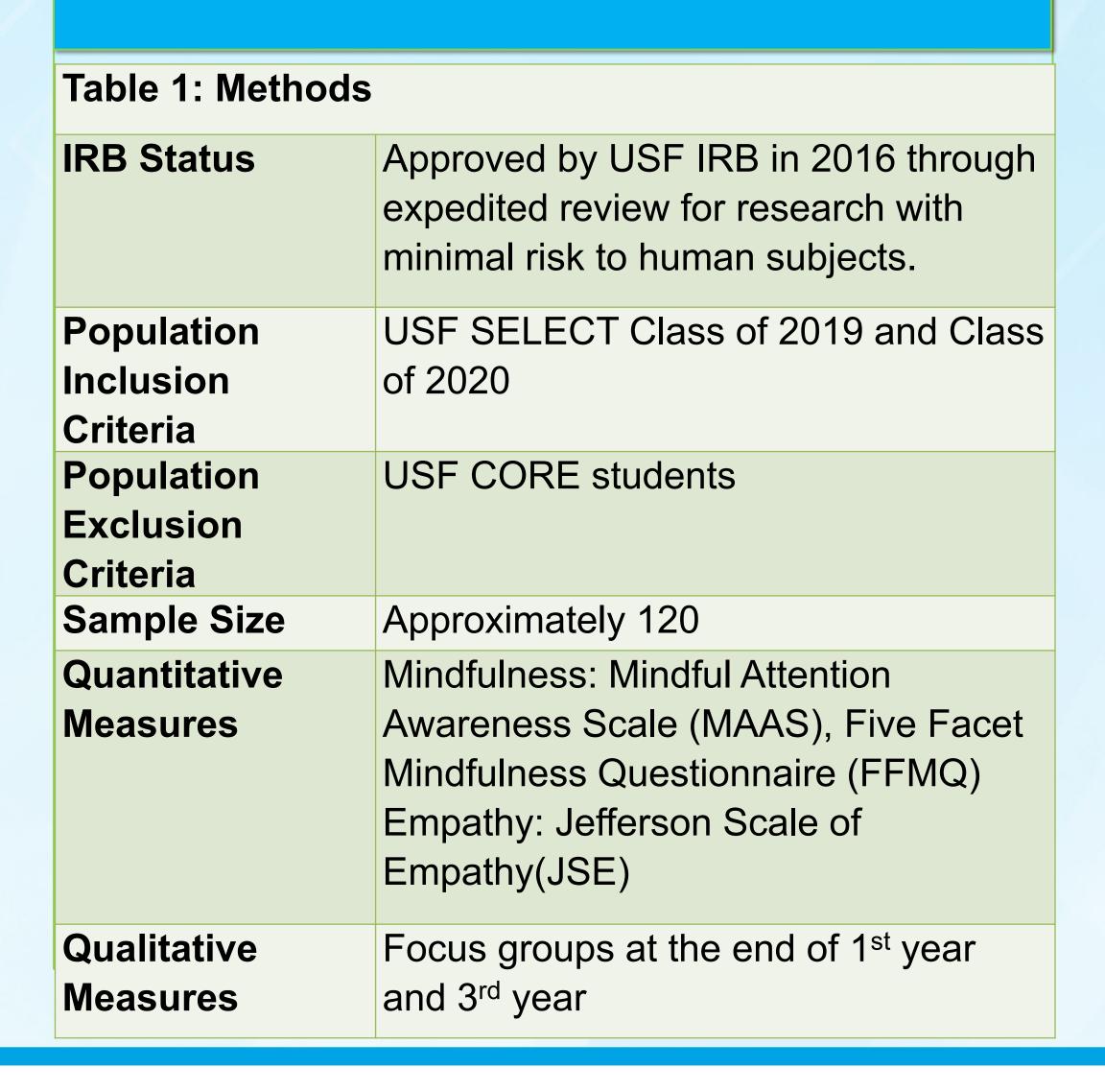
WHERE: Tampa, FL and Allentown, PA

WHY: Healthcare needs more deliberate, emotionally-intelligent physician leadership

# Problem Statement

How does a longitudinal EI-based supplemental medical curriculum affect the mindfulness and empathy of medical students?

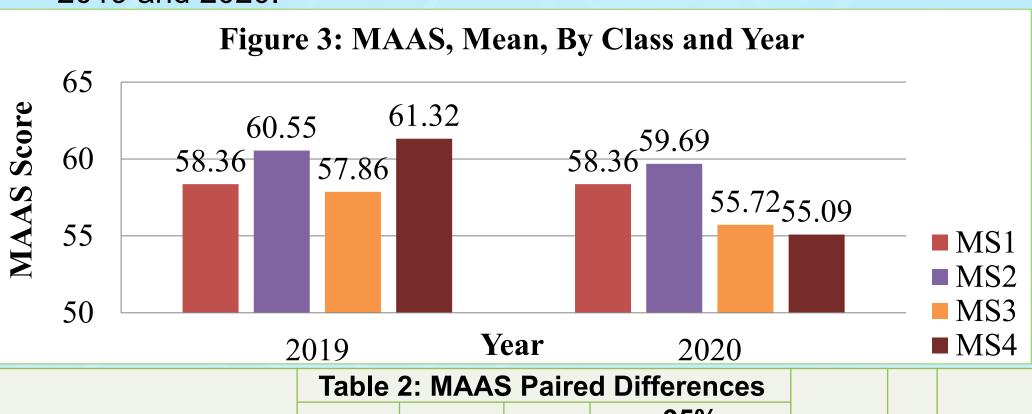
# Methods



# Results

#### Mindfulness Attention Awareness Survey Data

- Both classes of medical students started with non-significant differences in scores prior to beginning MS1.
- Class of 2019 maintained similar scores throughout their education, with no significant mean difference calculated.
- Class of 2020 experienced a significant decrease between the beginning of MS2 and MS3 (mean difference 4.690 [95% CI 0.594-9.787]), and between beginning of MS2 and MS4 (mean difference 5.800 [95% CI .487-11.113]). Class of 2020 did not experience a significant change in mean between MS1 and MS4.
- Differences were not significant between year-matched Class of 2019 and 2020.

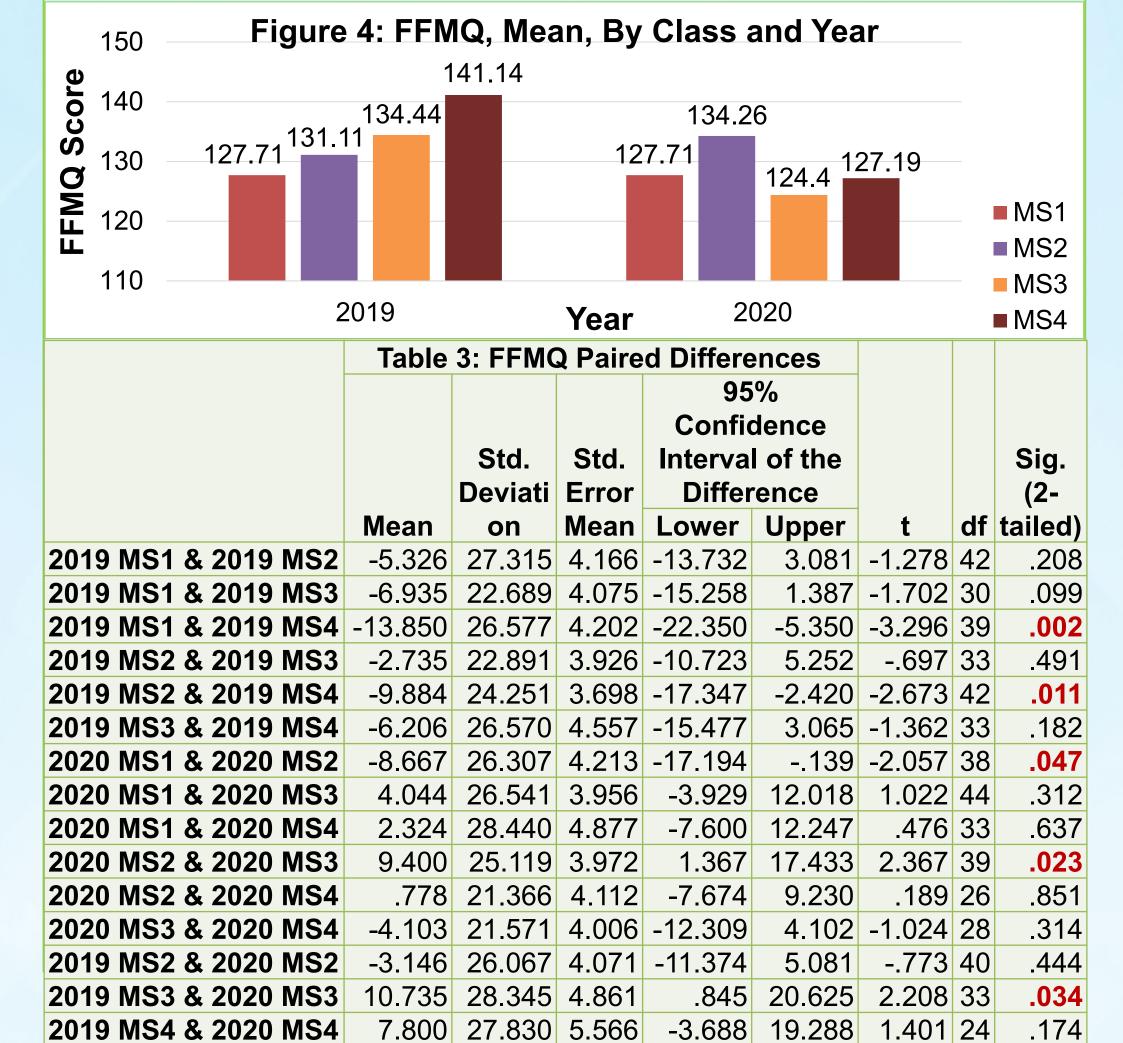


	50								W123
	2019 <b>Year</b> 20					2020			■MS4
Table 2: MAAS Paired Differences									
					95%				
					Confidence				
			Std.	Std.	Interval of the				Sig.
			Deviati	Error	Difference				(2-
		Mean	on	Mean	Lower	Upper	t	df	tailed)
	2019 MS1 & 2019 MS2	-3.211	13.672	2.218	-7.704	1.283	-1.448	37	.156
	2019 MS1 & 2019 MS3	194	14.108	2.534	-5.368	4.981	076	30	.940
	2019 MS1 & 2019 MS4	-2.730	13.101	2.154	-7.098	1.639	-1.267	36	.213
	2019 MS2 & 2019 MS3	2.714	16.776	2.836	-3.049	8.477	.957	34	.345
	2019 MS2 & 2019 MS4	-1.195	13.280	2.074	-5.387	2.997	576	40	.568
	2019 MS3 & 2019 MS4	-4.343	16.104	2.722	-9.875	1.189	-1.595	34	.120
	2020 MS1 & 2020 MS2	-3.474	12.502	2.028	-7.583	.636	-1.713	37	.095
	2020 MS1 & 2020 MS3	3.244	14.083	2.099	986	7.475	1.545	44	.129
	2020 MS1 & 2020 MS4	4.182	17.107	2.978	-1.884	10.248	1.404	32	.170
	2020 MS2 & 2020 MS3	4.690	13.146	2.028	.594	8.787	2.312	41	.026
	2020 MS2 & 2020 MS4	5.800	12.871	2.574	.487	11.113	2.253	24	.034
	2020 MS3 & 2020 MS4	1.233	14.066	2.568	-4.019	6.486	.480	29	.635
	2019 MS2 & 2020 MS2	132	14.800	2.401	-4.996	4.733	055	37	.957
	2019 MS3 & 2020 MS3	2.943	16.419	2.775	-2.697	8.583	1.060	34	.296
	2019 MS4 & 2020 MS4	1.500	15.323	3.128	-4.970	7.970	.480	23	.636

## Five Facet Mindfulness Questionnaire Data

- Baseline scores between both classes prior to beginning medical school were not significantly different.

  On 1994
- Class of 2019, a significant increase was seen between MS1 and MS4 scores (mean difference -13.850 [95% CI -22.350--5.350]) and between MS2 and MS4 scores (mean difference -9.884 [95% CI -17.347—2.420]).
- Class of 2020 had a significant increase in score between MS1 and MS2 (mean difference -8.667 [95% CI -17.194--0.139]) and a significant decrease between MS2 and MS3 (mean difference 9.400 [95% CI 1.367-17.433]). No significant difference in mean was noted between MS3 and MS4. There was no significant difference between MS1 and MS4 for Class of 2020.
- No difference was seen between the Class of 2019 and 2020 at the MS2 and MS4 level, but the Class of 2019 has a significantly higher score during MS3 (mean difference 10.735 [95% CI 4.861-0.845]).



# Results

#### **Focus Group Data**

Significant trends from MS1 focus groups for Class of 2019 (N=13) and Class of 2020 (N=12)

- Prior exposure to mindfulness and EI (1/13 vs 6/12)
- Importance of El/mindfulness/empathy in applying to medical school (1/13 vs 7/12)
- Participation in activities related to El/mindfulness/empathy outside of school (8/13 vs 3/12)
- Changing opinions of the SELECT program throughout the year (13/13 vs 12/12)
- Recommend SELECT over the traditional medical curriculum (8/13 vs 12/12)

# Discussion

#### **General Discussion**

- The trends seen in the MAAS and FFMQ data sets correlate well with one another.
- Class of 2019 showed preserved mindfulness throughout all four years, with a significant increase on the FFMQ between third year and fourth year and between first year and fourth year.
- Class of 2020 had preserved FFMQ and MAAS between first and second year and a significant decrease in both the FFMQ and MAAS between second and third years.
- There was no significant difference in both MAAS and FFMQ for class of 2020 between first and fourth years.
- Class of 2020 had more exposure to the concepts of EI, mindfulness, and empathy prior to beginning medical school compared to the Class of 2019, and both classes had similar selfreported opinions of the SELECT program and its curriculum.

## **Study Limitations**

- Lack of control group (CORE medical students) is a missed opportunity to strengthen the significance of any findings.
- Test-retest bias
- Small sample sizes for each class with decreasing participation in final years of medical school compared to first year
- Decrease in participation in focus groups during 3<sup>rd</sup> year for both Class of 2019 and 2020

## Relationship to SELECT

- This study relates to many SELECT topics, especially leadership, emotional intelligence and empathy by looking at how SELECT curriculum may have had an impact on its students
- Prior studies suggest that interventions targeted at improving mindfulness in healthcare professionals, show improvements in burnout, stress, anxiety and depression (Lamothe et al 2016)
- Prior studies also showed that teaching mindfulness strategies to healthcare professionals lead to increase in empathy and decrease in indicators of burnout (Moll et. al 2018)
- Furthermore, participants have self-reported increased ability to listen mindfully and to be more compassionate and to have better conflict management skills (Moll et. al 2018)
- Physicians who had higher mindfulness scores were rated higher on clinical communication and overall satisfaction by patients (Beach et. al 2013)

# Conclusions

Longitudinal quantification mindfulness in medical students showed preservation or improvement across four years in one class and a decrease between the second and third year with preservation between first and final year in another class.

This study highlights the need for further longitudinal studies assessing the efficacy of experimental educational models on the emotional intelligence of medical students.

# References

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