

Emotions of medical and law students during high fidelity simulations of palliative medicine and law. A comparative analysis.

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Emotions play a significant role in how people learn and interact with simulated environments. Simulations, especially those involving real-world scenarios or high-stakes events, can evoke strong emotional responses. These emotions can impact attention, memory, decision-making, and motivation during the simulation and afterward. Understanding and managing emotions in simulation-based learning is crucial for optimizing the learning experience.

Method

Participants

The sample consisted of 74 participants, of which 55 were students of medicine (group 1), and 19 studied law (group 2). The sample was predominantly female (78%), with 63 students (85%) who participated in simulation classes in the past.

Statistical analyses

We used the U Mann-Whitney test to examine differences between two groups of students participating in simulation classes. We chose this test due to the significant difference in subsamples' sizes (group 1: n = 55, group 2: n = 19) and the ordinal character of all variables. As an effect size measure, we used rank-biserial correlation. Also, we performed a principal component analysis (PCA) to reduce the number of variables related to very detailed emotional states into a narrow number of components denoting more general emotional dispositions. The KMO metric and Bartlett's test justified the possibility of variables' reduction, suggesting the existence of correlated clusters of variables: KMO = 0.76, χ^2 (276) = 1146.76, $p < 0.001$. Note that we decided not to treat obtained components as latent variables (and, thus, used exploratory factor analysis) because of the lack of theoretical justification for such a procedure. Parallel analysis was used to extract components. All loadings were calculated using promax rotation. Then, to test differences in emotional components, we calculated sum scores and tested between-group differences using the Mann-Whitney test (which was used due to the significant difference in subsamples' sizes).

Table 1 Differences in emotions between groups of medicine and law students - U Mann-Whitney test

	U Mann-Whitney test		Effect size
	W	P	r_{bs}
Joy	340.50	0.022	-0.35
Unrest	531.00	0.919	0.02
Fear	543.50	0.796	0.04
Love	628.00	0.090	0.20
Wrath	376.50	0.063	-0.28
Cheerfulness	396.00	0.112	-0.24
Humiliation	606.50	0.279	0.16
Sadness	726.00	0.010	0.39
Agitation	234.50	< 0.001	-0.55
Anxiety	605.50	0.301	0.16
Regret	646.00	0.115	0.24
Apprehension	598.00	0.345	0.14
Devotion	436.50	0.283	-0.17
Anger	480.50	0.593	-0.08
Breakdown	691.50	0.031	0.32
Happiness	397.00	0.117	-0.24
Rage	415.50	0.157	-0.21
Satisfaction	548.00	0.750	0.05
Tenderness	853.00	< 0.001	0.63
Shame	732.00	0.008	0.40
Guilt	759.50	0.002	0.45
Attachment	641.50	0.122	0.23
Depression	652.50	0.047	0.25
Misfortune	689.50	0.024	0.32

Note. For effect size, rank-biserial (r_{bs}) correlation was reported.

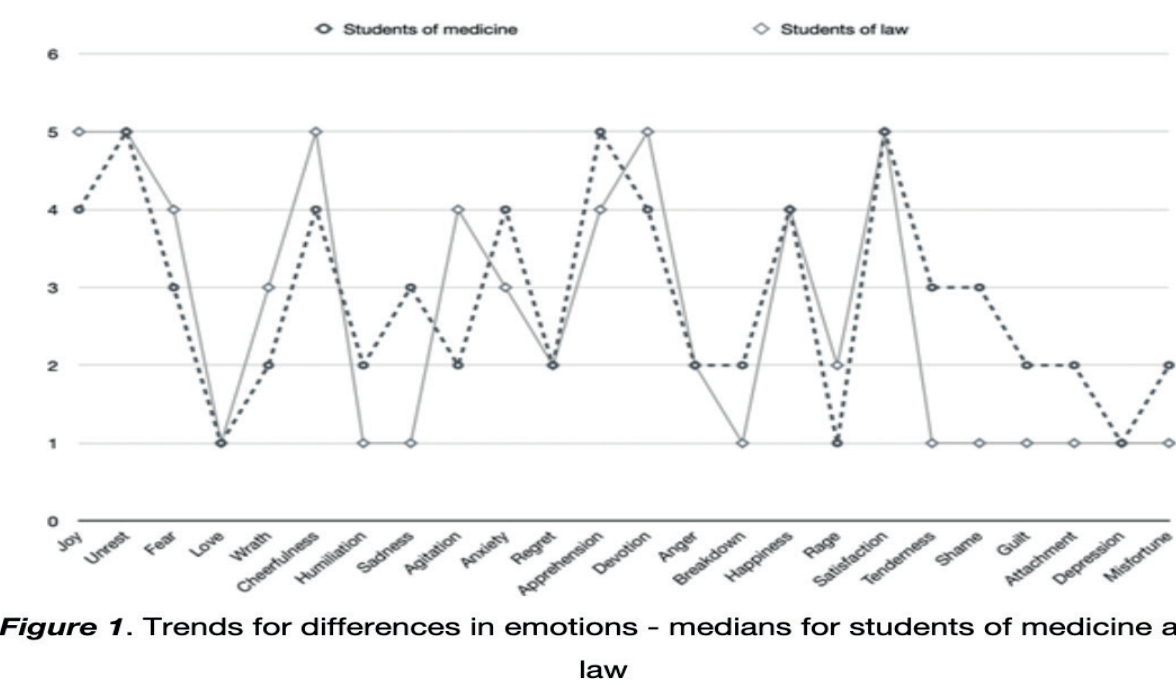


Figure 1. Trends for differences in emotions - medians for students of medicine and law

Results

Between-group differences, analyzed with the U Mann-Whitney test, were presented in Table 1

Analysis revealed statistically significant differences in joy ($p = 0.022$), sadness ($p = 0.010$) agitation ($p < 0.001$), breakdown ($p = 0.031$), tenderness ($p < 0.001$), shame ($p = 0.008$), guilt ($p = 0.002$), depression ($p = 0.047$), and misfortune ($p = 0.024$). In most cases, effect sizes denoted small effects, except emotions such as agitation, shame, and guilt, for which effect sizes were medium, and tenderness, for which effect size was large. Medians showed that medicine students, compared to law students, reported higher levels of emotions, such as sadness, breakdown, tenderness, shame, guilt, depression, and misfortune. However, law students performed higher levels of joy and agitation. Trends for differences in all emotions were visualized in Figure 1.,

Emotions regarding simulation classes - specific emotions

Results revealed four components. The first component consisted of 8 emotions, i.e., humiliation, sadness, regret, breakdown, shame, guilt, depression, and misfortune. Because all emotions were related to a highly negative emotional state, oscillating between breakdown and depression, the component was labeled as "Depressive emotions". The second component consisted of 8 emotions, i.e., joy, unrest, fear, cheerfulness, anxiety, apprehension, happiness, and satisfaction. Some emotions had negative factor loading, i.e., unrest, fear, anxiety, and apprehension. Thus, we decided to reverse code those emotions, which allowed us to extract a dimension related to the presence of positive emotional states (and the absence of those negative), labeled as "Positive emotions". The third component consisted of 4 emotions, i.e., wrath, agitation, anger, and rage. Because all emotions were related to a highly impulsive (potentially followed by expulsive actions) affect, the component was labeled "Impulsive emotions". Finally, the fourth component consisted of 4 emotions, i.e., love, devotion, tenderness, and attachment. Because all emotions were related to an interpersonal context and usually harbored regarding other people, the component was labeled "Interpersonal emotions".

Analysis revealed statistically significant differences in impulsive ($p = 0.013$) and depressive emotions ($p = < 0.001$). In the first case, the effect size was small, and in the second - it was moderate. Medicine students were characterized by lower levels of depressive emotions (median = 8.00, IQR = 5.50; and higher levels of impulsive emotions (median = 17.00, IQR = 11.00; compared to law students (depressive emotions: median = 12.00, IQR = 3.00 ; impulsive emotions: median = 13.00, IQR = 6.00

Discussion

Higher levels of impulsive emotions in medical students likely relate to a tendency toward strong emotional reactions and impulsive behavior relevant to a future profession that could potentially influence decision-making This could manifest as difficulty regulating emotions, increased risk-taking and potential difficulties in maintaining long-term goals or coping with stress. Law school can be a stressful time for students, and many report experiencing significant levels of anxiety, depression, and other mental health challenges. A study found that 44% of law students meet the criteria for clinically significant levels of psychological distress. This can be due to the intense workload, competitive environment, and the pressure to succeed in a rigorous academic program.

Table 5. Differences in emotional components between groups of medicine and law students - U Mann-Whitney test

	U Mann-Whitney test		Effect size
	W	P	r_{bs}
Interpersonal emotions	659.50	0.090	0.26
Impulsive emotions	322.00	0.013	-0.38
Depressive emotions	791.00	< 0.001	0.51
Positive emotions	410.00	0.165	-0.22

Note. For effect size, rank-biserial (r_{bs}) correlation was reported.

Conclusion

The results indicate distinct emotional profiles in medical and law students participating in high-fidelity simulations. Medical students exhibited significantly higher levels of depressive and impulsive emotions, suggesting a heightened emotional engagement, possibly shaped by the emotional demands of clinical settings. In contrast, law students experienced more agitation and joy, indicating a different pattern of emotional processing in response to simulations. These findings underscore the importance of tailoring emotional support and debriefing strategies to specific student populations to enhance the educational value of simulation-based learning and promote psychological well-being.

