

# First year medical students' attitude toward anatomical corpse dissection and its relationship with their personality

MIHAI HORAȚIU BOB<sup>1)</sup>, CODRUȚA ALINA POPESCU<sup>2)</sup>, ȘOIMIȚA MIHAELA SUCIU<sup>3)</sup>, ANCA DANA BUZOIANU<sup>4)</sup>

<sup>1)</sup>Department of Anatomy and Embryology, "Iuliu Hațieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

<sup>2)</sup>Department of Social Sciences and History of Medicine, "Iuliu Hațieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

<sup>3)</sup>Department of Physiology, "Iuliu Hațieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

<sup>4)</sup>Department of Pharmacology, Toxicology and Clinical Pharmacology, "Iuliu Hațieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

## Abstract

**Introduction:** Anatomy is an important and intense mandatory course offered during the first year of medical school. Corpse dissection is very important in Anatomy teaching, and first year students will encounter, most likely for the first time, a dead human body during Anatomy labs. **Objectives:** The purpose of this study was to evaluate the anxiety experienced by medical students with no previous corpse dissection background just before, after a week, and then after a month of dissection labs, and to investigate the relationship between students' personality and their attitude towards dissection. **Subjects and Methods:** 138 first year English Section medical students from the "Iuliu Hațieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania, completed a personality inventory, an anxiety scale and a questionnaire to assess their attitudes and reactions to anatomical dissection. **Results:** The level of anxiety reported by students increased from before the first dissection encounter to after one month of dissection labs. **Conclusions:** There is a relationship between the Five Factor model of personality and students' attitudes towards dissection. Medical students could be better prepared for their first corpse dissection experience if the preparation before dissection would take in consideration their psychological traits.

**Keywords:** corpse dissection, medical students, personality.

## Introduction

Anatomy is one of the most important and intense mandatory courses offered during the first year of medical school. Corpse dissection is very important in anatomy teaching, so the first year students will encounter, most likely for the first time, a dead human body. This experience, while emotionally taxing and stressful, provides essential knowledge required for the duration of their future studies.

Many studies have been conducted to determine the emotional reactions of medical students to the dissection room [1, 2]. Some studies reported that 30% of students experienced physical effects such as dizziness, sore eyes and nausea [3] and feeling of anxiety and disgust, particularly with the dissection of certain regions of the body [3, 4]. Other findings indicate that only a small percentage of students show persistent negative reactions to viewing (or using) cadaveric tissue, while most students report no ill effects and even have positive reactions to the dissection experience [5].

The purpose of this study, conducted on students with no previous cadaver dissection experience, was to evaluate the anxiety experienced just before, after a week, and after a month of dissection labs, and to investigate the relationship between students' personality and their attitude towards dissection. Consulting the existing literature on the subject, the following hypotheses were formulated:

- Medical students experience emotional stress in response to corpse dissection;

- Medical students with extroverted personalities report less emotional stress than students with introverted personalities;

- Medical students with high emotional stability experience less emotional stress than students with low emotional stability.

## Subjects and Methods

### Subjects

One hundred thirty-eight first year English Section medical students from the "Iuliu Hațieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania, participated in this study, all subjects having no previous cadaver dissection experience.

### Instruments

The students' anxiety status was assessed at three key-moments: before and after first dissection Anatomy lab, then after one month of dissection labs. The instrument used was the State-Anxiety Scale of the State-Trait Anxiety Inventory (STAI) [6], which comprises two scales: a State-Anxiety scale (STAI-Y1) and a Trait-Anxiety scale (STAI-Y2). The STAI-Y1 refers to what the subject is feeling "right now, at this very moment" and the STAI-Y2 to what he "usually" feels. The total score varies from 20 to 80.

The 60-item NEO Five-Factor Inventory (NEO-FFI) [7] was used to evaluate personality traits. NEO-FFI measured

the scores of each student on the five personality factors: Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness. Neuroticism refers to a degree of emotional instability, impulse control, and anxiety. Extraversion is displayed through a higher degree of sociability, assertiveness, and talkativeness. Openness is reflected in a strong intellectual curiousness and a preference for novelty and variety. Agreeableness refers to being helpful, cooperative, and sympathetic towards others. Finally, conscientiousness is exemplified by being disciplined, organized, and achievement-oriented.

A questionnaire was designed by the authors to evaluate the attitudes of medical students towards human cadaver dissection.

### Procedure

This study received the approval of the Research Ethics Committee of the “Iuliu Hațieganu” University of Medicine and Pharmacy and was authorized by the Dean of the Faculty of Medicine. Three different questionnaires were provided to students at each key-moment of this research: after the introductory lecture (before first dissection); just after first dissection; after one month of dissections.

The first questionnaire was introduced by a presentation meant to prepare them for their first cadaver dissection experience. The 20-minute lecture titled “Corpse Dissection: Why? What? How?” covered the main scientific benefits of corpse dissection, information on the source of corpses, their legal and sanitary status, as well as conservation procedures used in our Department. Safety instructions and rules for handling instruments and conserved human tissue followed. After 10 minutes of discussions on presented topics, the students received “The pre-dissection questionnaire” containing demographic questions (gender, age), a State-Trait Anxiety Inventory (STAI-Y1 and Y2), and several multiple choice and fill-in-the-blanks questions about the dissection preparation. One week later, after

their first dissection lab, students were presented with “The immediately-after dissection questionnaire” containing State-Trait Anxiety Inventory (STAI-Y1). The third answer sheet “The post-dissection questionnaire” contained the State-Trait Anxiety Inventory (STAI-Y1 and Y2) and the NEO Five-Factor Inventory (NEO-FFI). The questionnaires were anonymous, but each student was asked to write a personal code and to remember it for all three-answer sheets. The participation was voluntary and no material compensation or credits were offered for questionnaire completion.

The statistical analysis was performed with SPSS 20 software and used non-parametric tests for comparisons, because the Shapiro–Wilk test indicated that the data was not normally distributed. Calculation of correlations was performed *via* the Spearman’s rank correlation coefficient.

### Results

A significant number of students (138/170 enrolled, 81.17%) completed the three answer sheets. The mean age was 20.57 years (range 18–37 years). There were 70 (50.7%) women and 68 men (49.3%).

Nearly 36.2% of the students ( $N=50$ ) had never seen a human cadaver before dissection labs. Of the others, 30 (21.7%) had seen the corpse of a stranger, 33 (23.9%) had seen the body of a deceased relative and 25 (18.1%) had seen the dead body of a relative and a stranger.

### Personality traits

A significant difference between genders was found on three of the five dimensions of personality: the means for female students were higher on openness, agreeableness and conscientiousness. The gender differences found in medical students were similar to those in other studies [8, 9] with the exception we did not found a significant difference on neuroticism (Table 1).

**Table 1 – Gender differences on Big Five Dimensions of Personality scores**

Dimensions of Personality	Males			Females			Mann–Whitney U-test	p
	Mean	N	SD	Mean	N	SD		
Neuroticism	24.44	68	6.44	26.174	70	6.48	2721.5	0.145
Extraversion	34.08	68	6.5	34.47	70	5.26	2950.5	0.369
Openness	29.39	68	5.89	31.18	70	5.6	2916.5	<b>0.022</b>
Agreeableness	24.72	68	6.07	27.77	70	6.12	3093.00	<b>0.002</b>
Conscientiousness	28.73	68	4.73	30.6	70	5.69	2866.5	<b>0.038</b>

N: No. of students; SD: Standard deviation.

### Attitude towards dissection in relationship with personality

After a month, a large majority of students (94.2%) found dissection useful for obtaining anatomical knowledge. Regarding fear in reaction to dissection, nine (6.5%) students were very afraid, 12 (8.7%) were moderately afraid, 35 (25.4%) were slightly afraid, and 82 (59.4%) were not at all afraid.

In order to evaluate the relationship between personality traits and attitude to the dissection room, the mean trait scores of the students who reported

curiousness or fear were compared to those of the students who did not. 62.5% of the students described themselves as curious in relationship with dissection and 6.5% afraid.

The students who reported feelings of fear had a higher mean on Neuroticism ( $U=883.0$ ,  $p=0.009$ ), for the other dimensions no significant difference were found. Feeling of curiousness were positively associated with scores on Extraversion ( $U=2923$ ,  $p=0.001$ ), Openness ( $U=2698$ ,  $p=0.016$ ), Agreeableness ( $U=2763.5$ ,  $p=0.01$ ) and Conscientiousness ( $U=2736$ ,  $p=0.01$ ) (Table 2).

**Table 2 – Variations between Big Five Dimensions of Personality and Curiousness and Fear**

Dimensions of Personality	Curiousness (65.2% of sample)			Fear (6.5% of sample)		
	Mann–Whitney U-test	p	Relationship	Mann–Whitney U-test	p	Relationship
Neuroticism	2073	0.697	n.s.	883.0	0.009	positively
Extraversion	2923	0.001	positively	517.5	0.586	n.s.
Openness	2698	0.016	positively	693	0.693	n.s.
Agreeableness	2736.5	0.01	positively	610	0.610	n.s.
Conscientiousness	2736	0.01	positively	433.5	0.204	n.s.

n.s.: No statistical significance.

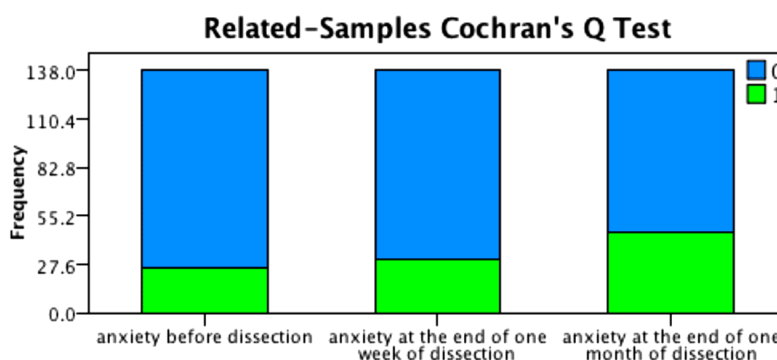
**Evolution of anxiety**

The level of anxiety reported by the students increased from the beginning to one month of dissection course. At baseline, before dissection, 18.1% of students showed increased anxiety, 21% after one week, and 32.6% after one month. This increase was statistically significant,

Related-Sample Cochran's Q-test = 12679,  $p=0.002$  (Figure 1).

On the Big Five Dimensions, Neuroticism correlated positively significantly with anxiety, the correlations were higher at the end. The other dimensions correlated negatively with anxiety (Table 3).

**Figure 1 – Evolution of anxiety level before and after the dissection (0 – normal state, 1 – anxiety, Related-Sample Cochran's Q-test = 12679,  $p=0.002$ ).**



**Table 3 – Spearman's Rho correlation between the level of Anxiety before and after dissection and the Big Five Dimensions of Personality**

Dimensions of Personality	Level of anxiety before dissection		Level of anxiety after a week of dissection	Level of anxiety after one month of dissection
	STAI-Y1	STAI-Y2	STAI-Y1	STAI-Y1
Neuroticism	0.276**	0.439**	0.352**	0.565**
Extraversion	-0.231**	-0.440**	-0.102	-0.248**
Openness	-0.158	-0.259**	-0.259**	-0.217*
Agreeableness	-0.186*	-0.168*	-0.175*	-0.059
Conscientiousness	-0.282**	-0.431**	-0.217*	-0.226**

\* $p<0.05$ ; \*\* $p<0.01$ .

**Discussion**

This study did not find any significant difference in students' anxiety before and immediately after the first dissection, but at one month, the anxiety increased. This outcome contradicts some prior studies. For example, in 2004, Arráez-Aybar *et al.* [5] found a significant decrease in stress, subsiding from one exam session to the next. As students gained more experience with dissection, their emotional reactions were reduced and their attitudes changed. Likewise, in 1997, Dickinson *et al.* [10] found a difference in stress levels between their male and female students, with the latter significantly more tense than the former. The results are similar with Leboulanger [11] who did not report any significant differences in student stress levels before or after their first dissection.

The findings of our study highlight the fact that curiousness shows a positive variation with extraversion and varies negatively with neuroticism, while anxiety

shows a negative variation with extraversion, agreeableness and conscientiousness and varies positively with neuroticism, results that are similar with Plaisant *et al.* [8].

**Conclusions**

Our findings are consistent with our hypothesis that there is a relationship between the Five Factor model of personality and students' attitudes towards dissection. Thus, medical students can be better prepared for the dissecting room experience if the preparation will take into consideration their psychological traits. Our findings show that there can be a relationship between personality and anxiety as a reaction to corpse dissection, but other factors can also influence that anxiety. Our sample of international students has a diverse cultural background and we can have little understanding as to how various cultural, political, and religious views may affect the reactions to corpse dissection.

**Conflict of interests**

The authors declare that they have no conflict of interests.

**References**

- [1] McLachlan JC, Bligh J, Bradley P, Searle J. Teaching anatomy without cadavers. *Med Educ*, 2004, 38(4):418–424.
- [2] Böckers A, Jerg-Bretzke L, Lamp C, Brinkmann A, Traue HC, Böckers TM. The gross anatomy course: an analysis of its importance. *Anat Sci Educ*, 2010, 3(1):3–11.
- [3] Horne DJ, Tiller JW, Eizenberg N, Tashevskaya M, Biddle N. Reactions of first year medical students to their initial encounter with a cadaver in the dissecting room. *Acad Med*, 1990, 65(10):645–646.
- [4] Snelling J, Sahai A, Ellis H. Attitudes of medical and dental students to dissection. *Clin Anat*, 2003, 16(2):165–172.
- [5] Arráez-Aybar LA, Casado-Morales MI, Castaño-Collado G. Anxiety and dissection of the human cadaver: an unsolvable relationship? *Anat Rec B New Anat*, 2004, 279(1):16–23.
- [6] Spielberger CD, Gorsuch RL, Lushene RE. Manual for the state-trait anxiety inventory: STAI. Consulting Psychologists Press, Palo Alto, CA, 1982.
- [7] Costa PT, McCrae RR. Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) Manual. Psychological Assessment Resources, Odessa, FL, 1992.
- [8] Plaisant O, Courtois R, Toussaint PJ, Mendelsohn GA, John OP, Delmas V, Moxham BJ. Medical students' attitudes toward the anatomy dissection room in relation to personality. *Anat Sci Educ*, 2011, 4(6):305–310.
- [9] Coulston C, Vollmer-Conna U, Malhi G. Female medical students: who might make the cut? *Psychiatry Res*, 2012, 200(2–3):457–463.
- [10] Dickinson GE, Lancaster CJ, Winfield IC, Reece EF, Colthorpe CA. Detached concern and death anxiety of first-year medical students: before and after the gross anatomy course. *Clin Anat*, 1997, 10(3):201–207.
- [11] Leboulanger N. First cadaver dissection: stress, preparation, and emotional experience. *Eur Ann Otorhinolaryngol Head Neck Dis*, 2011, 128(4):175–183.

**Corresponding author**

Codruța Alina Popescu, Lecturer, PhD, Department of Social Sciences and History of Medicine, "Iuliu Hațieganu" University of Medicine and Pharmacy, 31 Avram Iancu Street, Avram Iancu Building, 2<sup>nd</sup> Floor, Room 72, 40083 Cluj-Napoca, Romania; Phone +40722–957 195, e-mail: cpopescu@umfcluj.ro

*Received: May 7, 2014*

*Accepted: February 11, 2015*