

A study of cognitive-affective and physiological-motor reactions to human dissection in Spanish students of human Anatomy

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SUMMARY

In the last two decades anatomists have carried out research into students' reactions, both physiological and emotional, to dissection. This research has mainly been carried out in English-speaking countries. The objective of the study is to investigate these reactions in a group of Spanish students. Given the scope and volume of data being analyzed in the complete study, in this paper we present data referring only to the methodology employed and those results presented at the Joint Meeting of the Anatomical Society of Great Britain & Ireland and the Spanish Anatomical Society, held in September 2006 in the Medical Faculty of the Complutense University of Madrid.

Key words: Dissection – Medical education – Cadaver – Gross Anatomy – Professionalism

INTRODUCTION

In the eighties some anatomists such as Lippert (1985) or Penney (1985) began to take an interest in the reactions of students to cadaver dissection, but still the early nineties this was still a little-discussed point, and rarely the subject of scientific interest. Never-

theless, over the decade there was an increase in this research, carried out almost exclusively in English-speaking countries and mainly centered on descriptive aspects of the students' physical responses. At the present time there are still relatively few studies referring to pupils' emotional reactions in the dissecting room (DR) (Tschernig et al., 2000; Carrol et al., 2002). Studies have been carried out mainly, though not exclusively, in English-speaking countries, and have been interview-based (Penney, 1985; Gustavson, 1988; Finkelstein and Mathers, 1990; Lempp, 2005) or questionnaire-based (Evans and Fitzgibbon, 1992; Charlton et al., 1994; Druce and Jonson, 1994; Nnodim, 1996; Leong, 1999). This topic may be of broader interest because it has been suggested that the reactions of the student to the cadaver may be predictive of future doctor-patient relationships (Shalev and Nathan, 1985). Finally, cultural changes, scientific progress, and new trends in medical education have modified the role of dissection in teaching anatomy in today's medical schools (Elizondo-Omana et al., 2005) making further studies timely.

The purpose of this study is to investigate the cognitive-affective and physiological-motor reactions of a group of Spanish students to human dissection. Given the characteristics

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and volume of data being analyzed in this study, in this paper we present only data referring to the methodology employed and results presented at the Joint Meeting of the Anatomical Society of Great Britain & Ireland and the Spanish Anatomical Society, held in September 2006 in the Medical Faculty of the Complutense University of Madrid.

METHODOLOGY

425 students, from three university degree courses, took part in this study: Medicine (N=195), Occupational Therapy (N=141) and Odontology (N=89), all registered for the first time in the subject of Human Anatomy of the Department of Human Anatomy and Embryology II of the Complutense University of Madrid (DHAIEICUM). Of the total sample 81% were female and 19% male, the average age of the participants being 19. Participation was voluntary and anonymity was guaranteed.

Evaluation Instruments

An *ad hoc* instrument was designed consisting of a check-list of sensations. The participant had to mark the reactions provoked in him/her by the experience of dissection.

Procedure

All students in the DAHEIICUM undertake compulsory practical dissection of human cadavers in the first year of Human Anatomy, although medical students (MS) carry out dissections and odontology (OdS) and occupational therapy students (OTS) simply observe prosections. The dissecting room has eighteen work tables. In each practical session nine cadavers are studied, with fourteen students allocated to each cadaver (seven on each side). Each practical session is supervised by two teachers.

The evaluation instrument was distributed on four occasions: immediately before and after the first (Pr1 and Post1) and last dissection sessions of the first year of anatomy (Pr4 and Post4).

RESULTS

The idea of “watching/doing dissection” arouses different types of response, which we have grouped into two categories: cognitive-affective and physiological-motor reactions.

The most marked cognitive reaction before going into the dissecting room for the first time (first pre-session) (Table 1) was curiosity (88.5%) followed by interest (74.1%) with maximum values for MS and minimum for OdS in both cases.

This was followed by uncertainty (47.5%), disgust (17.4%), calmness (16.7%) and no problem (15.5%). Anxiety accounted for 14.4%, with a maximum value in OTS (20.6%) and a minimum in OdS (6.7%). There followed, in decreasing percentages, worry (13.4%), pleasure and displeasure with the same value (9.6%), Satisfaction (9.2%), fear (8.2%), happiness (5.6%), and repugnance (3.8%). The least common were distress (1.6%) and horror (1.4%).

These initial values vary at the end of the practical sessions (Table 2). The greatest post-session/pre-session increases are no problem (Pr1=15.5%; Post4=52.71) and calmness (Pr1=16.7%; Post4=32.9%) and those showing the greatest decreases are uncertainty (Pr1=47.5%; Post4=12.9%) and curiosity (30.8%) (Pr1=88.5%; Post4=57.7%).

As to physiological-motor reactions, there were eight classifications (Table 3). In the first place nerves (45.4%) with highest values among MS (51.3%) and lowest among OdS (25.8%), followed by stomach upsets (queasiness) (31.3%), palpitations (8.9%), trembling (5.4%), agitated breathing (5.2%), Dryness of the mouth (4.2%) (all of which showed the highest values in OTS), and the lowest levels being dizziness (3.5%) and nausea (3.3%). After the first session (Table 4) all reactions dropped, the most notable fall in general physiological reaction being that of nerves (Pr1=45.5%; Post4=5%).

After the first session a very few students reported feeling cold, loss of sleep, sore eyes, and tension; all these were at extremely low percentages, less than 1%. At no time did our students comment on “recurring visual images of cadavers”.

DISCUSSION

Bibliographical analysis shows that the majority of studies carried out both on physical and emotional reactions, or anxiety in the face of death, have been carried out with a mixed methodology, designing evaluation instruments which are not validated. Some studies are interview-based and others ques-

tionnaire-based; the moment of study also varies, being in some cases before and/or during the dissection, while in other cases students are asked to send their replies by post, etc. All of this makes it very difficult, indeed practically impossible to make comparisons between the various published results.

In our study MS did dissections and OdS and OTS observed prosections, both methods having the same educational value (Yeager, 1996).

For Penney (1985) the two reactions most noted by his students before seeing the cadaver for the first time were anxiety and interest,

Table 1: Cognitive-affective Reactions: 1st Pre session

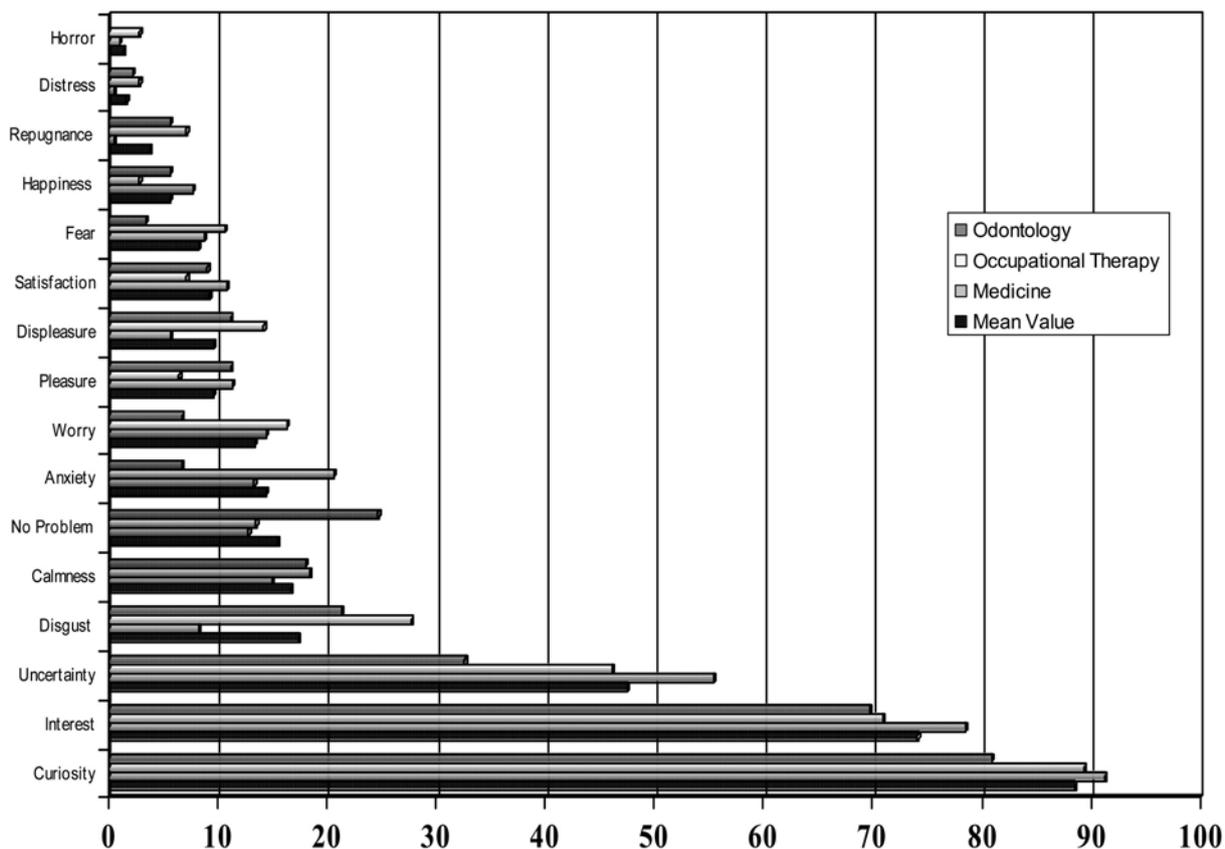


Table 2: Cognitive-affective Reactions. Differences Post 4th-Pre 1st session

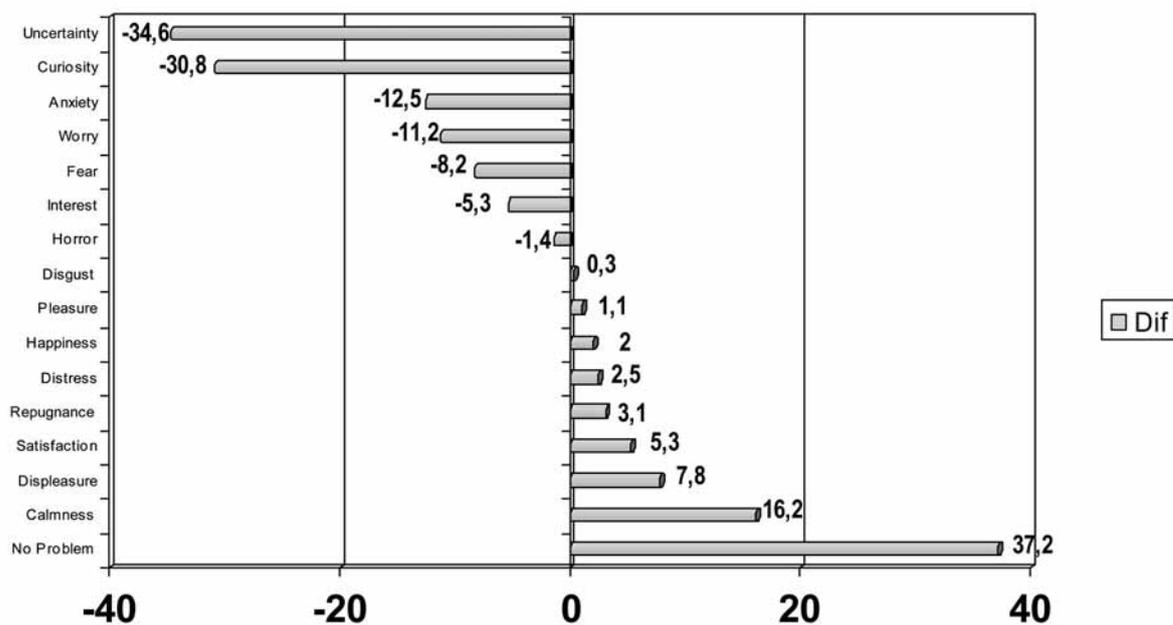


Table 3: Physiological-motor reactions 1st Pre-session

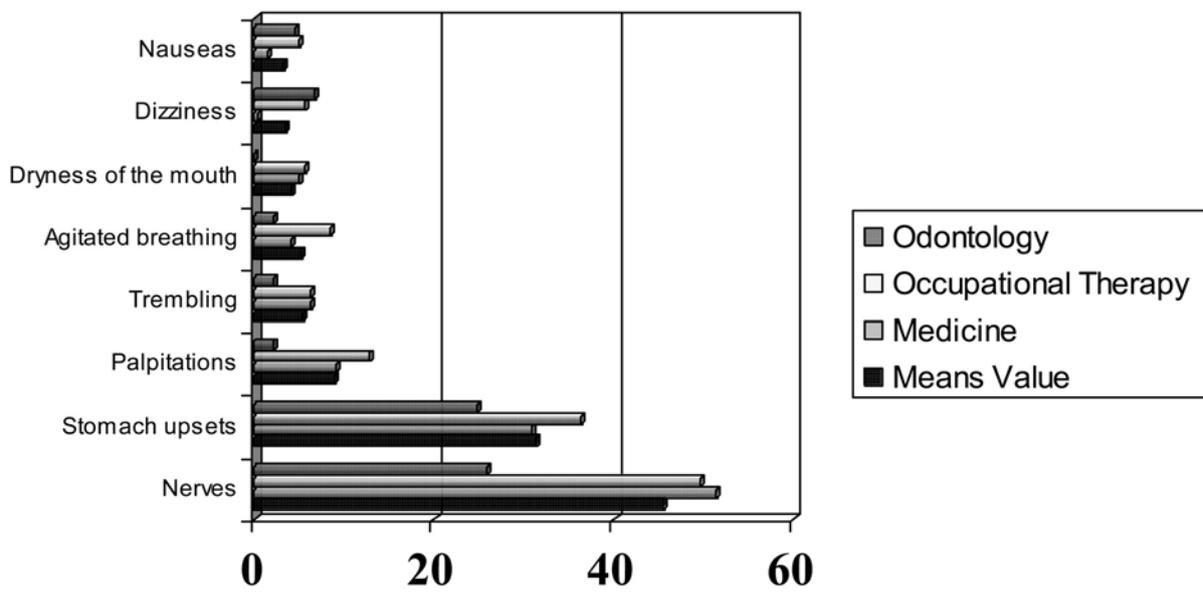
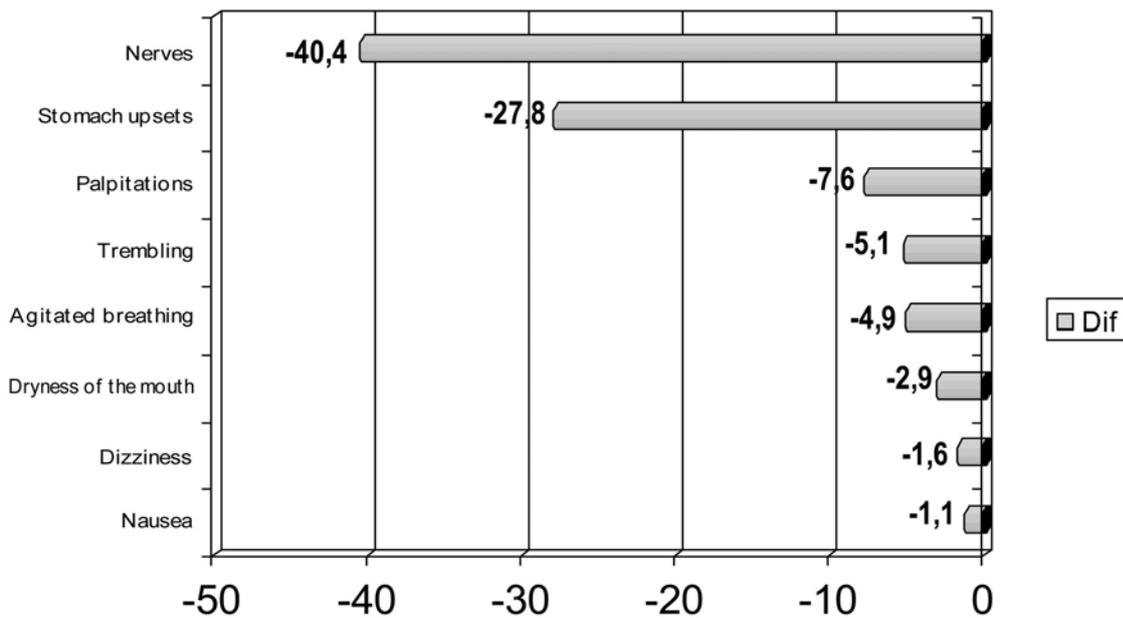


Table 4: Physiological-motor reactions. Differences Post 4th-Pre 1st session



with respective values of 75% and 32%. These figures dropped to 30% and 18% respectively after making the first incision. In our students, before seeing the cadaver, interest (74.1%) is the second most observed response after curiosity (88.5%) while anxiety (14.4%) is in seventh place. We also find differences from in the percentages relating to horror: Penney (1985) has 11% falling to 4% while our initial value of 1.4% disappears at the end of the sessions. As to the “recurring visual images of cadavers”, experienced by 38% of

the students of Abu-Hijelh et al. (1997), our students have at no time commented on this.

Physiological motor reactions have also been noted by the authors: thus, for Penney (1985) they are found in 23% of his students, for Horne et al. (1990) in 30% and for Druce and Johnson (1994) in 50%, although no individual details are given. Abu-Hijelh et al. (1997) only mention loss of appetite (22.5%) and palpitations (19%). In our case palpitations represent an average of 8.9% which drops to 1.3% at the end of the dissection sessions.

Overall, in our study, both the cognitive-affective and the physiological-motor reactions fall immediately after the first experience, which coincides with the findings of other authors (Penney, 1985, Horne et al., 1990; Evans and Fitzgibbon, 1992; Harper, 1993; Charlton et al., 1994; Druce and Jonson, 1994; Abu-Hijelh et al., 1997) and a previous pilot study by ourselves (Arráez et al., 2004).

While the results presented are preliminary, the initial data so far analyzed allow us to confirm that pupils' experience dissection as a novel situation which causes them uncertainty and high levels of anxiety before their first real practical class. However, once they come face-to-face with the situation which they feared, levels of anxiety drop considerably as the student reaches a stage of adaptation and psychological balance (Arráez et al., 2004). This suggests that we may be able to ameliorate these initial anxieties by appropriate educational interventions, such as for example by means of seminars or prior showings of audiovisual material presenting the dissection room and a practical dissection. Our results also emphasize the importance of preparing students mentally and emotionally before they begin dissection practice (Abu-Hijelh et al., 1997). Elsewhere it has been noted that student reactions to the cadaver may become evident in attitudes to later doctor-patient relationships (Shalev and Nathan, 1985). This possibility, although only theoretical, implies that dissection has a formative value in the communicative, ethical and humanist approach to patient care (Tschernig et al., 2000), which revitalizes the educational role of dissection and thus of the anatomist in the training of new health professionals.

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