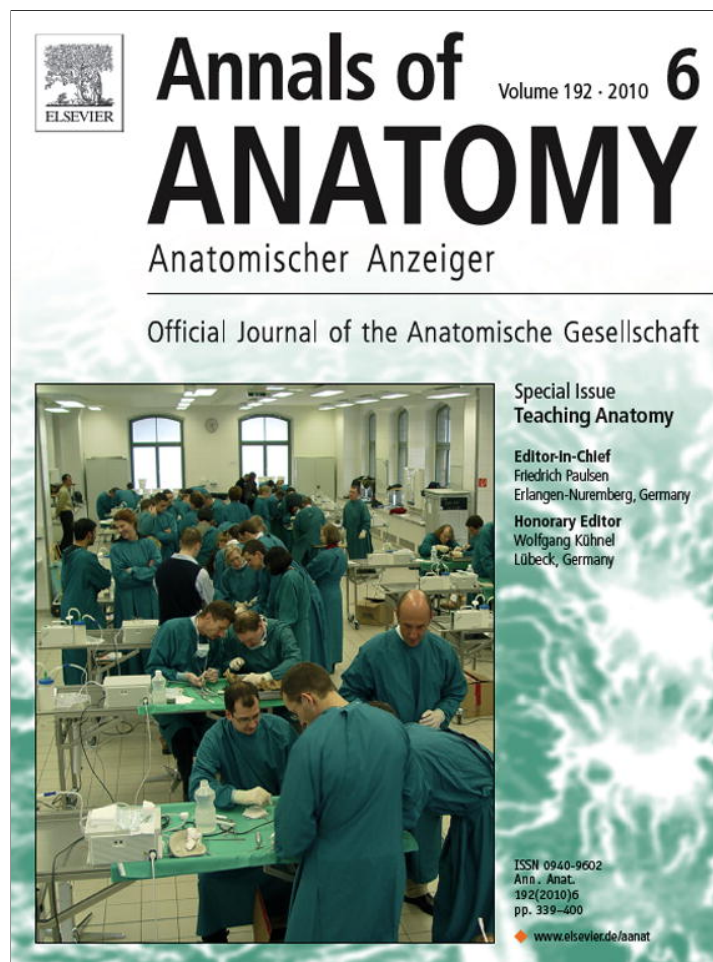


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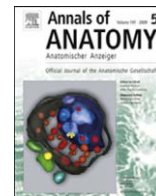
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## How can we deal with mental distress in the dissection room?—An evaluation of the need for psychological support

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### SUMMARY

The dissection course (DC) is an essential part of the preclinical medical curriculum that mediates professionalism. The process of dissecting, however, has an inherent additional stress potential. Our study determined student mental stress, their need of psychological support and factors influencing this need. A quantitative longitudinal query before, during and after the DC was performed including the Brief Symptom Inventory (BSI) as well as self-formulated questions used a 5-point Likert scale. Half of the students who anticipated dissection to be a stress factor reported that this declined significantly over time. Instead, student fear of not being able to cope with the work load increased significantly. As many as 64% of the students favored psychological support on the first course day, while 75% rejected this during the period of dissection and 39% appreciated this after the course. Moreover, 42% emphasized the importance of the funeral ceremony. Additionally, 75% documented their need for support in coping with stress and learning strategies. Gender, previous medical training, and BSI levels were identified as psychosocial influence factors. A majority of students named friends, members of their family or work-mates as partners with whom they could talk about mental stress. Our results document the need to develop an optimum support during the DC taking into account the ascertained indicators. Exemplarily the Institute of Anatomy and Cell Biology at Ulm University suggests several options like a step by step approach for optimization. These measures reduce mental stress and help students to cope with it by the development of “detached concern” towards their “first patient” as this will decisively influence their future professional behavior.

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### 1. Introduction

Worldwide and thus, in Germany as well, the dissection course (DC) is seen as an essential component of medical education and students would only reluctantly abstain from its experience (Pabst and Rothkotter, 1997; Hofer et al., 2006; Dinsmore et al., 2001; Leong, 1999; Leung et al., 2006). This subjective student opinion could also be confirmed and objectified at Ulm University in Germany (Boeckers et al., 2010). Additionally, we could prove that the DC fosters professional competencies like team spirit, development

of learning strategies, self-reflection and time management apart from the mere attainment of anatomical knowledge. These professional competencies are necessary for the student to fulfill his later medical activity as a doctor. Unfortunately, these competencies are valued too little in medical education. This is obvious in the fact that these abilities are often neglected within the medical curriculum and their mediation is left to the effects of the “hidden curriculum”. In the past, qualitative studies have shown that learning anatomy by experiencing the dissection of cadavers fosters the development of professionalism in being a doctor (Lempp, 2005; Swick, 2006; Netterstrom and Kayser, 2008). However, the dissection of cadavers in the gross anatomy course is an additional stress factor for students in addition to the very challenging learning load.

Historically, in anatomy, more precisely, the “Theatrum anatomicum”, the mere sight of a dead person was often known to be enough to engender the greatest of terror—it was reported to have serious effects such as “severe persistent melancholy” or even “a deadly convulsion which originated as a result of fright and fear of the corpse” (Platter, 1614). Therefore, it is not surprising that

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today it is still a matter of habituation and self-discipline for beginning doctors to encounter cadavers or body donors, respectively.

In Germany, Lippert and Schneller (1980) for the first time described the fears, strains or the joy and curiosity of medical students. However, these emotions quickly decreased after encountering the cadaver for the first time. Penney (1985) stressed the fact that the psychological load is remarkably high prior to commencement of the course. He described this phenomenon as follows: "The strongest reaction by medical students to dissection was in anticipation of it". Similar findings were confirmed by Horne et al. (1990), Druce and Johnson (1994), Hanock et al. (2004), Hamdan et al. (2008), and Boeckers et al. (2010). Shortly after the beginning of dissection student fear reduces significantly (Dinsmore et al., 2001; Snelling et al., 2003). During the DC mental stress again becomes more strongly evident as soon as work is done on body parts which are intimate or express human personality such as the face and hands (Shalev and Nathan, 1985) or when the cadaver still appears intact (Finkelstein and Mathers, 1990). Although, in the majority of instances, fear of dissecting the cadaver gives way to assessment and working stress (McGarvey et al., 2001; Evans and Fitzgibbon, 1992), different studies have reported that between 4 and 6% of students show difficulties in adapting which were expressed in nightmares, sleeplessness and learning difficulties (Snelling et al., 2003; Finkelstein and Mathers, 1990; Druce and Johnson, 1994; Dinsmore et al., 2001). Finkelstein actually spoke about a resemblance of these symptoms to those of posttraumatic stress disorder (PTSD). Probably this is one reason why authors like McLachlan et al. (2004) saw dissection as disadvantageous and came to the conclusion that dissection should be abolished. Indeed, this topic has been discussed controversially in the literature as other authors value the stress involved in the dissection course as an important positive experience (McGarvey et al., 2001; O'Carroll et al., 2002; Arráez-Aybar et al., 2004).

The discussion about mental distress related to dissection should not disregard that students in general are exposed to multiple stress factors which may be of occupational or private nature. Evans and Fitzgibbon (1992) identified 14 stress factors common to medical students among which the mental distress related to dissection was the third to the last. Secondly, the prevalence of psychiatric or psychic disturbances among students in the medical field is known to be higher than in the "normal" populations. Additionally, medical students differ significantly from the reference group in standardized personality tests (Boeckers et al., 2010). Overall information found in the literature is very inhomogeneous concerning this topic.

As, for the vast majority of course participants, mental stress reduces markedly in the course of time, the question arises as to which mechanisms aid in doing so. In the literature, mechanisms such as habituation, or more specifically desensitization (Gustavson, 1988), depersonalization (Druce and Johnson, 1994) or distance to DC (Egbert, 2005; Lempp, 2005) are mentioned. Dickinson et al. (1997) referred to the concept of "detached concern" and described it as "the effort to care, yet don't get too close" therefore implying not only a coping mechanism, but also the ability to develop a balance between necessary distance to the body donor and at the same time emotional proximity to him. Other coping strategies named by Snelling et al. (2003) are humor, interest, intellectualization and philosophical/religious attitudes.

What are possible predictors for the identification and support of these students in the coping process? In this respect Dickinson et al. (1997) and Hanock et al. (2004) had already reported on gender influence. Here, women reported more fear before and after the DC and agreed less to the necessity of "detached concern". The effect of previous medical training is discussed controversially. Egbert (2005) described a greater discomfort in handling of the cadaver for subgroups with previous medical training and

Tschernig et al. (2000) reported similar experiences. On the contrary, Evans and Fitzgibbon (1992) found no gender difference, but noted that mature students were significantly less stressed than other students. This aspect might be interesting to look at as age shows an influence on student willingness to body donation (Perry and Ettarh, 2009).

In conclusion, the above-mentioned studies made clear that students need psychological support before, during and/or after the DC (O'Carroll et al., 2002; Snelling et al., 2003; Arráez-Aybar et al., 2004). Fear of death and additional stress due to dissection are significantly reduced if the students feel well prepared upon entering the course (Arráez-Aybar et al., 2008). Other authors report on support which has been offered during the course (Tschernig et al., 2000). An important point in the evaluation of the DC is the funeral service at the end of the course which is undertaken by most faculties nationwide and internationally (Pabst and Pabst, 2006; Elansary et al., 2009; Tschernig and Pabst, 2001; Winkelmann and Guldner, 2004).

Up to now, the aspects described in the literature refer predominantly to Anglo-American universities. Hence, our interest has been to obtain comparable data for a German medical faculty. Secondly, we wanted to explicitly question the students themselves about time, frequency and type of psychological support they would like to have. To our knowledge this direct information has not been gathered before. These data are needed to further optimize psychological support and to improve anatomical education at Ulm University.

The gross anatomy course at Ulm University is carried out in the 3rd preclinical term and includes 114 teaching lessons. First year medical students visit the anatomy seminar with clinical cases (28 teaching lessons), as well as the course of microscopic anatomy (52 teaching lessons) beforehand. The course is also offered to students of dental medicine in their 4th or 5th term (7% of the course participants). Before the start of the dissection course students have had no contact with cadavers either by dissection or by demonstration of prosected specimens. Dissection takes place in groups of 10–12 students working on a cadaver under the direction of a lecturer and a student assistant. Laboratory dissection is subdivided into five body regions (lower extremity, upper extremity, thorax and abdomen, head and neck, central nervous system).

Study questions:

- Is the previously described mental distress reproducible in our cohort of medical students at Ulm University?
- What kind of support do students wish?
- Are there any subgroups that need more support than the average student?
- Which improvement steps could be derived from this?

## 2. Materials and methods

During the winter term 2006/2007 we developed and performed a questionnaire based on 160 self-formulated non-validated questions (5-step Likert scale: 0–4) and a standardized instrument to measure personal disturbance on a somatic and mental level (BSI: Brief Symptom Inventory).

Self-formulated items dealt with topics like demographic data ( $n = 12$ ), course value ( $n = 32$ ), motivation ( $n = 8$ ), emotion and cognition ( $n = 42$ ), religion ( $n = 6$ ), attitude towards body donation ( $n = 20$ ), social and professional competence ( $n = 21$ ) and desire for psychological support ( $n = 19$ ). Not all items were used to answer our study questions, but were the basis of our previously published data concerning professionalism in the dissection course (Boeckers et al., 2010). To reduce and comprise item data a varimax rotated factor analysis was undertaken with the self-formulated items to

**Table 1**  
Reliability values (Cronbach's  $\alpha$ ) of factors elicited by explorative factor analysis.

Factor	tp1		tp2		tp3	
	Item number	Alpha	Item number	Alpha	Item number	Alpha
Fear of mental stress	n = 8	0.795				
Fear of learning stress	n = 6	0.799				
Actual mental stress			n = 10	0.814		
Actual learning stress			n = 11	0.830		
Religious attitudes	n = 5	0.828		0.824	n = 6	0.769
Reflection/empathy	n = 7	0.632	n = 8	0.671	n = 5	0.703

identify and define factors such as (fear of) mental distress, (fear of) learning stress, religion and reflection/empathy. Factor analysis included 39 items at time point (tp) 1, 42 items at tp2 and 22 items at tp3. Items of demographic data, course value, motivation, religion, social and professional competence were not included. Factors were identified whenever at least 4 variables showed a factor load higher than 0.6. Overall factor analysis revealed six factors at tp1, five at tp2 and four at tp3. In this study we concentrated on factors dealing with mental stress, learning stress, religious attitudes and reflection/empathy. Factor reliabilities are shown in Table 1. Influence of these factors on the desire for psychological support was evaluated by Monte-Carlo significance and Spearman's Rho correlation analysis.

To objectify degree of student mental distress in our cohort we used the Brief Symptom Inventory as an instrument to measure the subjective disturbance by somatic and mental symptoms of students (reference group: n = 589 students age 18–54 years). Internal consistencies are listed between  $r = .63$  and  $r = .85$  (Franke, 2000). BSI results are presented by nine different scales, three global scores and four additional items asking about poor appetite, sleeping difficulties, thoughts about death and dying or feelings of guilt.

Written consent was gained from those students participating voluntarily in the study beforehand. The questionnaire was undertaken in an anonymous manner and given to the students prior to the course (Week 1, time point (tp1)), in the middle (Week 8, time point (tp2)) and at the end of the gross anatomy course (Week 16, time point (tp3)). Statistical analysis was performed using a licensed SPSS Version 16.0.1. software. For descriptive analysis, the Likert scale was summarized as follows:

Likert scale 0 = “no, does not apply at all” and 1 = “hardly applies” were evaluated as an attitude of “refusal”.

Likert scale 2 = “possibly applies” was evaluated as an attitude of “indecision”.

Likert scale 3 = “probably applies” and 4 = “yes, applies somewhat” were evaluated as an attitude of “approval”.

Results are described by mean value and standard deviation. Level of significance ( $*p < 0.05$ ,  $**p < 0.01$  or  $***p < 0.001$ ) was tested using non-parametrical Wilcoxon test for dependent samples or Mann-Whitney U-test for independent samples. The T-test was used whenever the Kolmogorov-Smirnov test to check for Gaussian distribution made it possible to do so. Analysis of regression was done for metric scales and correlation values were calculated either by Pearson or Spearman according to item distribution and scale.

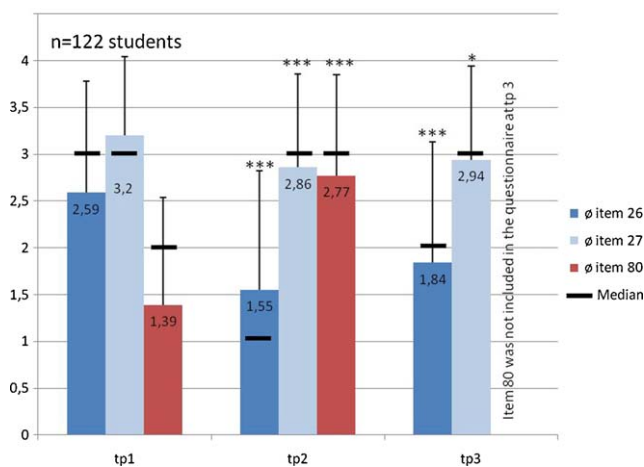
### 3. Results

#### 3.1. Demographic data

Of 371 participants in the DC, 88% of the students took part in the query prior to the course, 86% during the course and 41% after the course. A total of 122 participants returned all three questionnaires. We found a distribution of 35% males and 65% females and an average age of  $22.5 \pm 3.0$  for males and  $22.1 \pm 3.6$  years for females. Some 35% of the students had been in professional contact with the medical environment. About half of these had been occupied in the medical field as nurses or emergency medical technicians. In 34% of the cases previous training was undertaken during times of civilian or voluntary social service. Only 14% of members of this group showed an education in non-medical fields. A total of 64% of the interviewees mentioned that they had already been in close contact with a dying person beforehand and 36% of them had experienced a death in their family or in their closest circle of friends prior to the DC.

#### 3.2. Brief Symptom Inventory (BSI)

The most sensitive BSI indicator for mental stress, the global sum index (GSI) showed no significant differences between our study group and Franke's reference group of students. Additionally, the GSI did not change over time. According to the BSI, 13–22% of our students felt mentally burdened before the course began and a similar percentage of students felt this way after the course had been completed. A significant rise could be noted for the scale “anxiety” and a significant decrease in the scale “insecurity in social interaction”. Otherwise, the remaining scales did not change significantly between tp1 and tp3. In contrast to this we noted significant differences in the analysis of BSI-additional items. Wilcoxon test proved a very significant rise in “poor appetite” ( $**p < 0.006$ ) and “sleeping disorders” ( $**p < 0.01$ ) comparing tp1 and tp3 though there was a decline in “thoughts about death and dying” ( $**p < 0.002$ ).



**Fig. 1.** Descriptive data of Item 26, 27 and 80 at tp1, 2 and 3 shown by mean value and standard deviation on a 5-step Likert scale (n = 122 students). Median values are shown as black bars. Item 26: Do you consider dissecting a cadaver as an additional factor of mental stress? Item 27: If yes, do you think this additional stress due to dissection is justified in consideration of its benefit? Item 80: I am afraid not to be able to master the learning amount.



**Table 2**

Mann–Whitney *U*-test relating the wish for more detailed psychological preparation before DC and sex, previous medical training or mentally stressed students.

Variable	Mann–Whitney <i>U</i>	Z	Level of significance	Spearman's Rho
Sex	10,329.5	–2.1	0.04*	0.114*
Previous medical training	7278.5	9489.5	0.06	–0.105
Mentally stressed	3630.5	–2.099	0.036*	0.138*

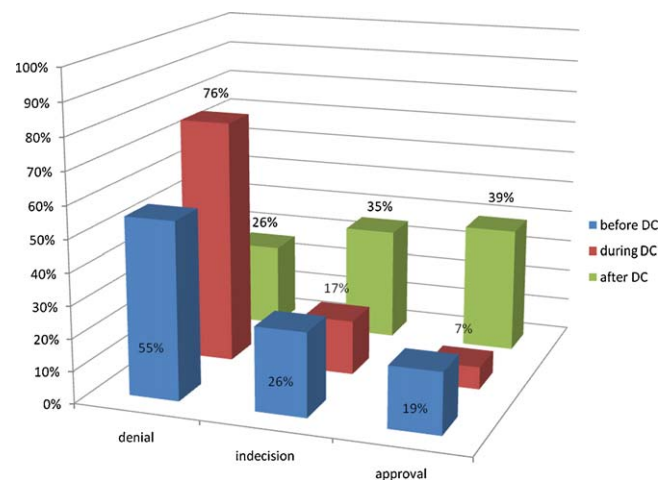
### 3.3. Self-formulated items concerning mental and learning stress

Half of the students confirmed a direct additional stress factor in the dissection of the cadaver (63%). However, this amount reduced significantly down to 30% at tp2 and to 40% at tp3. Nonetheless, during and at the end of the course at least three quarters of the students thought that the additional stress due to dissection is justified when considering of its utility. Mean and median values for these items are shown in Fig. 1. Nearly three quarters of the students indicated intensive mixed feelings fluctuating between curiosity and fear before the course started. Similarly, 28% of the participants admitted having inhibitions in regard to cutting open a dead person, but this percentage decreased during the DC to 7%.

Student fear of not being able to cope with the amount of necessary study rose very significantly over the duration of the course (tp1:  $1.39 \pm 1.15$ ; tp2:  $2.77 \pm 1.08$ ,  $***p < 0.000$ , s. Fig. 1). Of the group, 73% of the students felt a permanent strain during the DC and 81% often thought about the amount of material which still had to be mastered. During the DC the learning load dominated student private lives; e.g. due to lack of time it was difficult to follow hobbies (83%). In addition, 57% of the students stated that their interpersonal relations with friends and family had suffered. Previously published data (Boeckers et al., 2010) showed that, after the course, more than three quarters of the students thought that the DC had taught them to remain concentrated and highly productive even under great physical and/or mental stress. An opinion which had changed highly significantly over time (tp1:  $2.64 \pm 0.84$ ;  $***tp2$ :  $2.37 \pm 0.95$ ;  $***tp3$ :  $2.93 \pm 0.95$ ).

### 3.4. Need for psychological support (see Fig. 2)

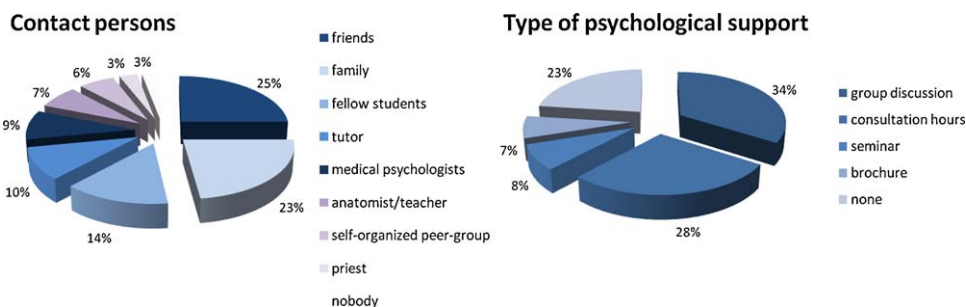
- *Prior to the DC*: About half of the test persons declined psychological support in preparation of the DC. About a quarter was indecisive and 19% recommended such an offer. Most students favored a preparation taking place on the first day together with their colleagues from their dissecting group. Only 1% of participants wished no offer at all.
- *Parallel to DC*: 75% of the students rejected continuous psychological support while dissecting. Questioned about the time extent for psychological support, 36% wished that accompanying measures should be offered more frequently during the habituation phase at the beginning of the course than later. About a quarter of the students favored a monthly appointment, 13% only before and after the DC, 15% fortnightly and 9% weekly.



**Fig. 2.** Descriptive data (in %) to the items showing the preferred point of time for the desired psychological support (before, during or after DC). Likert scale was summarized as follows: Likert scale 0 and 1 = “refusal”; Likert scale 2 = “indecision”; Likert scale 3 and 4 = “approval”. Before DC: I would have wished a detailed psychological support before the beginning of DC. During DC: I would have wished a continuous psychological support during DC. After DC: I would have wished some form of evaluation at the end of DC.

- *After DC ends*: Thirty-nine percent of the interviewees wished an evaluation at the end of the course with their table group for feedback and reflection while 26% rejected such a post-discussion. For many students the funeral service after the DC was important to express their respect and gratitude towards the body donors (43%). The ceremony was also of great value, because it allowed them to recollect that a person and not just a cadaver had been dissected (36%). No student indicated that the service is not necessary at all.

Questioned about the type of measures interviewees wished in 34% of the cases some form of group discussion and consultation hours (28%) (see Fig. 3). Contact persons in the process of coping with mental distress, according to the information provided by the interviewees, are to a great extent found within the family (62%), among fellow students or friends. Respectively, 10% could imagine talking to their tutor or with medical professionals such as psychologists. It was least imaginable to talk to priests (6%) or to anatomists/lecturers (7%). However, only 3% of the students saw no need for a conversational partner at all (see Fig. 3, right).



**Fig. 3.** Descriptive data given in percentages of study participants concerning the desired kind of psychological support and the preferred contact persons.

To cope with the ongoing pressure of learning, 75% of the students thought that support in areas of coping with stress and the mediation of learning strategies/techniques would be sensible. At least a third of those questioned wished instructions in coping with ambivalent feelings and the confrontation with death and dying. However, 25–35% stated that they did not need any support in these areas.

### 3.5. Factors influencing psychological support

Regression analysis revealed that students who felt a higher degree of mental distress measured by BSI desired more psychological support before, during or after the DC. Questionnaire results of the item “I would have wished a more detailed psychological preparation before the DC.” implied a positive correlation to students defined as mentally stressed by BSI values and to female students, but a negative correlation to students with previous medical training. Female students desired more preparation in advance to DC, while students with previous medical training had less need for a preparatory course (see Table 2).

Analysis of the factors identified by factor analysis concerning the wish for a more extensive support in preparation of the DC made the following correlations recognizable: the higher the factor “fear of mental stress” and “fear of learning stress” at tp1, the stronger the wish for a detailed preparation or accompanying psychological support. We could not find a significant correlation between the scale “religion” and the wish for preparation. Factor “reflection/empathy” positively correlated at all time points with the desire for more psychological support before or during the DC.

Moreover, as an important accessory result it became obvious that high levels in the factors “fear of mental distress” at tp1 and “actual mental stress” (Table 3) at tp2 were related to a diminished willingness to donate their own body for dissection.

## 4. Discussion

### 4.1. Is the previously described mental distress reproducible in our cohort of medical students at Ulm University?

In summary, our study could confirm that at Ulm university medical student fear and inhibitions primarily dominate prior to the DC and quickly diminish. However, in 5–10% of the cases, fears, inhibitions and disgust still remain. These data are in line with previous results published by McGarvey et al. (2001) and Snelling et al. (2003). Initially, an astonishingly high proportion of 42% of the students saw a direct mental distress due to dissection. Other authors have reported lower percentages between 20 and 30% (Penney, 1985; Nnodim et al., 1996; O'Carroll et al., 2002). The standardized BSI test was able to confirm the number of 13–22% of mentally burdened students at the beginning of DC. These data cannot be neglected and have to be taken into consideration by anatomical teachers. At the same time our study results made clear that the majority of students are able to develop coping strategies such as “detached concern”. Therefore, the study proved the DC's opportunity to mediate the medical competence of “detached concern” which can be developed only by the immediate experience of dissection and hence cannot be substituted by learning on models or by other teaching methods. Referring to O'Carroll et al. (2002), the majority of our students evaluated dissection as a positive experience, the additional stress impact which is justifiable in light of the aim of better learning.

### 4.2. What kind of the support do students need?

As expected, the level of mental and learning stress influenced the amount of desire for psychological support prior to dissection.

Students prefer psychological support ahead of the initial confrontation with the cadaver, preferably on the first day. This should be taken into account when developing an improved course structure or alternative support offers. The main persons to talk to are found within their peer-groups and clearly not within anatomy staff apart from tutors (10%). A majority favored small group or peer-group discussion immediately on the first course day.

### 4.3. Are there any subgroups that need more support than the average student?

In our investigation we could show that women especially asked for more psychological support. In contrast to previously published data (Dickinson et al., 1997; Dinsmore et al., 2001; Egbert, 2005) we found that students without previous medical training asked for more support as well. Students perceiving a greater degree of mental distress as measured by BSI mentioned a greater need for psychological support. These results could indicate a necessity to screen or identify students at risk prior to the beginning of the course, but this in fact is not very practicable. However, it might be equally effective to make the teachers aware that the above named subgroups experience more mental distress.

### 4.4. Which steps to improvement could be derived from this?

When this study was performed, our anatomy curriculum differed from the current one. Tutors who had already experienced and passed the dissection course were assigned to each dissection group. A teaching method described by Houwink et al. (2004) as a possibility for a reduction in student mental distress as more advanced students served as role models: “So having a student at our table to guide us and tell us about his or her first-day experience allowed us to calm down and actually learn.” During the course time participants always had the possibility to consult employees of the medical psychology department in case of any need. About 1–3% of the students used this offer. A special training for tutors or teachers did not take place and the curriculum did not include any support offers in preparation of dissection. An inherent part of the DC at Ulm university was, and still is, the funeral service at the end of term. This ceremony is actively accompanied by the student congregations of both denominations and is prepared and carried out by the students themselves. Through its festive setting and the large number of visitors it has gained a respected position in the university's and city's life.

Today we have expanded our offer for psychological support. According to our study results and the present literature (McGarvey et al., 2001; Penney, 1985) this expansion focused particularly on an optimized mental preparation of the students *before dissection*: initially, we offered the opportunity to visit and inspect the dissection lab prior to the course without any contact to cadavers. We gave information about body donation and fixation techniques. Since summer term 2008 we have regularly offered anatomical demonstrations with prosected material presented by advanced medical students in the Theatrum anatomicum. Apart from a repetition of anatomical knowledge, a major teaching objective is the reduction of fear and inhibitions prior to the first confrontation with the cadaver. Nnodim et al. (1996) had already described this as a suitable method to reduce mental distress and Arraez-Aybar et al. recommended such a “step by step” approach in 2004. Anatomy demonstrations are not an obligatory activity, but more than half of the student cohort visited them regularly. We demonstrated body regions of the musculoskeletal system in parallel to the anatomy seminar with clinical cases. Analogously, organ systems were presented parallel to the course of microscopic anatomy. All together, students have the chance to approach the cadaver within 6 teaching sessions first starting in the confrontation with isolated body

**Table 3**

The 10 items included in factor “actual mental stress” at tp2 and their loads in factor analysis plus the factor’s Chronbach’s alpha without this item.

Item	Load	Alpha if item deleted
Item of factor “actual mental stress” at tp2 (Item number = 10; alpha 0.814)		
1. I think is strange to be happy at the dissection table.	0.826	0.800
2. I am disgusted by the thought of dissecting a cadaver.	0.753	0.793
3. Thinking about dissection I feel inhibited to cut open a human being.	0.743	0.790
4. These pictures, smells and situations were awkward and disturbed my concentration.	0.690	0.780
5. I fear to meet awkward smells and sights in the dissection course.	0.681	0.794
6. If I suppress my emotions during dissection, it is easier for me to concentrate on learning and dissection.	0.620	0.802
7. Do you consider dissecting a cadaver as an additional factor of mental stress?	0.611	0.794
8. Sometimes even outside the dissection room pictures, smells and situation of the DC appear in front of my eye.	0.556	0.796
9. The DC is a cause of mental distress.	0.508	0.794
10. I dreamt of the DC.	0.297	0.829

parts, but finally with a complete cadaver. They become familiar with the typical smell in the dissection room and the haptic experience of different tissue types. Participants in the anatomical demonstrations reported a significantly reduced level of mental distress on a visual scale compared to students of a control group (unpublished data). Meanwhile, we optimized tutor education by special teaching inputs regarding possible mental distress of the participants and how to deal with it. On the first day of dissection we introduced a live video demonstration about the cadaver inspection, thus allowing our students an approximation by indirect confrontation via video screens. The immediate confrontation follows in a structured way by filling in an admission form sheet, similar to those used in clinical practice. Day one ends with a brief feedback and reflection session in small groups under surveillance of an advanced peer-student. Knowing from our study that mental distress reduces significantly but does not vanish completely during the course period, we tried to motivate students to talk about the dissection process by asking the students to document the group’s dissection process in follow-up sheets at the end of each lab day on a voluntary basis. Similarly, our students have the opportunity to creatively express their impressions on the cadaver by designing a poster as a team project. Ferguson et al. (2008) or Shapiro et al. (2009) described similar projects which are extracurricular and not obligatory for passing anatomy exams. Most posters touched on subjects like pathology found during dissection, possible causes of death, anatomical variabilities or general topics like body donation, case reports about their personal experiences in the DC or an analysis of anatomical textbooks. These posters are presented at the end of term to fellow students and faculty members.

Our study confirmed the importance of the funeral service as an instrument for students, to harmonize impressions of the cadaver and the history of a human person after the course again. Both aspects of the body donor meet in this ceremony. It is a crucial moment for the students to express their gratitude by readings, poems and personal reflexion. Therefore we have retained this as a measure of mental support.

Student learning stress gained increasing priority throughout the duration of the course as compared to mental stress. According to this study, up to 75% of the participants regarded any type of “learning support” as essential. An aspect which anatomists should definitely take into account, but as this study focussed on mental distress and its support, we only briefly want to touch on the load. It is my personal impression that these 75% do not feel left alone because of an insufficient teaching concept, but partly because of time pressure as teaching hours have been reduced markedly in the past to a critical level. The student’s search for learning advice is confronted by this time limit pressure. We try to meet their concerns in our anatomy lecture, a detailed catalogue of learning objectives, increased periods of self-study and the support of the tutor at each table. Serious learning problems are transferred to pro-

fessionell university institutions that mediate methods of how to learn learning.

Our data have to be judged critically as they were not gained in a multicentred manner and questionnaire return rate especially at tp3 was low. The return rate might be acceptable compared to other studies as the absolute number of participants was satisfactory.

Mental distress in the DC demands anatomists’ attention. Teachers have to assist students in developing the professional ability of “detached concern”, especially as it has been reported, that absence of this competence influences the future professional life leading to symptoms like exhaustion, “burn out”, cynism or impaired empathetic patient relationship. Montross (2007) described this as follows: “Clinical detachment and empathy have to be in balance for physicians to be fully functional and retain their humanity”. Saylam and Coskunol (2005) and described that this competence could even be a predictor for assessment results in state examinations.

Robbins et al. (2008) mentioned different strategies of dealing with mental distress in the DC. Students might learn faulty strategies if they are not guided by their teachers in the process of developing stress coping strategies which help students to integrate the picture of a human memorial person into the experience of the body as a learning instrument. If the student does not develop this professional ability of “caring for the body and yet not getting too close”, this could lead in the long term to “burn out” or a non-empathic treatment of patients (Thomas et al., 2007). This is a process which must be promoted in a curricular manner and can already begin in the period of preclinical education (Robbins et al., 2008). We are convinced that the teacher represents a major determining factor as he acts as a role model. If the teacher does take his students’ mental distress into consideration, if he does not take on his role model function and if he does not help them, on a curricular or extracurricular basis, to balance their feelings as described above, he himself fosters those factors which contribute to a teaching and medical culture of cynicism and decreasing empathy (Hafferty and Franks, 1994; Hojat et al., 2004).

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