5FF1 (23108)
The relationship between extrinsic motivation and metacognitive skills of medical students

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**Background:** Motivation can be divided into intrinsic motivation and extrinsic motivation. The four dimensions of extrinsic motivated behaviour are external, introjected, identified and integrated regulation. Extrinsic motivated behaviour is often associated with external factors such as rewards, promotions, family and peer influences among others. Metacognitive Skills revolves around the term metacognition which was first introduced by John Flavell in the 1970s who described metacognition as the knowledge concerning one's own cognitive processes or anything related to them and identified two dimensions of metacognition; regulation and knowledge of metacognition. These skills also referred to learners' automatic awareness of their own knowledge and ability to understand, control, and manipulate their cognitive processes. Metacognitive skills is essential and should be prioritised to teach future doctors to be independent and lifelong learners who are able to continuously assess the outcome of their actions to build new knowledge.

**Summary of Work:** Two inventories, Extrinsic Motivated Behaviour Inventory and Metacognitive Skills Inventory has been adapted from Metacognitive Skills Inventory (MAI) by Schraw & Dennison (1994) and further developed to be administered to the first year medical students (n=200) of University of Malaya. Pearson Correlation was used to study the correlation of the students' extrinsic motivated behaviour and metacognitive skills.

**Summary of Results:** 165 (80.49%) first year medical students completed both the inventories. The correlation revealed that the extrinsic motivation does have an effect on students' metacognitive skills.

**Discussion and Conclusions:** Extrinsic motivation does have an effect on students' metacognitive skills and are essential components to be included in selecting medical students.

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5FF2 (20898)
Motivating students to study every day

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**Background:** For decades, students attended classes without having read the topic and professors lead classes by holding a conference. Later, at best, students check the topic in house and so they consider to have done the necessary to learn. Reality is that most of what students hear is forgotten and what they manage to learn does not have a clear meaning of its usefulness and remains in his/her mind as isolated knowledge.

**Summary of Work:** We designed a course based on clinical cases. Previous to the lesson, students receive a clinical case with questions. Next day, they must have these questions answered in order to participate in their discussion. In this way, students have a guide to study that helps them to focus on the most important facts and learn how to apply this knowledge to solve clinical problems, developing their clinical reasoning.

**Summary of Results:** This methodology has been used for the last two courses. During the class, students participate actively in discussions regarding the answers and they learn about its usefulness to solve health problems and its importance in their future clinical practice. At the end of the course it is notable how students face clinical problems by using clinical reasoning and have learned to study looking for how to apply the facts learned in the clinic.

**Discussion and Conclusions:** Giving students a case to be solved is more motivating to study than if they only have to read a subject without a well-defined immediate objective.

**Take-home messages:** The learning of medicine is more effective when students face clinical cases.
**5FF3 (19458)**

The Correlation Between Achievement Goals, Learning Strategies, and Motivation in Medical Students

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**Background:** The purpose of this study is to investigate the pursuit of achievement goals in medical students and to assess the relationship between achievement goals, learning strategy, and motivation.

**Summary of Work:** Two hundred seventy freshman and sophomore premedical students and sophomore medical school students participated in this study, which used the Achievement Goals Scale and the Self-Regulated Learning Strategy Questionnaire.

**Summary of Results:** The achievement goals of medical students were oriented toward moderate performance approach levels, slightly high performance avoidance levels, and high mastery goals. About 40% of the students were high or low in all three achievement goals. The most successful adaptive learners in the areas of learning strategies, motivation, and school achievement were students from Group 6, who scored high in both performance approach and mastery goals but low in performance avoidance goals. Performance approach goals are related to the deep, metacognition, time management, and task value categories, and are the best predictor of academic achievement. Performance avoidance goals were negatively associated with academic self-efficacy and action control. Mastery goals were the best predictor for most of the learning strategies and motivation.

**Discussion and Conclusions:** Based on the results of groups of students who have high levels of performance approach and mastery goals, those who have a low level of performance avoidance use diverse learning strategies and have the best academic scores, and the mastery goal is the strongest predictive variable for learning strategy and motivation; such a result strongly suggests how medical students' parents and instructors should adjust students' achievement goals.

**Take-home messages:** Instructors should closely observe students' achievement goal orientation and at the same time enhance performance approach goals or mastery goals and drop the level of performance avoidance goals.

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**5FF4 (23050)**

Does Emotional Intelligence imply better academic performance?

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**Background:** Several reports have established a strong association among the intellectual quotient and the academic performance. However, during the last two decades, a growing body of scientific evidence has begun to establish a relationship between emotional intelligence and the results obtained in different areas of the social environment of people, including academical performance.

**Summary of Work:** Objective: To research about the relationship between emotional intelligence and academical performance.  
Methods: 31 students, aged between 18 and 27 years, were enrolled in the present study. The Emotional Quotient Inventory EQ-1 (IE) was applied to all the students; the results obtained were correlated with their aggregated mean of academic qualifications. The correlations were validated by the tests of Pearson and Spearman.

**Summary of Results:** Only the domains of Intrapersonal and General Mood showed a significant correlation with academic performance.

**Discussion and Conclusions:** In relation to these results, emotional intelligence appears to be only a part of the factors related to academic success.

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5FF4 (23050)

Does Emotional Intelligence imply better academic performance?

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**5FF5 (21230)**

**Communication Skills and Emotional Intelligence**

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**Background:** Emotional intelligence (EI) is a kind of intelligence of people’s self-perceptions of their emotional abilities together with an awareness of the emotions in others and the ability to manage them. EI with respect to a number of issues related to relationship between the physician and patient including patient satisfaction and medical education and academic performance. In this study we aimed to determine the relation between communication skill scores of phase 2 medical students and emotional intelligence.

**Summary of Work:** The study is conducted in Gazi University School of Medicine in November 2013. Totally 366 (89.3) phase 2 students participated, after controlling of data 290 (70.7%) of them were included to the study. We used Turkish version of TEIQue-SF (Trait Emotional Intelligence Questionnaire- Short Form) to measure global trait intelligence. Turkish validity and reliability of the scale was conducted. We got the students’ communication skill scores from the Communication Skill Council of the Medical School.

**Summary of Results:** The study group comprised 290 students whose ages are between 19-22 years old and 49.5% of them were female. The mean scores of TEIQue-SF and subscales well-being, self-control, emotionality, sociability, and also communication skill scores were 94.6±16.1 (min37-max134), 19.4±4.7 (min4-max28), 18.2±4.5 (min4-max28), 18.9±3.6 (min8-max28), 19.1±4.1 (min4-max28), and 94.1±7.9 (min61-max100), respectively. The emotionality and communication skills scores of female students were higher than male students (p<0.05). The Pearson correlation coefficients between communication skills score and TEIQue-SF total, well-being, self-control, emotionality, sociability scores were 0.04, -0.06, 0.07, 0.04, and 0.03 respectively.

**Discussion and Conclusions:** The definition and measurement of EI deserves attention because this essential humanistic aspect of medicine and communication. Female students have higher communication skill scores.

**Take-home messages:** In communication skills education developing emotional intelligence of the participants is important.

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**5FF6 (21938)**

**Emotional intelligence and academic performance in the first year of undergraduate degree programmes**

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**Background:** Links between Emotional Intelligence (EI) and academic performance have been reported. This study aims to explore the relationship between Emotional Intelligence (EI), academic performance, and module type in the first year of undergraduate radiography programmes.

**Summary of Work:** All first year undergraduate students from the BSc Diagnostic Radiography and BSc Radiotherapy at an UK university and the BSc Radiography programme at an Irish university were invited to complete an online Trait EI questionnaire on three time-points during the 2012-2013 academic year. Associations between EI scores and assessment scores, awarded across all modules, were then explored using Spearman’s Rank correlation.

**Summary of Results:** No strong correlations between assessment scores and Global EI score or the Well-being, Self Control, Emotionality or Sociability subdomains were evident for any of the core modules across the three programmes. The strongest positive association between assessment scores and Global EI(r=0.52) was found for one of the BSc Radiotherapy modules while the strongest negative association was in the Sociability domain for the BSc Diagnostic Radiography programme (r=-0.38). While the lack of a strong correlation for academic / theoretical modules was not an unexpected finding the lack of any strong correlation between EI and assessment in clinical modules was more surprising and may be due to the fact that such early exposure to clinical teaching and assessment may not impact on EI as much as clinical immersion in later years.

**Discussion and Conclusions:** No evidence of a strong association between EI and academic performance was found in the first year of these undergraduate degree programmes.

**Take-home messages:** The suggested link between EI and clinical performance remains uncertain.
Achievement goals of medical students: Is there any difference between first year students and graduates?

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Background: First year medical students and graduates completed a short questionnaire about their achievement goals including learning goals, challenge goals, outcome goals, ability goals, normative outcome goals, and normative ability goals. The questionnaire (Grant & Dweck, 2003) contains 18 items using a 7 point scale from 1 “I do not agree at all” up to 7 “I totally agree”.

Summary of Work: Students in their first year (n = 58) as well as students who had just passed their final exams (n = 63) were included in this examination. Means were compared by using multiple t tests.

Summary of Results: Graduates compared to first year students showed significantly lower normative ability goals (p < .001), normative outcome goals (p < .05), and ability goals (p < .05). However, they did not differ significantly regarding learning goals, outcome goals, and challenge goals. Interestingly, those goals differing between both groups were characterized by lowest average scores, while those goals without group differences scored higher on average.

Discussion and Conclusions: Longitudinal research is needed to investigate if students adapt their achievement goals according to the demands of their studies. Moreover, the relationship between specific learning goals and performance should be examined.

Take-home messages: For effective learning it is recommended to employ multiple teaching modalities.

Learning Style Preferences among Undergraduate Students of a Medical College in South India

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Background: Medical Curriculum not only involves theoretical learning, but also includes gaining skills in practical and clinical aspects which makes it unique. The present study was carried out among the undergraduate Medical students to find out the learning style preferences and the factors influencing it.

Summary of Work: The crosssectional study was carried out among 180 first and final year students of Kasturba Medical College, Mangalore, South India. The data was collected using self administered semi structured questionnaire. The students’ learning preferences were assessed using VARK questionnaire. The collected data was analyzed using SPSS Version 11.5. The study was approved by the Institutional Ethics Committee.

Summary of Results: A total of 180 students were assessed for their learning preferences of whom 61.7% were females and the mean age of the study subjects was 20.2. Majority (63.9 %) of the students preferred reading as a method of learning followed by 40% who preferred hands on approach. Based on the VARK assessment 47.8% of the students preferred single modality of learning and 21.1% of the students preferred quadrimodal approach.

Discussion and Conclusions: Students preferred a combination of all four modalities of learning like Aural, Reading, Writing & Kinesthetic.

Take-home messages: For effective learning it is recommended to employ multiple teaching modalities.
5FF9 (20379)  
Learning style and Grade point averages

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**Background:** Learning styles are likely to vary among medical students. However, little is known whether learning style would be associated with academic performance.

**Summary of Work:** The Index of Learning Styles (ILS) questionnaire was assessed during orientation when entering the new academic year. Last academic year’s GPA was obtained from registry records. Association between different type of learning style by domain and student year was tested using chi square test. Association between learning style and High GPA (GPA ≥ 3.0) were tested using logistic regression adjusting for student year and sex.

**Summary of Results:** Most learning style domains did not vary by year except for Domain 1 (active/reflective). Students at higher years of medical school have more active learning style and less reflective learning style. Controlling for year and gender, most learning style domains were not associated with high GPA except for Domain 3 (Global/Sequential). Sequential learning style was associated with higher GPA compared to balance and global learning style (p-value trend=0.02).

**Discussion and Conclusions:** All types of learning style were present among medical students. Most learning style domains did not vary by year in medical school except where higher year in medical school was associated with more active learning style than reflective. This may correspond to increasing hands-on clinical rotations during later years. Most learning styles were not associated with higher GPA, except for sequential learning style. As learning style in this domain may not change though medical school, teaching methods to suit more balanced and global learning style should also be incorporated.

**Take-home messages:** As many types of learning styles exist, a variety of teaching methods should be considered to meet the diverse learning needs.

5FF10 (21472)  
The correlation of learning strategies and secondary factors associated with academic performance in medical school: Systematic review of the literature

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**Background:** We conducted a systematic review of the evidence of the effects that learning strategies and secondary factors had on academic performance during medical school.

**Summary of Work:** A keyword search of PUBMED and a hand search of 6 major medical education journals with chaining of reference lists up to October 2013. The PICO framework was utilised to guide the inclusion or exclusion of studies. The search strategy identified 487 relevant articles, 21 of which met the inclusion criteria and were chosen for systematic review.

**Summary of Results:** A standardised data form was developed to extract the information. A study scoring indicator scale was designed to assess the quality of the studies chosen for systematic review. We categorised the factors into 5 main thematic dimensions: learning approaches, learning styles, conceptions on learning, student characteristics and clinical experience. This validity assessment was applied to each dimension to objectively compare the level of evidence.

**Discussion and Conclusions:** Several studies showed that strategic learning approaches, although not commonly used by medical students, yielded the best academic outcomes whilst surface approaches returned poorest. Meaning orientated learning correlated with the highest-grade performance. Reproduction orientated learning was negatively correlated with high academic achievement. High quality learning practices were promoted by self-directed, problem based and vocationally relevant activities. Individual student characteristics played only minor roles. This systematic review concludes that strategic learning yields best academic performance and highlights the need for further study in this area.

**Take-home messages:**  
• Strategic learning yields best academic outcomes  
• Secondary factors play an important role  
• Further study is required
Changes in Self-Directed Learning During the First Two Years of Training Process in a Chilean Medical School

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**Background**: Several educational organizations emphasize that self-directed learning is critical for the future of healthcare professionals. However, no studies were found on changes occurring in self-directing learning during the training process. Therefore this study (sponsored by FONDECYT 1140654) analyzes the evolution in self-directed learning, during the first and second year of medical training in a Chilean university.

**Summary of Work**: A longitudinal study was performed. A sample of 116 first year medical students (51.72% women) was surveyed applying Fisher’s Self-Directed Learning Scale (validated in Chile by Fasce et al.). Students were asked to complete the scale in 3 different opportunities: at the beginning of their training process (measurement 1), at the end of the first year (measurement 2) and at the end of the second year (measurement 3). To evaluate the average variation of students’ scores in these 3 applications of the scale, a Repeated Measures ANOVA was performed using STATA 11.0 SE.

**Summary of Results**: Significant variations in Planning skill and Desire to learn sub-scales were found. Intra-subject contrast was statistically significant for a quadratic relationship between time and self-directed learning. Significant differences were also identified between three measures, for Self-Confidence and Self-Evaluation, however for these cases intra-subject contrast showed the existence of a linear relationship. Finally, no significant changes were identified for Self-management sub-scale.

**Discussion and Conclusions**: This is a first evidence that, during the training process, changes occur in self-directed learning of medical students.  
**Take-home messages**: Self-directed learning decreases during medical students training process. How harmful could be training programs for students’ skills?

Students’ Satisfaction with Lecture vs PBL at Medical School with Traditional Curriculum

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**Background**: Since 1999, Kyungpook National University School of Medicine (KNUSOM) which has traditional curriculum has conducted PBL for the second-year medical students. This study is to evaluate the students’ satisfaction level with the lecture vs PBL using questionnaire.

**Summary of Work**: The target students in the survey were the second, the third, and the fourth year medical students who experienced PBL. Among 327 target students, 283 students participated in the survey. We analyzed survey data of 262 students excluding the invalid survey materials of 21 respondents. The questionnaire included 13 items. 11 questions were measured on the scale of 7 and the 2 questions were descriptive ones. The questionnaire showed very high coherence with the coefficient of Cronbach’s α 0.993. The survey was conducted in April 2012, and the data was analyzed using SPSS version 19 in terms of frequency, independent sample t-test, and two-way ANOVA.

**Summary of Results**: This study showed that the overall satisfaction with lecture was 5.37 and that of PBL was 5.50, which was statistically insignificant. There was a higher satisfaction score in lectures in three domains out of eleven, which were necessity, effectiveness, and acquisition of medical knowledge. However, students were more satisfied with PBL in six domains, which were long-term memory, communication skill, clinical reasoning, self-directed learning, cooperation, and evidence-based learning. There was no difference between satisfaction with lecture and PBL in two domains, which were motivation, and integrated understanding of medical knowledge.

**Discussion and Conclusions**: The results show that more students were satisfied with PBL than lecture-based teaching in the domains of clinical reasoning with knowledge application, problem solving with communication, and self-directed learning. At medical school with traditional curriculum, PBL could work as a very useful tool for nurturing students’ ability of acquiring effective reasoning, collaboration,
communication and team skills if PBL program is designed to run to match the ongoing traditional curriculum content.

**5FF13 (23186)**

Supporting Students using a Q&A Forum

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**Background:** In 2013 Manchester Medical School introduced a new module focused on Quality Improvement (QI). This groundbreaking module was designed to give students an insight into QI in modern healthcare in the context of a clinical environment. Critical to the module’s success was the provision of accessible academic support. It was recognised that many students would require specialised advice about research skills, audits and statistics. Around 20 Advisors such as hospital librarians, Audit team managers and statisticians were identified, scattered across numerous teaching hospitals and the University. There were too few Advisors to directly supervise over 400 students, especially as the students themselves had been assigned to clinical placements across the North-West of England.

**Summary of Work:** The solution was to provide students with an online Question and Answer forum during the module. Students were able to post questions to which students and Advisors could respond.

**Summary of Results:** Engagement exceeded expectations. Within two weeks over 90 questions had been posted by students with over 300 contributions from students and Advisors. Over 97% of the cohort visited the forum, viewing an average of 13 questions. The quality of the questions and the responses was notable; students asked a wide range of in-depth questions that were relevant and probing, whilst the Advisors provided insightful and supportive responses.

**Discussion and Conclusions:** This method of delivering student support proved very effective for a geographically dispersed group of students and Advisors.

**Take-home messages:** Forums can be highly effective in delivering support to medical students.

**5FF14 (20445)**

in-Training, the online magazine for medical students: An innovative approach to medical student community building

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**Background:** The socialized hierarchy and ‘hidden curriculum’ of medical education promote student burnout and sap medical students of their optimism for the profession of medicine. Medical students must be empowered to communicate with their peers to advocate for improvements in medical education and to build a collective sense of self-worth as part of the profound transformation they undergo as physicians-in-training.

**Summary of Work:** To achieve these goals, we created in-Training (http://in-training.org), a dedicated student-written, peer-edited online publication that promotes community building among medical students worldwide. As a virtual community for students to reflect on their experiences and share their passions with their colleagues, in-Training helps students to cope with the rigors of medical education and to build a culture of open discourse among fellow physicians-in-training.

**Summary of Results:** Over the past 18 months, in-Training has met the pressing need for a communal gathering place for the medical student body. Over 260 articles by 130 medical students at 60 institutions across the United States, Canada, India, Ireland, United Arab Emirates, and Netherlands have been published on in-Training.

**Discussion and Conclusions:** in-Training has become a forum for medical students to share their thoughts on medical education and healthcare, showcase their literary and artistic endeavors, and discuss the arts, politics, science and literature with their peers across the globe.

**Take-home messages:** in-Training is an online publication that overcomes the current geographic isolation of medical schools to encourage self-reflection, communication and collaboration among medical students and promote the authenticity and independence of the medical student voice.
Correlation between academic record of high school students and achievement of the First year Pre-medical students

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Background: There are three projects for admission to study medicine in the Faculty of Medicine Thammasat University; 1) national admission via Consortium of Thai Medical Schools (COTMES), 2) the Collaborative Project to Increase Production of Rural Doctor (CPIRD) and 3) the distributed medical program; One District One Doctor (ODOD). Even the first year medical students came from different projects and different background, they studied pre-medical science together in the same class and were assessed by the same evaluation.

Summary of Work: The first objective is to study the differences in pre-medical academic achievement of 3 projects. The second objective is to study the correlation between academic records of high school level and pre-medical academic achievement of 3 projects. We reviewed data of 162 first year medical students of Thammasat University of academic year 2011. Grade point average (GPA) from high school and GPA from pre-medical year were reviewed and compared for correlation by using SPSS.

Summary of Results: The medical students from COTMES had the highest GPA compared with the students from CPIRD and ODOD with the mean GPA of 3.55, 3.42, and 3.34 respectively (p=0.05). The GPA of Mathematics, Science and English has a positively significant statistical correlation with pre-medical GPA. (p=0.05).

Discussion and Conclusions: Student from CPIRD and ODOD had lower GPA or academic achievement than COTMES project. Mathematics, Science and English GPA from high school positively correlated with pre-medical achievement.

Take-home messages: High school academic background is important for achievement in medical school. This would bring to consideration of student admission criteria.