Its all about me to Its all about us: The influence of social comparisons across the medical training continuum

Research Highlights
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Purpose: Providing trainees with norm-referenced information (i.e. social-comparative feedback, SCF) is a common method of delivering feedback during medical training. It is also an efficient way for educators to deliver unbiased and uniform feedback. However, this leaves it up to trainees to interpret its meaning. SCF has been shown to influence a learners psychological and behavioral performance and learning outcomes (1). There is evidence that medical students respond to SCF differently than non-medical learners (2). Unlike previous studies with non-medical learners, positive SCF does not facilitate learning while negative SCF, irrespective of task or feedback provider, is psychologically and behaviorally detrimental to novice medical students learning motor skills (2). It is not currently known whether this sensitivity to below-average feedback persists across the medical training continuum. The purpose of this project was to investigate the influence of social comparisons on trainees at two distinct timepoints during the medical training continuum beginning of the final year of medical school prior to transitioning to residency and once residency begins.

Methods: Participants that were beginning their final year of medical school or first year of residency at two different medical schools were eligible to participate in this multi-institutional review board approved project. Across two years, we asked 145 fourth-year medical students and 488 incoming interns from two medical schools to choose one of the following statements and briefly explain their decision: I would rather receive a 60% if my peers received a 50% OR I would rather receive an 80% if my peers received a 90%.

Results: Data across two years and both institutions reveal that 71% of the fourth-year medical students yet only 35% of the incoming interns chose the statement that reflected receiving a lower grade (60% versus 80%) in order to be above their peer group average. In addition to the dramatic shift away from preferring to be above-average, the incoming intern comments emphasized team-based thinking (e.g. I would like to be surrounded by dedicated, committed peers that I can learn from) as opposed to self-oriented thinking suggested by the fourth-year medical student comments (e.g. I don’t want to be below average).

Discussion: The majority of the responses from the final-year medical students demonstrate that they are influenced by social comparisons and sensitive to below-average feedback, which is in line with previous research with junior medical students (2). The current study extends this work by providing evidence that the sensitivity to below-average feedback still persists as medical students progress into the final year of their undergraduate medical training. In this study, senior medical students were willing to choose a less favorable relative outcome (60% versus 80%) as long as they were above the average. Our findings also suggest there may be a decrease in the impact of social comparisons as medical students transition to residency, which could be due to the overall changes in training goals from medical school to residency.

Significance: As we keep moving towards a data-driven era, it is essential to further study the impact of social comparisons so that we can optimize meaningful feedback and learning across the
continuum.
Contact-based education & barriers to treating severe mental illness: A non-randomized, controlled trial

Research Highlights
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Purpose: Patients with severe mental illnesses (SMI) such as major depression, schizophrenia, and bipolar affective disorder face between 13 and 30 years in reduced life expectancy when compared to the general population. Numerous studies suggest that these early mortality rates are not due to the sequelae of mental illness itself (e.g. suicide), but rather to the poor management of comorbid common physical illnesses such as cardiovascular, metabolic, viral, and respiratory tract diseases. Along with systemic issues such as an absence of integrated care, the greatest barriers to management of comorbid health concerns in patients with SMI are the attitudes of medical practitioners, stigma within the healthcare system, and inadequate screening and referral. Despite awareness of these issues and the efforts of educators; negative attitudes, affect, and behavioral intentions toward patients with severe mental illness (SMI) are actually worsened during undergraduate medical education. Education which provides contact with patients with SMI has been found to be an important antidote. The authors conducted a longitudinal, non-randomized, controlled trial of the National Alliance on Mental Illness Provider Education Program a 15-hour contact-based curriculum on the attitudes, affect, and behavioral intentions of MS3 students at a single institution.

Methods: Two-hundred and thirty-one MS3 students at a single institution were invited to participate. Forty-four participated in the NAMI curriculum and 89 participated in the control (RR=57%). Participants in both conditions completed questionnaires assessing attitudinal, affective, and behavioral aspects of caring for patients with SMI at pre-test, one-week post-curriculum, and at 12-weeks follow-up. Owing to the elective nature of the course offering and resulting non-random assignment, covariates including age, gender, race, history of mental illness, and personality factors were controlled for in the analysis.

Results: Repeated Measures indicated that, after accounting for differences between the two conditions owing to non-random assignment, there was a large, statistically significant time by condition interaction (F = 3.24, p < .0001, ^2=.42) which was maintained at 3-month follow-up (F = 1.77, p < .05, ^2=.54). The largest areas of improvement were in behavioral intentions during an acute psychiatric emergency; intentions to engage in shared-decision making with patients with SMI, feelings of anxiety in working with patients with SMI, and beliefs about family blameworthiness for SMI.

Discussion: While medical students typically receive core training in diagnosis and somatic treatments of patients with SMI, the nature of this training may not adequately address the attitudinal, affective, and behavioral barriers to providing competent care. The present study suggests that a contact-based education program, especially when offered following the first clinical year of undergraduate training, may greatly ameliorate these barriers.

Significance: The NAMI provider-education program is highly standardized and can easily be implemented at other institutions of undergraduate medical education by partnering with one's local NAMI affiliate. The present research highlight proposal will provide audience members with initial evidence for the efficacy of such programs as well as information about how to partner with a local NAMI affiliate to offer such a curriculum.
Teaching strategies affect learner cognitive load in the exemplar procedural training setting of colonoscopy

Research Highlights
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Purpose: Procedural tasks involve both cognitive and motor aspects that are taught, learned and performed simultaneously. Such dual-task conditions put learners at risk of working memory overload, which in turn hinders learning and performance. Cognitive load theory (CLT) addresses challenges that arise from working memory limitations [1]. Three types of cognitive load impose on working memory. Intrinsic load occurs as learners perform essential task elements. Germaine load occurs as learners form and refine learning schema. Extraneous load occurs when learners attend to non-essential task elements. Although CLT-informed instructional strategies are well-described [2], how specific teaching strategies affect learners cognitive load in complex procedural settings is unknown [3]. Using 11 specific strategies that experienced teachers reported using while teaching the exemplar procedure of gastrointestinal endoscopy [4], we sought to characterize how these strategies were enacted during actual colonoscopy teaching, and how gastroenterology fellows perceived the strategies to affect their cognitive load.

Methods: We performed a mixed-methods study. While observing fellow-attending pairs performing colonoscopy at two hospitals, the lead author recorded how attendings enacted 11 teaching strategies (i.e., what they said or did). Fellows completed the Cognitive Load Inventory for Colonoscopy (CLIC, employing items with a 0-10 scale) to measure cognitive load subtypes [5]. After each colonoscopy, the author interviewed the fellow to discuss how they perceived each teaching strategy as affecting intrinsic, germaine and extraneous load. We used content analysis to characterize teaching strategy enactment and thematic analysis to assess perceived cognitive load impact.

Results: We observed 10 colonoscopies performed by 10 attendings (with 1-40 years of colonoscopy teaching experience) and 8 fellows (50-442 prior colonoscopies performed). Median (range) cognitive load was: intrinsic 3.0 (1.6-6.4), germaine 4.5 (1.5-8.8), extraneous 1.6 (0.0-3.8). We observed 520 instances of teaching strategies (median 42 per colonoscopy, range 15-136). Motor instruction (215 instances) was enacted with verbal instructions and gestures, and was perceived to reduce intrinsic load. Feedback (97 instances) was enacted by nonspecific comments (Good job) or specific comments (You took advantage of [deflecting the instrument tip] towards 12 o’clock since you get better tip flexion there). Fellows reported nonspecific feedback had no cognitive load impact, whereas specific feedback decreased intrinsic load and increased germaine load. Schema teaching (77 instances) was enacted by describing truisms or approaches (In the right colon I first examine the lower wall, then I go back and examine the upper wall), or by deconstructing complex tasks; this was perceived to increase germaine load. Checking understanding (50 instances) was enacted by questioning the fellow about understanding or next steps (How do you want to remove that polyp?); this was perceived to increase germaine load. Takeover (38 instances) was enacted by taking control of the equipment while narrating; this was perceived to decrease intrinsic load and increase germaine load. Less-often used strategies were: clarify roles (12 instances), technical assistance (12 instances), emotional support (10 instances), promote mastery mindset (5 uses), and modify environment (4 instances). One strategy (stop and listen) was not observed.
Discussion: Measured germane and intrinsic load numerically exceeded extraneous load; this was reflected in observed teaching strategies, which were primarily related to fellow learning and task completion. Most fellows perceived these strategies to increase germane load and/or decrease intrinsic load. Conversely, extraneous load was relatively low, and strategies impacting extraneous load (e.g., emotional support, modify environment) were rarely observed. Variation in perceived impact of some strategies may reflect different enactment, or different fellow experience of similar enactments.

Significance: The strategies we studied are generalizable to diverse procedural training settings. Teachers may use them to promote goals of CLT: to match task complexity to the learners competence, reduce distractions, and promote learning.
Reconnecting the Mouth to Medical Education

Research Highlights
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Purpose: The absence of oral health education in medical education has resulted in physicians who are poorly equipped to diagnosis, treat, refer and collaborate on matters of oral health and disease. This poster describes the successful integration of an oral health curriculum, with measurable outcomes, into the medical curriculum.

Methods: In the first two years of the curriculum all medical students are now required to engage in thirty-six hours of oral health education which includes a lecture presented by an international expert on oral health, labs on anatomy/oral health, PBL patients with dental diseases, lectures on oral manifestations of systemic disease, oral cancer screening, and inclusion of the oral exam into the HEENT exam. In year 3 oral health is a component of the Family Medicine Clerkship. Assessments include a HEENOT (O=oral) exam with standardized patients, a written exam in year 2, student satisfaction of the oral health week, and a retrospective chart review comparing documentation of oral components within student (n=100) and attending (n=100) HEENT exams.

Results: The average score on the oral written exam has been 89%. Qualitative findings from dental week evaluations have been extremely positive. The retrospective chart review revealed that students were more likely to include the documentation of periodontal tissue (students 12%, attendings 9%), dentition (students 46%, attendings 15%), oral cancer screening (students 49%, attendings 32%) and mucous membranes (students 60%, attendings 35%) within their HEENT examinations.

Discussion: In a partnership with Delta Dental, who provided financial resources for the curriculum, VTCSOM has completed 5 years of educating and training future physicians on the importance of oral health.

Significance: Through the development and refinement of an oral health curriculum, student learning outcomes regarding oral health principles and satisfaction with the curriculum proved excellent.