The Effect of Mood on Medical Students’ Diagnostic Performance

John RANELLUCCI, and Susanne P. LAJOIE
ATLAS Laboratory, Department of Educational and Counselling Psychology
McGill University, 3700 McTavish St, Montreal, QC H3A 1Y2, Canada
John.ranellucci@mail.mcgill.ca

Problems that will be addressed and the bigger picture

It is clear that mood and emotion play an important role in how people deal with problems [1]. The problem-solving strategies adopted by people when they are in a happy mood are quite different than the strategies used by people when they are in a sad mood [1]. It is also well documented in the literature that individuals’ affective feelings influence their evaluative judgment, strategies of information processing, and the type of information retrieved from memory [1]. One area where this knowledge has important implications is in the design, application, and effectiveness of cognitive tools. Cognitive tools are tools that “help students during thinking, problem solving, or learning by providing them with opportunities to practice applying their knowledge in the context of complex, meaningful activities rather than in isolation of their ultimate use” (p. 88) [2]. A computer-based learning environment (CBLE) incorporating a number of cognitive tools of particular interest for this paper is called BioWorld [2]. BioWorld provides medical students with instruction, model proficiency, and an assessment of their knowledge in a more authentic scenario than standard classroom learning [2]. These tools have been shown to effectively promote scientific reasoning in high school students [3], and have been adapted for use with medical students. We propose replicating the emotional side of working in the medical field by manipulating the affect of students before they engage in a BioWorld problem. Addressing the relationship between mood and doctors’ performance is extremely important, especially with researchers suggesting that these types of emotions are normal, inevitable, and capable of negatively effecting patient care [4].

Aims and objectives

By analyzing the way students interact with BioWorld based on their affective feelings, recommendations can be made to enhance the authenticity of BioWorld, to address maladaptive problem-solving strategies among students that are caused by an affective state, and to draw attention to possible consequences of mood. Medical students or physicians have multiple patient cases to see in one day. It is highly likely that one case may be more emotionally laden than others, such as one where the patient may not recover or may be debilitated for life. In these situations, the physician’s mood state may be altered, interfering with decision making about the next patient they see.
Methodology

McGill medical students will be randomly assigned to one of three experimental groups where affect will be manipulated in a particular direction (positive-valence, negative-valence, or neutral affect/control group). Participants’ affect will be manipulated through the same procedure used by De Dreu, Baas and Nijstad, which consists of asking participants to write a short essay about a situation that made them feel very happy, sad, or for the control group, about a non-affective topic [5], after which participants will complete the same BioWorld problem. Dependent measures collected from BioWorld will include how confident the participants are with their diagnoses, the number of hypotheses reported, the solution time, the types of tests ordered, the number of tests ordered, and a qualitative analysis of their written case summaries.

In accordance with Schwartz & Skurnik’s review [1], it is expected that students’ mood in the positive-valence and the negative-valence groups will exhibit distinct problem solving and decision making skills. Since mood is expected to interfere with task performance, the control group is expected to make significantly less mistakes, take a more efficient diagnostic route (ordering an optimal number of tests), and produce a more accurate case summary compared to students in the experimental groups. A one-way MANCOVA will be used to examine these differences with prior knowledge, year of study, and MCAT score entered as covariates.

Main contribution of the research to the AIED

The outcomes of this research will demonstrate whether or not affective states lead to differences in diagnostic reasoning about patient cases using BioWorld, and medical problem solving more broadly. The results of this study will provide support for the role of affect in diagnoses, and will help guide future case development in BioWorld. If affect plays a large role then more attention needs to be placed on both developing and analyzing patient cases in terms of affective dimensions. By studying affect in conjunction with cognitive skills we can develop more authentic contexts for teaching and assessing medical students, improving their overall training so that they will be better prepared for the emotional demands of their future profession.

Reference