A Preliminary Inquiry Into Reducing Medical Errors: Reflection, Stress, & 1st Year Medical Students
Robert C. Miller, Ed.D.
Via College of Osteopathic Medicine – Virginia Campus

INTRODUCTION

Reflection is the cognitive process of thinking about one’s thoughts and behaviors while engaged in a particular activity. It has long been considered important to medical practice (Schön, 1983; Niemi, 1997). Medical mistakes can occur as a result of errors in thinking (Groopman, 2007); yet, little research exists on the reflection-error relationship or how physician stress may impair reflection and increase error risk. This preliminary project explored reflection and stress in a study of first year medical students (OMS1) enrolled in Anatomy Lab. Hypotheses included: 1) high stress would result in low reflection because stress adversely affects concentration and therefore reflection, and 2) reflective writing assignments would buffer against stress and enhance reflection for all subjects.

"I have always thought of medicine as very technical...but I think it's important for doctors to constantly reflect on their interactions with patients. This assignment allows one to be mindful and aware of the way you interact with others, as well as of your thoughts and feelings about each encounter.”

VCOM Medical Student

RESULTS

Figure 1: Comparisons of Stress & Reflection Over Time

There were no significant differences (p<.47) on reflection (GRAS) between LS & HS groups at T1 (Figure 1) although HS scored substantially higher than LS at T1. HS GRAS scores dropped significantly from T1 & T2 (p<.005) whereas LS scores rose slightly but not significantly from T1 to T2. As a group LS GRAS scores remained stable over time whereas HS scores started higher than LS scores but declined significantly in comparison to LS and HS scores over time.

CONCLUSIONS

Results indicate stress adversely effects reflection for HS subjects despite these subjects starting higher on reflection scores. Findings are consistent with the Yerkes-Dodson Law (1908), a longstanding psychological law, which states stress enhances performance to a point after which it results in precipitous performance decline. Hypothesis 1 was partially supported in that HS declined in reflection. Hypothesis 2 was partially supported because the independent variable modestly but insignificantly increased reflection scores for LS while HS declined. In sum, HS may be at higher risk for making medical errors because as reflection decreases error risk potentially increases. Confounding results was a high drop out rate for HS subjects between T1 & T2. HS students may have depleted psychological resources and to preserve energy left the study. Future research will increase sample sizes to enhance statistical power and explore methods (i.e. Mindfulness training) to reduce stress and enhance reflection ability for HS medical students.

ACKNOWLEDGMENTS

The investigator wishes to thank VCOM OMS1 students who volunteered for this study and John Anstrom, PhD, Chair, VCOM Department of Anatomy, and Anatomy Faculty Ken D’Amato DO, Igor Danelisen MD PhD. Terry Hrubec DVM PhD & Richard Wyeth PhD for their valuable assistance on the project.

REFERENCES


Yerkes, R. M. & Dodson, J. D. (1908). The Relation of Strength of Stimulus to Rapidity of Habit-Formation. Journal of Comparative Neurology and Psychology, 18, 459-482.

CONTACT INFORMATION

Robert C. Miller Ed.D.
Assistant Professor, Neuropsychiatry & Behavioral Sciences, VCOM
2265 Kraft Drive Blacksburg VA.: 24060
P: 540-250-3065 E: rmiller@vcom.vt.edu