Psychoneuroimmunology (PNI) is an interdisciplinary field that examines the relationships between psychological factors and changes in endocrine and immune function, with possible consequences for health status. There is a growing literature suggesting that psychosocial stressors can impact negatively on health through deleterious changes in immune function. In their 2005 review, Glaser and Kiecolt-Glaser examined the mechanisms by which these changes might occur, and summarized some of the findings showing stress-related health consequences in a number of human populations. Buchanan et al. (2009) examined the cortisol response in individuals sustaining damage to the hippocampus, when challenged with a psychosocial stressor. Individuals with damage to the hippocampus, but not those with damage in other regions of the brain, showed abnormal cortisol responses to the psychosocial stressor. These papers were used successfully in an undergraduate Neuroscience course to stimulate class discussion; other possible uses for these articles are discussed.

Key words: Psychosocial stressors; health consequences of stressors; hippocampus; cortisol
significantly lower than both groups at 10 and 30 minute time points following the psychosocial stressor, suggesting that the hippocampus is critical to the response to psychosocial stressors. Moreover, although there were no group differences in pre-TSST negative affect scores, nor were there differences in pre- or post-TSST ratings of positive affect, hippocampal-damaged individuals reported significantly higher post-test ratings of negative affect than other groups, although negative affect was elevated in all groups following the TSST. The results suggest that multiple physiological systems are involved in the response to psychosocial stressors (e.g., the HPA pathway, autonomic control of heart rate, subjective reports of stress), and elucidate the role of the hippocampus in one of these "pathways" (the glucocorticoid response).

VALUE
The two papers complement each other well, providing valuable and important information to students studying the potential health consequences of psychosocial stressors, and the role of the hippocampus in the responses to psychosocial stressors. The Glaser and Kiecolt-Glaser review provides critical foundational information, including the basics of the immune system and of the immune response, as well as methodological considerations for researchers in the field of PNI. The Buchanan et al. paper reinforces the importance of the hippocampus in the stress response, and also provides students with reminders about some of the unique methodological considerations when engaged in human PNI research (e.g., the need to include a group of individuals with damage outside of the hippocampus in addition to neurologically-intact controls, the benefit of multiple dependent measures). In addition, the paper demonstrates that, in addition to the hypothalamus and pituitary, other important forebrain areas are critical to an organism’s response to psychosocial stressors.

AUDIENCE
These papers were used in an Advanced Neuroscience course, the capstone course for our students pursuing the Neuroscience concentration. The course examines a number of contemporary topics in Neuroscience, generally by having students read and discuss primary source literature related to each topic. Generally, each topic is covered in two to three class periods. Students enrolled in the course have completed an introductory course in Neuroscience, as well as several elective courses in Psychology, Biology and Chemistry, and therefore have adequate background to understand and discuss these papers.

The papers could be integrated into an upper level course in Biological Psychology or Neurophysiology, as well, provided that students have sufficient background in Biology or Psychology. Discussion sessions could be led by the course instructor or by a student. In addition, one could structure the course in such a way that students are responsible for presenting the paper contents to the class and subsequently leading discussion, thereby providing an opportunity to sharpen oral communication skills.

REFERENCES

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