Natasha Orton
Disorders of Perception

There are a plethora of mental disorders, some of which affect individuals’ perceptions of time, space, people, or objects. Many times disorders develop because of a traumatic brain injury or lesion. In other cases individuals are born with or develop the disorder. Some brain areas that seem to play a major role in perceptual disorders are the fusiform gyrus and amygdala. We will be examining how these brain areas function in relation to perceptual disorders. This presentation will begin by examining symptoms, etiology, and diagnosis of a few perceptual disorders, including: prosopagnosia, capgras delusion, cotard's syndrome, and synesthesia (although this is not technically considered a disorder). The main focus will be on the physiological basis behind these disorders, including brain areas and neurotransmitters. In conclusion we will be discussing possible psychotherapy and pharmacotherapy treatment options.

Samantha Edmunds
The Effect of REM Sleep on Cortisol Levels and Perceived Happiness

Rapid eye movement sleep (REM) is a period of sleep during which dreaming, rapid twitching movements of the eyes, muscle relaxation or paralysis, and other physiological changes take place. During REM sleep, signals are sent to different parts of the brain responsible for learning, thinking, and organizing information. Studies have shown REM to be involved with processing emotions and emotional memories. The sleep-wake cycle and REM have their own rhythms, and disruptions to these rhythms can affect many different circadian rhythms, including the cortisol rhythm. Cortisol production levels typically peak in the early morning, and decline throughout the day. In order to assess the effects of REM sleep on cortisol and subsequent emotional regulation, REM sleep, as well as many other characteristics of sleep, will be assessed using a Motion Watch that participants wear for 5 days. During this time, they will also have waking cortisol levels assessed. In addition, participants will also be asked to complete a Subjective Happiness Scale to measure their average level of happiness, and the Pittsburg Sleep Quality Index to measure their perceived sleep quality. It is hypothesized that those who experience less REM sleep per night will experience a greater amount of awakening cortisol levels and have lower levels of perceived happiness.

Cory Albrechtsen
Circadian Rhythms and the Modern Physician

Circadian rhythms affect numerous aspects of individuals, including cognitive ability, mood, physical health and social interactions. The modern physician experiences many factors that affect their circadian rhythms—such as overnight call and both acute and chronic sleep deprivation—from entering residency until retirement. The accumulation of chronic sleep debt with acute total sleep debt experienced while on call has shown to affect physician performance. In addition, physician sleep debt has been associated with an increase in physician-performed medical errors, decrease in empathy, decline in communication skills, and a decrease in cognitive performance (especially in monotonous tasks that require vigilance). Available tools and strategies need to be implemented, and medical students, residents, and practicing physicians need to be educated regarding the dangers of working under a sleep debt. This presentation will address problems associated with circadian desynchronization due to the job requirements of physicians, and strategies to reduce fatigue's effects will be discussed.