Newhouse, J. W. H. and Penning, D., Department of Biology and Environmental Health, Missouri Southern State University. **Is There Always a Need For Speed? Is it Possible for Snakes to Alter How They Strike?** Organisms constantly face ever changing environments where they encounter both predators and prey. Being able to recognize and discern the differences between potential predators and prey can have substantial fitness consequences for the animals involved. For example, failing to feed oneself will result in prolonged hunger; whereas failing to defend oneself will typically result in death. Therefore, we often observe animals using different behaviors in varying predator-prey scenarios. However, discerning those different behaviors can be quite difficult in animals with a simplified external body shape. For example, snakes are elongate and limbless reptiles that must perform all of life's requirements with only their head, trunk, and tail. Therefore, many of the behaviors that snakes use may appear qualitatively similar but may actually be quantitatively distinct. The purpose of this study was to measure snake strike performance in varying predator-prey scenarios. Using hatchling ratsnakes (*Pantherophis obsoletus*), we measured the strike kinematics when snakes faced different predator and prey targets. Our results show that strikes at predators and prey are distinctly different. Snakes strike at threats from significantly greater distances than when striking at prey. The snakes are accelerating over a longer distance and therefore produce strikes with higher maximum velocities when striking defensively. While defensive strikes take longer, all snakes strike in an incredibly short amount of time.