Sixth Annual Meeting of the Minds Symposium Oral Presentation Winners

Zachary Harmony and Israel Garcia

Best Graduate Oral Presentation Award

Program: General & Experimental Psychology, Biological Psychology

Faculty Sponsor: Dr. Cynthia Crawford

Title: Effects of Nicotine Exposure on Methamphetamine Oral Self-Administration, Extinction, and Reinstatement in Adolescent Rats

Abstract: Adolescence is a vulnerable developmental period, especially in regard to pharmacological induced changes in neurochemistry and resulting behavior (Andersen, 2014). Nicotine exposure during adolescence alters the response to addictive drugs in adult rodents (Anker and Carroll, 2011; Collins et al., 2004; Hutchison and Riley, 2008; Kemppainen et al., 2009; McMillen et al., 2005, Pipkin et al., 2014; Santos et al., 2005). Specifically, nicotine administration during adolescence increases the locomotor activating effects of cocaine and amphetamine in adult rats (Collins et al., 2004, Santos et al., 2005). Recently, we found that adolescent exposure to nicotine increased the intake of methamphetamine in adult male rats (Pipkin et al., 2014). In the current study, we assessed early adolescent nicotine exposure on the reinforcing properties of methamphetamine (MA) in adolescent rats. To this end, we assessed MA acquisition of self-administration, extinction, and reinstatement in adolescent male and female rats. In addition, we investigated if the effects of adolescent methamphetamine intake were modulated by different nicotine exposure periods. Here we show that exposure to a low dose of nicotine (0.16, S.C.) during self-administration decreased MA intake, whereas rats with pre-exposure to nicotine (i.e., PD 25 – 35) did not show this effect. Conversely, pre-exposure to a high dose of nicotine (0.64, S.C.) increased MA intake during self-administration. We found this effect stronger in female rats. Lastly, neither dose of nicotine altered behavior during extinction or reinstatement periods.