EXECUTIVE FUNCTIONS AND FRONTAL LOBE
SEX DIFFERENCES IN TOBACCO WITHDRAWAL: EFFECTS ON EXECUTIVE FUNCTIONING

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Introduction*: Tobacco abstinence is associated with impaired cognitive functioning, particularly in the area of sustained attention and working memory. Recently studies focused on individual differences, such as gender, to explain some nicotine addiction features. It seems that tobacco abstinence significantly reduces memory performance under full attention conditions for males but not for females. Although, few studies have investigated sex differences in executive functioning. The aim of this study was to investigate whether different executive functions are impaired during acute abstinence and how effects differ between males and females. Results may contribute to developing new tailored treatments for quitting smoking dependence.*

Methods*: Fifteen smokers (8 females) were tested twice after 2 hours abstinence in a counterbalanced order on the Italian version of JEF® task. Smoking status (Abstinence vs. Ad Libitum) was manipulated within-subjects in a repeated measures design. In the Ad Libitum condition participants were asked to smoke as usually, after which they performed JEF® task. In the Abstinence condition they did not smoke for at least 2 hours, before the assessment. In order to capture isolated elements of executive functioning we used the Jansari Assessment of Executive Functions (JEF®), known to have more ecological validity and sensitivity than traditional assessments. Severity of dependence was assessed through the Fagerström test of nicotine dependence and participants were included if their score was ≥ 3.*

Results*: We performed GLM defyining Condition and Sex as IV, then the 9 levels of performance on cognitive functioning as dependent variables. The analysis revealed a significant Condition*Sex interaction for Planning and Selective Thinking function between smoking conditions and the gender. We found a significant main effect of Condition and Sex for Creative Thinking function within the two levels of smoking conditions. showing males performing better than females. We found a significant main effect of Condition for ABPM. Since studies suggest a moderator effect of severity of dependence, we included it as IV. The analysis revealed a significant main effect of Condition, Condition*Sex*DepGrade and Condition*DepGrade interactions, of Overall score.*

Discussion*:The results from this study are not consistent with our first hypothesis, that acute smoking abstinence would be associated with a decrease in executive functioning, whereas is consistent with our second hypothesis, that there are sex differences in performance in response to abstinence. In abstinence condition, males performed better than on ad libitum condition and compared to females, whereas, females performance remained steady across the two conditions. The functions resulting very sensitive to nicotine withdrawal were Creative Thinking, Planning, Selective Thinking and Action Based Prospective Memory. The discrepancy with the literature might be explained both in terms of differences in abstinence time window and in the specificity of cognitive constructs.*

References*: Merritt PS et al. ExpClinPsychoph (2012) 20:258-263. Jansari A et al. Addiction. (2012) 108:977–984. Dawkins L et al. Psychoph (2007)190: 457–467.*

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