Binge Eating and Reward Sensitivity: Contributions to Obesity and Dysregulated Brain Reward Circuitry- Commentary by Nicole Avena, PhD

Obesity has become one of the biggest health care burdens, increasing morbidity and lowering life expectancy. It is a major contributing factor to several chronic conditions, including cardiovascular disease, dyslipidemia, diabetes, and cancer. Given the social and economic burden associated with the “obesity epidemic” there has been considerable global interest across many disciplines including medicine, nutrition, neuroscience, psychology, sociology, and public health in order to reverse this trend.

Binge eating often occurs in people who are obese. Animal models have shown that binge eating can alter dopaminergic signaling in reward-related brain regions, thereby contributing to the pathology of overeating. It is unknown why some individuals are prone to binge eat, while others are not. In our recent study, we assessed reward and punishment sensitivities, as these have been identified as potential contributors to binge eating and compensatory behaviors, though few studies have examined gender differences in these behaviors. A college-aged sample (N = 1,022) completed both the Eating Disorders Diagnostic Scale (EDDS) and Sensitivity to Punishment/Sensitivity to Reward Questionnaire (SPSRQ). The sample had a self-reported mean BMI of 23.79 kg/m2 (SD = 4.67). BMI was significantly associated with binge eating (r = .10, p < .01) but not compensatory behaviors (r = .03, p = .31). Rates of binge eating were similar in males and females. A similar proportion of participants (n = 255 [29.3% women; 24.7% men]) reported compensatory behaviors, with a trend towards a greater number of women reporting compensatory behaviors relative to men ($\chi^2(1) = 2.48$, p = .07). Sensitivity to reward and sensitivity to punishment were both positively associated with binge eating frequency in both genders. In contrast, women with high reward sensitivity reported engaging in compensatory behaviors more frequently. The findings suggested that the rates of binge eating and compensatory weight control behaviors were similar between college-aged males and females, though females who engaged in compensatory behaviors did so more frequently than males. Sensitivity to punishment was greater in females, whereas sensitivity to reward was greater in males. Reward and punishment sensitivity were each positively associated with binge eating in both males and females, while only reward sensitivity was positively associated with compensatory behaviors in females. These results may inform additional studies related to better understand the role of sensitivity to reward and punishment as predictors on binge eating behaviors.

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