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# Effects of mood induction on eating behavior and cigarette craving in dietary restrainers

Dana A. Cavallo, Anthony Pinto\*

*Department of Psychology, Hofstra University, Hauser Hall, Hempstead, NY 11549, USA*

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## Abstract

Women high in dietary restraint (“restrainers”) increase food intake more than nonrestrainers following emotional arousal. When restrained smokers are deprived of cigarettes during elevated mood states, nicotine craving should increase with food craving. The present study investigated the interaction of smoking and affect on food intake in 60 women, 18–25 years old, who were identified as restrainers. The study consisted of smokers and nonsmokers who viewed a domestic violence or comedy film segment, followed by exposure to snacks. Emotional arousal, regardless of valence, did not result in a difference in food consumption between smokers and nonsmokers. Furthermore, smokers showed similar levels of nicotine craving after both films. Self-report of mood changed only in the domestic violence condition, indicating the difficulty of positive mood induction. Limitations to the study and suggestions for further research are discussed. © 2001 Elsevier Science Ltd. All rights reserved.

*Keywords:* Eating behavior; Dietary restraint; Emotional arousal; Mood induction; Nicotine craving

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## 1. Introduction

Restrained eaters typically restrict food intake to lose or maintain body weight. They employ cognitive control over physiological hunger (Herman & Polivy, 1984). In situations where their self-control is hindered, such as during stress, restrainers may violate their dieting practices and overeat. Such disinhibited eating is more common in women than men (Grunberg & Straub, 1992). Those individuals who are not restrained eaters typically

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\* Corresponding author. Tel.: +1-516-463-5662; fax: +1-516-463-6052.

*E-mail address:* anthony.pinto@hofstra.edu (A. Pinto).

decrease food intake when under stress (Herman & Polivy, 1975). Restrained women are also more likely than their unrestrained counterparts to substitute eating with other methods of regulating hunger and weight, including cigarette smoking. In fact, the smoking rates among women who diet are two times higher than among nondieters (Krahn, Kurth, Demitrack, & Drewnowski, 1992).

### *1.1. Emotional arousal and eating behavior*

Several studies have examined the effects of negative emotional arousal, including anxiety, stress, and depression, on eating behavior. For purposes of this paper, the terms “emotional arousal,” “mood,” and “affect” are used interchangeably. Herman and Polivy (1975) demonstrated that anxiety caused by anticipated electrical stimulation increased intake of ice cream in restrainers, with the opposite effect in nonrestrainers. Similarly, Rutledge and Linden (1998) found that following stress-inducing laboratory cognitive tasks (mental arithmetic, Stroop, and word scramble), restrained eaters increased their consumption of snacks (chocolate chip cookies and crackers), whereas nonrestrained eaters decreased their consumption. Physiological measures of blood pressure and heart rate were used to corroborate self-reported levels of stress. Schotte, Cools, and McNally (1990) presented a 20-min segment from a frightening film to induce anxiety, sadness, and anger, which triggered overeating of popcorn in restrained eaters.

In general, studies on positive emotions are less common than those on negative emotions. The effect of positive emotional arousal on eating behavior has been examined in only one prior study. Cools, Schotte, and McNally (1992) repeated the mood induction design of Schotte et al. (1990), but added a 20-min comedy film segment to induce positive affect. They found that positive affect results in a similar, but not as extreme, increase in food intake among restrainers. Thus, the disinhibiting effects of mood on food intake in restrainers are not limited to negatively valenced affective states. Further research is needed, however, to show whether the intensity of the induced emotions has a greater impact than valence.

### *1.2. Cigarette smoking, emotional arousal, and eating behavior*

Smokers who experience negative emotional arousal tend to use cigarettes to enhance mood (Pomerleau & Pomerleau, 1987). During smoking abstinence, smokers report an increase in nicotine craving (Borelli, Bock, King, Pinot, & Marcus, 1996). When smokers high in dietary restraint are deprived of cigarettes during negative mood states, nicotine craving should increase with food craving. Thus, smoking abstinence and negative mood states may have an additive effect on food intake in restrained women.

A study by Ogden (1994) suggests an association between smoking abstinence and the desire for food. Following 24 h of smoking abstinence, food intake among smokers was significantly correlated with dietary restraint. This effect was not observed among those smokers who did not abstain from smoking prior to the lab or among nonsmokers. The interaction of stress, smoking, and dietary restraint in women was first examined by Mitchell and Perkins (1998). As expected, food intake following a stressful computerized recall task

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