Original Article

Beauty against tobacco control: viewing photos of attractive women may induce a mating mindset, leading to reduced self-control over smoking among male smokers[☆],[☆☆]

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ARTICLE INFO

ABSTRACT

Successful smoking cessation or reduction requires smokers to focus on the distal concerns of health and control instead of immediate impulses to smoke. Based on pioneering research demonstrating that cues inducing a mating mindset (i.e., viewing pictures of attractive women) can engender greater temporal discounting in men, we conducted a laboratory experiment to examine whether viewing faces of attractive women rendered male smokers with intentions to quit or reduce smoking more likely to discount the future and give in to the immediate impulse to smoke by sacrificing distal health concerns during a subsequent task. Seventy-six male smokers with intentions to quit or reduce smoking were randomly assigned to view either attractive or unattractive opposite-sex faces. Participants completed a modified Stroop task measuring their mating mindset after the attractiveness manipulation. The dependent variables were temporal discounting and actual cigarette consumption during an ostensible survey. A mating mindset mediated the connection between viewing pictures of attractive women and greater temporal discounting. Male smokers exposed to photographs of attractive compared with unattractive women were less likely to refrain from smoking and smoked more cigarettes in a subsequent survey. Attractive women may act as stimuli that increase a mating mindset among male smokers with intentions to quit or reduce smoking, leading to greater temporal discounting and reduced control over cigarette consumption. The implications for associations among mating motives, temporal discounting, and control over addictive impulses and behaviors are discussed.

1. Introduction

In principle, self-control refers to the control of one's thoughts, emotions, impulses, and behavior by oneself (Ainslie, 1975; Baumeister, Vohs, & Tice, 2007). Smoking cessation and reduction require continuous self-control efforts in diverse contexts over time (Chiou, Wu, & Chang, 2013). Research regarding self-control has shown that poor self-control is associated with greater temporal discounting (i.e., a preference for larger, distant rewards over smaller, immediate ones) (Fujita, 2011; Fujita, Trope, Liberman, & Levin-Sagi, 2006; Malkoc, Zauberman, & Bettman, 2010). Wilson and Daly (2004) measured the parameters involved in temporal discounting after participants rated either attractive or unattractive opposite-sex faces by offering a choice between two monetary options: a specified sum "tomorrow" ($15–35) or a larger sum ($50–75) after a specified delay (7–236 days). They showed that temporal discounting increased significantly among men who viewed pictures of attractive women. Based on the study conducted by Wilson and Daly (2004), we argue that male smokers may show increased temporal discounting, which is associated with yielding to the immediately satisfiable impulse to smoke while sacrificing distal concerns of health, after viewing attractive opposite-sex faces. In the present study, we tested whether male smokers exposed to photographs of attractive compared with unattractive women would demonstrate greater temporal discounting and smoke more cigarettes while subsequently completing questionnaires.

According to sexual strategies theory (Buss & Schmitt, 1993; Gangestad & Simpson, 2000), some aspects of mate value and romantic desire depend on the temporal contexts of human mating. Based on evolutionary theories (Buss & Schmitt, 1993; Rhodes, 2006), Wilson and Daly (2004) argued that a mating-opportunity mindset induced by the availability of courtship-worthy targets (e.g., pictures of attractive women) induces an increase both in efforts to mate and in the preference for smaller, immediate rewards. They demonstrated that

exposure to pictures of attractive women increased men's discount rates in a monetary-choice task, whereas the same exposure did not have this effect on men who viewed pictures of relatively unattractive women. These findings suggest that cues that activate mating motives may induce men to behave impulsively, as evidenced by increased temporal discounting.

Additionally, previous studies have also demonstrated an association between discount rates and addictive behaviors (see Bickel et al., 2007 for a related review). For example, individuals with addictions appear to discount more (i.e., are more impulsive) compared with those who do not use drugs (Crean, de Wit, & Richards, 2000). Compared with non-dependent controls, drug-dependent individuals, such as those dependent on cocaine (Coffey, Gudleski, Saladin, & Brady, 2003), problem drinkers (Petry, 2001; Richards, Zhang, Mitchell, & de Wit, 1999), and cigarette smokers (Baker, Johnson, & Bickel, 2003; Bickel, Odum, & Madden, 1999; Mitchell, 1999) exhibited greater temporal discounting. Indeed, heroin addicts have been found to have higher discount rates than controls (Kirby, Petry, & Bickel, 1999). Addicts' discount rates increase as a function of time elapsed since their last injection (Giordano et al., 2002). Moreover, it has been demonstrated that temporal discounting incrementally improves the prediction of tobacco, alcohol, and drug use and of socio–sexual orientation above and beyond the predictive power of sex and the big five traits (Daugherty & Brase, 2010). These findings collectively indicate that poor self-control over impulses and behaviors is manifested by greater temporal discounting.

Smokers with intentions to quit or reduce smoking face a typical self-control dilemma involving distant concerns of health (the distal motivation) and immediate impulses to smoke (the proximal motivation). Self-control among these smokers entails consistently acting in accord with their distal motivation, which, in this case, involves the successful inhibition of immediate impulses to smoke in favor of distal health concerns. In contrast, a failure in self-control entails acting in a manner consistent with proximal motivation, sacrificing distal concerns of health in favor of the immediate impulse to smoke. Such a tendency toward temporal discounting (i.e., to prefer the proximal motivation over the distal motivation) has been shown to be an example of poor self-control (Ainslie, 1975; Fujita & Han, 2009; Mischel, Shoda, & Rodriguez, 1989). Given that men with a mating mindset appear to discount the future (Wilson & Daly, 2004), we argue that male smokers may act in accord with their proximal motivation (i.e., the impulse to smoke) after viewing pictures of attractive women.

Recent research has demonstrated that induced mating motives may elicit a variety of behaviors in men, including devoting more attention to money (Roney, 2003), failing to conform (Griskevicius, Goldstein, Mortensen, Cialdini, & Kenrick, 2006), spending conspicuously (Griskevicius et al., 2007), playing risky blackjack hands (Baker & Maner, 2008), donating more generously (Iredale, Van Vugt, & Dunbar, 2008), and being more likely to endorse statements supporting war on a questionnaire (Chang, Lu, Li, & Li, 2011). The current research focused on smokers with intentions to quit or reduce smoking, because these individuals encounter a self-control conflict in which the distal and proximal motivations press for opposing behaviors. Findings obtained from these smokers can provide insights into how stimuli that induce a mating mindset may interfere with control over the use of tobacco.

In summary, building on pioneering work showing that viewing pictures of attractive women may induce greater temporal discounting in men (Wilson & Daly, 2004) and on recent advances in understanding the link between greater temporal discounting and poor self-control over impulsive choices and behaviors (Daugherty & Brase, 2010; Fujita & Han, 2009; Kirby et al., 1999), we hypothesized that viewing pictures of attractive women would induce a mating mindset and thereby lead to increased impulsivity in smokers with intentions to quit or reduce smoking, as evidenced by greater temporal discounting and the failure to inhibit the impulse to smoke.

2. Methods

2.1. Participants

The formal sample consisted of 76 male smokers (mean age = 30.9 years, SD = 5.9) who intended to quit or reduce smoking. The candidate participants (N = 96) were recruited from the larger community using a subject pool drawn from a civic health study administered through the College of Health Sciences at Kaohsiung Medical University in Kaohsiung (the largest city in southern Taiwan). The candidate participants were screened through face-to-face interviews to ensure that they met the following study criteria: no current psychopathology, no current nicotine-replacement therapy, smoking of at least five cigarettes per day for the past year, and an intention to quit or reduce smoking. Measures of intention to quit or reduce smoking were assessed with a dichotomous item ("I intend to quit or reduce smoking") with which respondents either agreed or disagreed (Smit, Fidler, & West, 2011). Twenty candidate participants who did not meet the study criteria were screened out.

During recruitment, participants provided demographic information, answered a question about number of cigarettes smoked per day, and rated nicotine dependence on the seven-item modified Fagerström Tolerance Questionnaire (Prokhorov et al., 2000; mean score range: 0–9). Participants were also told to bring their usual brand and type of cigarettes to the study.

2.2. Setting

The laboratory consisted of a study room and a smoking room connected by a small shaft that allowed the experimenter to communicate with the participant. The attractiveness manipulation and the modified Stroop task were performed on a desktop computer located in the study room. The smoking room contained a chair, table, ashtray, lighter, and respiratory tube connected with a ventilator in the ceiling. Experimental sessions were conducted with a half-hour break between participants to minimize the salience of smoking during previous sessions.

2.3. Procedure

Upon arrival, participants were informed that they were going to engage in several unrelated tasks to be used in future studies. After participants provided written consent, they were then randomly assigned to rate the appeal of either highly attractive or less attractive opposite-sex faces using a seven-point scale (1 = $unappealing$, 7 = $very\ appealing$). The photographs were taken from our prior research about search bias in finding a romantic partner online (Wu & Chiou, 2009). Based on male participants' ratings of the attractiveness of opposite-sex profile pictures on a seven-point scale (1 = $unattractive$, 7 = $very\ attractive$), we selected photographs that were rated as either highly attractive (mean rating higher than 6.0) or much less attractive (mean rating of 2.0–3.5). Sixteen photos of women with the same ethnicity were chosen via this selection and were randomly presented in head-and-shoulder images, centered on a black screen. Participants were instructed as follows: "Please rate the following pictures according to how appealing you find the woman's face."

Wilson and Daly (2004) hypothesized that viewing pictures of attractive women would activate a mating-opportunity mindset, inducing men to discount the future. However, they did not elucidate the psychological mechanisms associated with responses to cues of mating opportunities. Thus, the facial attractiveness task was followed by a modified Stroop task (a color-naming task) to test reaction times (RTs) to mating-related and neutral terms. Participants were presented with words printed in either blue or red and were asked to press the key corresponding to the correct color. The color-naming task included six mating-relating words (couple, courtship, love, mate, reproduction, and sex) and six neutral words (background, book, building, neutral,