Published in final edited form as:

Addict Behav. 2010 May ; 35(5): 530–532. doi:10.1016/j.addbeh.2009.12.025.

Manipulating Regulatory Focus in Cigarette Smokers

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Abstract

Regulatory focus theory (RFT; Higgins, 1997) may help to address the issue of motivation in cigarette smoking cessation. RFT suggests that individuals may be motivated to approach desired end-states (e.g., improved lung capacity) and/or avoid undesired end-states (e.g., illness). These motivations are referred to as promotion focus, in which people attempt to achieve their aspirations, and prevention focus, in which people are motivated to live up to responsibilities. According to RFT, smoking-related messages framed to match an individual's regulatory focus should be more effective than those that do not match. The current study attempted to prime promotion and prevention focus in a sample of cigarette smokers, to determine if priming impacts memory for smoking-related narratives. We expected that participants in the promotion-focus condition would outperform those in the prevention-focus condition on recall of materials reflecting approach strategies, whereas those in the prevention-focus condition would score better on recall of vignettes depicting avoidance. This hypothesis was not supported. There was, however, a significant interaction between participants' recall of vignettes depicting smoking vs. abstaining and approach vs. avoidance strategies, such that participants recalled smoking vignettes better when the described-person's goal was smoking to avoid an undesired state and recalled abstaining vignettes better when the target's goal was to approach a desired state. Further research into how regulatory focus theory may apply to adult cigarette smokers is warranted.

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Author Disclosures

Contributors

The first author conducted data analyses and wrote the manuscript. The second author conducted literature reviews and wrote the first draft of the manuscript, under the supervision of the first author. The third author served as project director, helped to refine the experimental protocol, and collected the data. The fourth and fifth authors designed the study, supervised data collection, conducted data analyses, and contributed to the writing of the manuscript. All authors approved the final version of the manuscript.

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Conflict of Interest

There are no conflicts of interest.

The data were presented at the 41st annual convention of the Association for Behavioral and Cognitive Therapies, November 2007, Philadelphia, PA.

Keywords

regulatory focus theory; cigarette smoking; motivation; smoking cessation; smoking prevention

1. Introduction

Despite widespread knowledge of the negative health consequences of smoking, one in five Americans smokes cigarettes (Centers for Disease Control and Prevention, 2008). A majority of American smokers report no intention of quitting within the next six months (Wewers, Stillman, Hartman, & Shopland, 2003). These individuals represent a significant challenge to our motivational theories and techniques. Traditional theories of motivation are based on the hedonic principle, the notion that people seek pleasure and avoid pain. However, Higgins's (1997) regulatory focus theory¹ (RFT) posits that human motivation may be more complex.

According to RFT, motivation can be divided into two focus types, promotion and prevention. In promotion focus, people are motivated to fulfill their aspirations and match their ideals and are focused on gains. On the other hand, in prevention focus, people are motivated to live up to their responsibilities, to behave as they think they ought, and to attain safety.

These different types of self-regulation can be applied to health domains. For example, over a fifteen-month period, those who scored higher on promotion focus initially lost more weight; however, participants higher on prevention focus were better able to maintain weight loss (Fuglestad, Rothman, & Jeffrey, 2008). Fuglestad and colleagues found analogous results for smoking cessation: those who scored higher on promotion focus were initially more successful in quitting smoking, while those higher on prevention focus were better able to maintain abstinence, suggesting that a fit between regulatory focus (RF) and behavioral task may be important.

The role of RF in smoking-prevention messages has also been investigated: advertisements targeting non-smoking adolescents were more effective when they matched participants' focus type (Kim, 2006). These results provide preliminary support for the relevance of RFT to smoking; however, RF has been conceptualized as both a trait variable, as in these two studies, and as a state variable that can be manipulated. To our knowledge, no previous study has sought to manipulate RF in cigarette smokers.

The current study was based on research demonstrating that RF could be primed (Higgins, Roney, Crowe, & Hymes, 1994). Higgins et al. (1994, Study 2) primed RF by asking participants to describe changes in their hopes and aspirations over time (promotion focus) or to explain how their sense of duty and obligation changed over time (prevention focus). Following this manipulation, participants read vignettes, each of which matched or conflicted with their primed focus type, and were then tested on recall. For example, for participants primed with promotion focus (motivated to approach goals), a vignette that described achieving a desired outcome would *match* the primed focus: "Because I wanted to be at school for the beginning of my 8:30 psychology class which is usually excellent, I woke up early in the morning" (Higgins et al., 1994, p. 281). Participants also read vignettes that conflicted with their primed state, such as (for promotion-focus condition), "I didn't want to feel tired during my very long morning of classes, so I skipped the most strenuous part of my morning workout" (Higgins et al., p.281). This example focuses on abstaining from an activity to avoid a situation rather than working towards a goal, providing a *mismatch* to the promotion-focus

¹RFT: Regulatory Focus Theory (Higgins, 1997); RF: Regulatory Focus

priming. As hypothesized, vignettes that matched the primed focus were better recalled than those which were mismatched (Higgins et al., 1994, Study 2).

We sought to extend this finding to smokers. After priming smokers into a focus type, we presented vignettes describing smoking behavior and motivations and then tested recall. We hypothesized that participants in the promotion focus condition would outperform those in the prevention focus condition on recall of stories reflecting approach strategies for matching desired end-states (“I smoked several cigarettes before fixing my breakfast because I needed to wake up”), whereas prevention participants would score better on recall of vignettes depicting avoidance of matches with undesired end-states (“My friend began to nag me again about smoking, so I decided not to smoke anymore that morning”). If matching based on RF is indeed effective at promoting memory for smoking-related content, it would suggest that tailoring smoking cessation interventions and messages based on this theory would make them more effective, consistent with social marketing principles (Hastings & McLean, 2006).

2. Method

2.1 Participants

Participants were 128 adults (68 women) who smoked at least 10 cigarettes a day. Recruited through newspaper ads, they all were native speakers of English and over 18 years old. Two participants identified themselves as Hispanic. Eighty-four were African American/Black, 39 White, one Asian, and four multiracial.

2.2 Procedure

The procedures mirrored those of Higgins et al. (1994, Study 2). Participants were randomly assigned to either the promotion-focus or prevention-focus condition. Promotion participants were asked to write for five minutes about how their hopes and dreams had changed in the past four years. On the other hand, prevention participants wrote for five minutes about how their feelings of obligation and duty had changed in the past four years.

Once primed, participants read a series of four stories, each comprised of four brief vignettes. The stories used first person language and corresponded to consecutive days in a target person's life (“Day 1,” “Day 2,” etc.). The structure of these stories was modeled after Higgins et al. (1994, Study 2). The content was derived from standardized measures of outcome expectancies, such as the Smoking Consequences Questionnaire – Adult (SCQ-A; Copeland, Brandon, & Quinn, 1995), and included both long-term (e.g., lung health) and short-term (e.g., staying awake) goals. Each of the four stories (days) included one vignette from each of four categories, arranged randomly:

- (a) SMOKE/APPROACH: Target person smokes to approach a match with a desired state (e.g. smokes to feel alert at an important meeting).
- (b) SMOKE/AVOID: Target person smokes to avoid a match with an undesired state (e.g. smokes to avoid breaking a diet).
- (c) ABSTAIN/APPROACH: Target person abstains to approach a match with a desired state (e.g. abstains from smoking to be a “good role model” for friend's children).
- (d) ABSTAIN/AVOID: Target person abstains to avoid a match with an undesired state (e.g. abstains to avoid being judged negatively by a potential, non-smoking date).

Each story (example below) integrated illustrations of each of the above categories into a brief, connected narrative.

Day 1: This morning, I smoked several cigarettes before fixing my breakfast because I needed to wake up after a night of no sleep (SMOKE/APPROACH²). Driving to work, I began to feel sleepy, so I smoked a couple of cigarettes in the car and turned the music up loudly (SMOKE/AVOID). Later on that afternoon, I remembered I would probably see this good-looking, non-smoking colleague whom I'd wanted to date at the office party, so I freshened up and vowed to stop smoking for the day (ABSTAIN/APPROACH). At the party, I began really craving a cigarette, but I didn't give in to it because I didn't want the colleague to see me as dependent on cigarettes (ABSTAIN/AVOID).

After reading the vignettes, participants completed a distractor task and then a 7-minute recall task, in which they were asked to write as much as they remembered about the stories. Two independent raters, masked to the condition of the participant, later scored the recall exercise, assigning one point for each correctly-recalled vignette. No points were deducted for incorrectly recalled stories. Judgments of whether the memory was accurate showed strong interrater agreement, kappa = .92. Disagreement between raters was resolved by a third rater, also masked to participant condition. Participants' scores for each category (a-d above) were totaled and could range from 0 to 4, comprising the dependent variable.

3. Results

We expected that promotion participants would outperform prevention participants on the recall of vignettes reflecting approach strategies for matching desired end-states, whereas prevention participants would score better on recall of vignettes reflecting avoidance of matches with undesired end-states. We tested this hypothesis using a 2×2×2 RM ANOVA. The dependent measure was the number of vignettes correctly recalled. The independent variables consisted of: RF condition (between-subjects; promotion-focus or prevention-focus), decision to smoke or not (within-subjects; smoking or abstaining), and motivation (within-subjects; approach or avoid).

Descriptive statistics for participant recall are in Table 1. The RM ANOVA revealed no significant main effect for condition, decision to smoke, or motivation, and no three-way interaction. The interaction of decision to smoke and condition was not statistically significant, $F(1,126)=0.33$, *n.s.* Similarly, the hypothesized interaction between condition and motivation was not significant, $F(1,126)=0.07$, *n.s.* There was a significant interaction between decision to smoke and strategy, $F(1,126)=4.08$, $p=.046$. This effect was small ($\eta_p^2=.03$). Participants recalled more smoking vignettes when the target person's goal was to avoid an undesired state rather than to approach a desired state. In contrast, abstaining scenarios were better-recalled when the target person's goal was to approach a desired state rather than to avoid an undesired state. The interaction residuals (cell mean – grand mean – row effect – column effect) are depicted in Figure 1, as recommended by Rosnow and Rosenthal (1989).

4. Discussion

Our results did not support the hypothesis that participants would better recall vignettes that matched their primed focus. These findings contrast with prior research. Higgins and colleagues (1994, study 2) found that participants performed better on recall tasks that matched their primed focus; our data revealed no such relationship. This divergence could be a function of our focus on smoking: perhaps this priming manipulation is not effective in the context of cigarette smoking, a behavior for which motivations may be somewhat resistant to

²Category included here for illustrative purposes; this information was not included in the version of the stories presented to the participants.

manipulation. Alternatively, methodological limitations may account for the discrepancy: the smoking vignettes were developed by the researchers for this study and may not have been an effective manipulation. Empirically, the memory task seemed difficult (average scores on a scale of 0-4 were less than 1), which could have caused a floor effect.

We did see a significant interaction between targets' decisions to smoke (smoke/abstain) and the target person's strategy (approach/avoid). Participants recalled smoking vignettes better when the described-person's goal was smoking to avoid an undesired state (SMOKE/AVOID). On the other hand, abstaining was more easily recalled when the target person's goal was to approach a desired state (ABSTAIN/APPROACH). This finding could suggest that smoking and avoiding unwanted situations, and, conversely, abstaining from smoking and approaching desired situations are linked in smokers' minds, consistent with the idea that people often report smoking to reduce or avoid negative affect (Kassel, Stroud, & Paronis, 2003). If such connections are indeed salient for smokers, public health campaigns that focus on linking abstinence to avoidance of long-term negative outcomes (e.g., disease) may not resonate as readily with smokers; a focus on abstaining to approach a goal (e.g., increased well-being) may be more effective.

Several strengths of the current study should be noted. For one, our methodology closely mirrored that of Higgins and colleagues (1994, Study 2), whose study did yield significant results. In addition, the coding of our memory task showed good interrater reliability. Finally, our sample showed substantial diversity.

Although priming RF did not have a significant effect on cigarette smokers' recall, further research is warranted on the applicability of the theory to cigarette smoking and smoking cessation. As described above (Section 1), measuring participants' trait-like RF types, rather than priming, may be useful in tailoring programs and influencing behavior over time. Perhaps measuring and matching focus type will be the more fruitful path in applying RF to effective smoking prevention and cessation programs. In pursuing this goal, however, it will be important to develop reliable and valid ways of assessing RF among cigarette smokers. Previous research by our group has determined that current measures of trait RF are not well correlated with each other (Haaga, Friedman-Wheeler, McIntosh, & Ahrens, 2008).

The importance of exploring motivation in smokers is vital, considering the health consequences of smoking and the importance of quitting, and RF theory may play a role in responding to the need for improved motivational interventions. Our findings call for further research into whether or not priming RF in smokers is effective, and into finding valid ways of measuring trait RF in this population.

Acknowledgments

We are grateful to E. Tory Higgins for advice on the design of the project, and to Frances Thorndike and Sarah Wesch for assistance with the research. This research was funded by grant 1 R21 CA91829 from the National Cancer Institute.

Role of Funding Sources

The research reported in this article was funded by a grant from the National Cancer Institute (1 R21 CA91829). The NCI had no role in study design, data collection, analysis, or interpretation, the writing of the manuscript, or the decision to submit the paper for publication.

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Figure 1. Residual memory scores for Decision to Smoke (Smoke vs. Abstain) X Coping (Approach vs. Avoid) interaction.

Table 1

Mean Recall of Approach or Avoidance Vignettes as a Function of Manipulated Regulatory Focus

	Promotion Prime		Prevention Prime	
	Smoke	Abstain	Smoke	Abstain
Approach	.58 (.83)	.59 (.75)	.45 (.75)	.59 (.81)
Avoid	.72 (.95)	.45 (.78)	.50 (.80)	.48 (.69)

Note. Scores ranged from 0 to 4, with higher scores indicating greater recall. Values in parentheses are standard deviations. “Smoke” and “Abstain” refer to the vignettes in which the target person smoked or abstained, respectively. “Approach” or “Avoid” refer to the motivation for smoking or abstaining. N=128, 64 in the promotion-primed condition and 64 in the prevention-primed condition.