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Optimizing Anti-Smoking Campaigns: The Dynamic Interplay of Self-Construals, Cigarette Types, and Cessation Stages

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Abstract

This study investigates the effectiveness of tailored anti-smoking campaigns by examining the interplay between self-construals, cigarette types, and stages of change in smoking cessation efforts. Focusing on both combustible cigarette and electronic cigarette users, the research explores how messages framed around either independent or interdependent self-construals influence attitudes and intentions to quit smoking. The findings indicate that in the early stages of cessation, combustible cigarette users respond more positively to messages emphasizing independent self-construals, which highlight personal health risks. Conversely, in the later stages, e-cigarette users are more receptive to interdependent self-construal messages that stress the broader impacts of smoking. We emphasize the importance of aligning smoking cessation messages with the psychological profiles and cessation readiness of different smoker groups. We offer theoretical and empirical insights for enhancing the effectiveness of public health campaigns.

Keywords: *Health communication, anti-smoking campaign, self-construals, cigarette types, stages of change.*

1. INTRODUCTION

The widespread acknowledgment of smoking's detrimental effects on public health underscores the necessity for effective cessation strategies to help people quit. Tobacco use remains a major cause of preventable deaths worldwide, with traditional combustible cigarettes being a significant contributor to

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nicotine addiction [1]. Although cessation efforts have traditionally focused on reducing the use of combustible cigarettes, the advent of electronic cigarettes (e-cigarettes) has added new layers of complexity to the landscape of smoking cessation.

Combustible cigarette users face considerable challenges in quitting due to high nicotine dependence and the deep-rooted behavioral and sensory rituals tied to smoking [2-4]. E-cigarettes, perceived by some as a less harmful alternative, provide a different pathway for nicotine consumption by maintaining the rituals of smoking while potentially lowering exposure to harmful toxins [5]. Despite this perception, the rapid rise in e-cigarette usage, particularly among younger populations, has raised concerns and necessitated a nuanced understanding of their role in cessation efforts [6].

Despite the availability of various cessation aids, such as nicotine replacement therapies (NRTs) and behavioral interventions, achieving long-term nicotine abstinence remains challenging [7]. The rapid nicotine delivery and strong sensory cues associated with combustible cigarettes make quitting particularly difficult [8]. On the other hand, while e-cigarettes offer a less harmful way to deliver nicotine, they maintain many of the behavioral aspects of smoking, which can complicate cessation efforts [9]. These contrasting characteristics between combustible cigarettes and e-cigarettes suggest that cessation strategies need to be tailored to address the specific challenges each presents [9].

Given the distinct needs of these different user groups, this study examines the effectiveness of messaging based on self-construal—focusing on either independence or interdependence—in encouraging smoking cessation among users of both combustible cigarettes and e-cigarettes. Self-construal, which refers to how individuals view themselves in relation to others, plays a critical role in shaping behaviors and responses, influencing psychological processes like motivation and decision-making [10,11]. Research has shown that messages are more effective when they align with an individual's self-view [12]. Additionally, by exploring how these tailored messages affect users at different stages of the cessation process for both combustible cigarette and e-cigarette users, this study aims to provide insights that can inform more effective public health campaigns. The ongoing debate about the health implications of e-cigarettes compared to combustible cigarettes, along with their controversial role in smoking cessation [9, 13], highlights the importance of this research in enhancing both the theoretical understanding and practical interventions aimed at reducing smoking prevalence.

2. LITERATURE REVIEW

2.1. Challenges in Smoking Cessation: Combustible Cigarettes vs. Electronic Cigarettes

Smoking cessation has been a critical focus for public health due to the well-known risks associated with tobacco use, including cardiovascular diseases, respiratory conditions, and multiple forms of cancer [1]. Combustible cigarettes, which deliver nicotine by burning tobacco, present a particularly difficult challenge for cessation efforts due to their high addiction potential. This addiction is driven by the rapid absorption of nicotine and the sensory reinforcement provided by the act of smoking [3].

E-cigarettes, on the other hand, offer nicotine delivery without combustion, reducing certain health risks associated with smoking. However, the act of smoking is maintained, which can perpetuate nicotine addiction [14]. The effectiveness of e-cigarettes as a cessation tool is debated, with some studies suggesting they can be effective, particularly when used as a substitute for combustible cigarettes rather than alongside them [5]. However, other research raises concerns about dual use and the possibility that e-cigarettes might perpetuate nicotine dependence instead of leading to full cessation [13, 15]. The variability in nicotine delivery and user

behavior adds further complexity to their role in smoking cessation [9].

2.2. Self-Construals in Health Communication

Self-construals describe how individuals perceive their relationships with others and influence their responses to various forms of messaging [10]. These can be broadly categorized into independent self-construals, which emphasize personal autonomy and self-reliance, and interdependent self-construals, which emphasize social harmony and connectedness [16].

Previous studies have shown that health messages are more effective when they align with the self-construal of the target audience. Independent self-construals are particularly effective in motivating individuals when messages encourage them to take control of their health behaviors [17]. For example, health messages that focus on the personal risks and consequences of smoking tend to resonate more with non-smokers who have an independent self-construal. In contrast, individuals with interdependent self-construals are more likely to respond positively to messages that emphasize the relational and social consequences of smoking [18]. This suggests that aligning health messages with the audience's self-perceptions can enhance their effectiveness.

Moreover, additional research has indicated that the interaction between self-construals and cigarette types can significantly influence cessation intentions. Specifically, e-cigarette users were more likely to respond favorably to messages framed around interdependent self-construals, while combustible cigarette users showed a stronger response to messages emphasizing independent self-construals [19]. These findings highlight the importance of customizing cessation messages to align with both the self-construals and smoking preferences (cigarette types) of individuals to improve the effectiveness of smoking cessation efforts.

2.3. Stage-Specific Interventions: Stages of Change in Smoking Cessation Based on Trans-Theoretical Model

The Trans-Theoretical Model (TTM) offers a framework for understanding how individuals progress through different stages of behavior change, from precontemplation to maintenance [20, 21]. Central to this model are the stages of change, which indicate an individual's readiness to modify their behavior [22, 23]. This study suggests that tailoring cessation interventions to an individual’s stage of change can enhance their effectiveness. Taken together, the study aims to explore how self-construal-based messaging can be tailored to meet the cessation needs of both combustible cigarette and e-cigarette users at various stages of their quitting journey, thereby improving the effectiveness of public health campaigns.

By aligning smoking cessation messages with individual characteristics such as self-construals, smoking preferences, and their stage in the cessation process, the impact of these interventions can be significantly enhanced. Specifically, in the early stages of smoking cessation, when individuals are either not fully committed to quitting or are simply contemplating it, messages that align with personal motivations and highlight immediate benefits tend to be more effective. This is particularly true for combustible cigarette users, who are more responsive to messages that emphasize personal autonomy and the immediate health benefits of quitting [19]. These smokers tend to be driven by a sense of control and the direct, tangible personal advantages that cessation offers.

On the other hand, a different messaging approach would be required in the later stages of cessation. As individuals progress, the focus should shift towards social responsibilities and the long-term benefits of quitting, which become increasingly important. This approach is especially effective for e-cigarette users. E-cigarettes are often perceived as a less harmful alternative, and users may see them as a transitional tool in the cessation process. This perception makes them a viable option for those who are more committed to quitting in the later

stages of change [9]. For these users, messages that highlight the social and communal benefits of quitting—such as protecting loved ones from secondhand smoke and contributing to a healthier community—are likely to have a stronger impact. Based on these insights, the following hypotheses are proposed:

H1: In the early stages of smoking cessation, messages emphasizing independent self-construals will be more effective for combustible cigarette users than for e-cigarette users in influencing (a) attitude toward the ad, and (b) intention to quit smoking.

H2: In the later stages of smoking cessation, messages emphasizing interdependent self-construals will be more effective for e-cigarette users than for combustible cigarette users in influencing (a) attitude toward the ad, and (b) intention to quit smoking.

3. METHOD

The current research aimed to explore the interaction effect of the stages of change on smoking cessation, self-construal messages and types of cigarettes on the persuasiveness of an anti-smoking campaign. Using a between-subjects factorial design of 2 (stages of change: the early stage vs. the later stage) x 2 (self-construal: independent vs. interdependent) x 2 (cigarette type: combustible vs. electronic), we hypothesized that in the early stages, a matching effect of an independent self-construal message and combustible cigarettes would be stronger than a matching effect of an interdependent message and electronic cigarettes. By contrast, in the later stages, a matching effect of an interdependent message and electronic cigarettes would be stronger than those of an independent message and combustible cigarette.

An online experiment was conducted involving 220 Korean smokers (male = 82.3% and female = 17.7%, average age = 39.15, SD = 10.22) recruited through Survey People, a Korean research firm. Only people who have smoking experience could participate in the experiment. All participants were provided brief information about the research and consent to participate in the research and received monetary compensation of ₩15,000 (approximately $10). Participants were first asked about their smoking behaviors such as their preference of type of cigarette (electronic vs. combustible cigarette), the amount of cigarettes they smoke per day and their length of smoking duration. Out of 220 participants, 51 indicated they were only e-cigarette users, 85 disclosed they were dual users (e-cigarette and combustible) and 84 stated that they were only combustible cigarette users. Among the dual users, 56 disclosed that they predominantly used e-cigarettes whereas 29 indicated they were predominant combustible cigarette users. Based on the responses, participants were divided into two groups (e-cigarette: exclusive & predominant e-cigarette users; n = 107 vs. combustible cigarette: exclusive & predominant combustible cigarette users; n = 113).

Then they were asked to indicate their current stages of change related to smoking cessation with a classification schema commonly utilized in prior studies [24, 25]. The classification schema was composed of five stages (pre-contemplation, contemplation, preparation, action, and maintenance) and people were categorized based on their length of smoking cessation or plans to quit smoking in the near or distant future (e.g., *Pre-contemplation*: I do not intend to quit smoking in the next six months; *Contemplation*: I intend to quit smoking in the next six months; *Preparation*: I intend to quit smoking in the next 30 days; *Action*: I have been quitting smoking for less than six months; *Maintenance*: I have been quitting smoking more than six months). Among the five stages, smokers in the pre-contemplation and contemplation stages might be less likely to be interested in and ready for smoking cessation compared to smokers in other stages (preparation, action and maintenance). Based on the level of interest in smoking cessation, in the current research, smokers were divided into two categories: the early stage of change (pre-contemplation & contemplation, n = 132,

60%) vs. the later stage of change (preparation, action, & maintenance, n = 88, 40%).

Following this, participants were randomly allocated to one of two self-construal advertisements (independent: n = 109 vs. interdependent: n = 111). Based on previous research [12], self-construal advertisements were manipulated through copies and images. For example, in the independent self-construal advertisement, the ad copy mainly emphasized the health risks of smoking that the smoker himself would have with a solo image of the smoker. By contrast, in the interdependent self-construal advertisement, the ad copy warned about the risk of smoking influencing the smokers' family with an image of the smokers' family. After the advertisement exposure, two dependent variables were measured. First, participants' attitude toward the advertisement were measured with a 7-point semantic differential scale [26] (1 = bad, negative, unfavorable = 1 vs. 7 = good, positive, favorable, α = .83). Then, their intention to smoking cessation was measured using a 7-point Likert scale (1 = definitely will not t; 7 = definitely will; 5 items such as 'I will quit smoking completely and permanently in the next 3 months,' etc.; (α = .91) [27]. Manipulation checks and participants' demographic questions were subsequently provided.

4. RESULTS

4.1. Manipulation check

To check the self-construal manipulation, a 7-point semantic differential scale with 3 items was used [28]. Participants were asked whether the advertisement focused more on smokers themselves or others such as "This advertising is emphasizing the benefit of smoking cessation to smokers themselves (1 vs. others: 7). The results of independent t-tests demonstrated that participants who were exposed to the interdependent advertisement indicated the ad was more associated with others (M =4.57, SD = 1.18) rather than smokers [M =4.04, SD = 1.29; t (218) = -3.14, p < .01]. Therefore, the self-construal advertisements were successfully manipulated.

4.2. Hypotheses testing

To test the hypotheses, a series of analysis of variances (ANCOVAs) were conducted with smoking quantity and duration employed as covariates. When it comes to attitude toward the advertisement, the results showed that there were significant main effects of stages of change [F (1, 210) = 12.38, p <.01, η^2 = .06] and cigarette types [F (1, 210) = 3.97, p <.05, η^2 = .02]. The significant main effect of self-construal appeals was not found (p >.05). The interaction effect between cigarette type and self-construal appeals [F (1, 210) = 10.89, p <.01, η^2 = .05] and the interactive effect of stages of change and self-construal appeals [F (1, 210) = 3.98, p <.05, η^2 = .02] were significant. However, the interaction effect between stages of change and cigarette type was not significant (p >.05). The three-way interaction of stages of change, cigarette type and self-construal appeals was also not significant (p > .05). Among two covariates, smoking duration had a significant influence on the dependent variable (p <.01), but smoking quantity did not exert a significant effect (p >.05). To further investigate the interaction effects, planned contrasts were conducted. As illustrated in Figures 1(a) and 1(b), the planned contrast demonstrated that in the early stage, combustible cigarette smokers responded more positively to the advertisement emphasizing independent self-construal (M = 4.34, SD = 1.00) rather than those of interdependent self-construal [M = 3.58, SD = 1.21; F (1, 210) = 7.80, p <.01, η^2 = .04]. However, in the later stage, e-cigarette smokers showed a more positive attitude toward the advertisement emphasizing interdependent self-construal (M = 5.15, SD = 1.10) compared to independent self-construal [M = 4.27, SD =

1.00; F (1, 210) = 5.98, p <.05, η^2 = .03]. Thus, H1a and H2a were supported.

In terms of intention to smoking cessation, the results indicated that there was a significant main effect of stages of change [F (1, 210) = 12.38, p <.01, η^2 = .06]. However, the main effects of cigarette type and self-construal appeals were not significant. Even though the interaction effect between cigarette type and self-construal appeals was significant [F (1, 210) = 4.36, p <.05, η^2 = .02], the other two interaction effects (stages of change x cigarette types & stages of change x self-construal appeals) were not significant (p > .05). The three-way interaction of stages of change, cigarette type and self-construal appeals was also not significant (p > .05). As illustrated in Figures 2(a) and 2(b), results from planed contrast tests revealed that e-cigarette smokers in the later stage indicated a higher level of intention to smoking cessation when they were exposed to the interdependent advertisement (M = 5.12, SD = 1.11) compared to the independent advertisement [M = 4.44, SD = 0.99; F (1, 210) = 4.10, p <.05, η^2 = .02]. However, smokers in the early stage did not show significantly different intention to smoking cessation depending on the self-construal advertisements (p >.05). Thus, H2b was supported, whereas H1b was not supported.

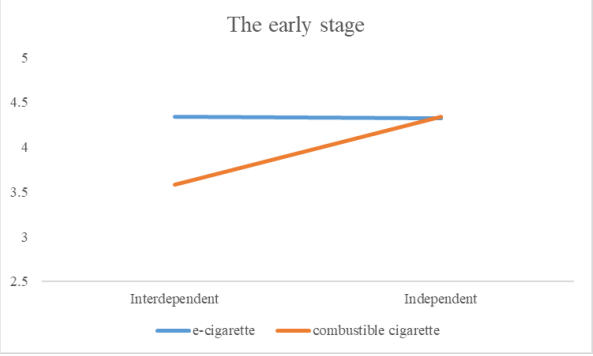

Figure 1(a). The interaction effect between self-construal appeals and cigarette type on the attitude toward the ad in the early stage of smoking cessation.

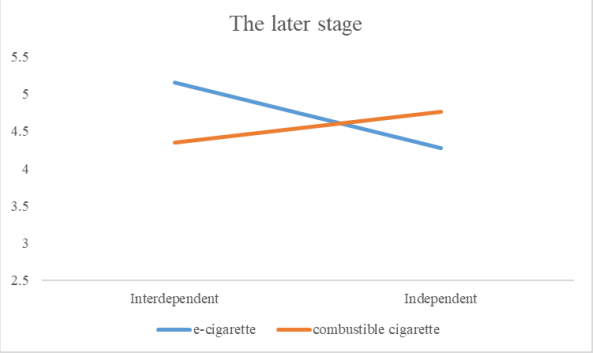

Figure 1(b). The interaction effect between self-construal appeals and cigarette type on the attitude toward the ad in the later stage of smoking cessation.

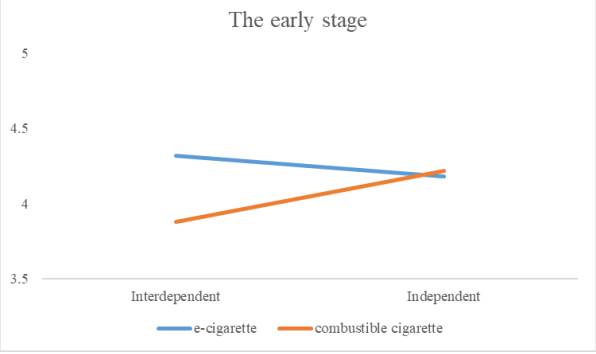

Figure 2(a). The interaction effect between self-construal appeals and cigarette type on the intention to quit smoking in the early stage of smoking cessation

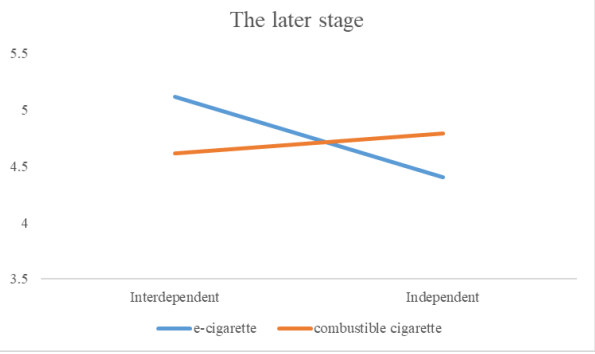

Figure 2(b). The interaction effect between self-construal appeals and cigarette type on the intention to quit smoking in the later stage of smoking cessation

5. DISCUSSION

The results support the hypothesis that in the early stages of smoking cessation, messages that emphasize independent self-construals—such as those highlighting personal health risks—are particularly effective for combustible cigarette users, helping to shape more positive attitudes toward the ad. However, the expected interaction effect on the intention to quit smoking was not statistically significant, implying that while these messages can influence attitudes, additional factors may be necessary to convert these attitudes into behavioral intentions [29], particularly given the initial stages of cessation. Emphasizing the personal consequences of traditional cigarette smoking is particularly effective for individuals in the early stages of cessation, where the strong sensory and habitual ties to combustible cigarettes necessitate a focus on autonomous motivation, aligned with independent self-construals. Conversely, the study found that in the later stages of smoking cessation, e-cigarette users responded more favorably to messages emphasizing interdependent self-construals, such as highlighting the broader health risks that smoking poses to their families. Aligning message framing with interdependent self-construals enhances both their attitude towards the advertisement and their intention to quit smoking. This underscores the importance of considering both psychological and social factors in smoking cessation campaigns. This finding aligns with the understanding that individuals in more advanced stages of cessation are driven by communal benefits and social responsibilities, making them more responsive to messages that emphasize interdependence and the broader impact of their smoking behavior on others.

Additionally, focusing on the dangers of combustible cigarettes appears more appropriate in the early stages of cessation, where the need and motivation to quit may be lower. These messages resonate strongly well with smokers who are dealing with the strong sensory and habitual ties to traditional cigarettes. However, with the growing popularity of e-cigarettes, it is crucial to address the perception that they are less harmful. This perception has led to increased usage, with many e-cigarette users not feeling the same urgency or need to quit as those who smoke combustible cigarettes. In this regard, our study highlights the importance of tailoring cessation messages to the specific type of cigarette being used. For e-cigarette users, who often perceive their habit as less harmful and thus feel less compelled to quit, carefully crafted messaging strategies are crucial. As the findings suggest, in the later stages of cessation, when individuals are more motivated to quit, emphasizing social responsibilities and the health risks that smoking poses to others becomes more effective. By framing the message around protecting loved ones from secondhand smoke and contributing to a healthier community, these strategies can more effectively encourage cessation among e-cigarette users.

Despite the valuable insights gained into smoking cessation, several limitations of this study should be acknowledged. Firstly, the focus on Korean smokers may limit the generalizability of the findings, as cultural factors significantly influence self-construals [30]. To improve the applicability of the results, future studies should explore these dynamics across diverse cultural contexts. Additionally, the current study captures participants' responses at a single moment, which may not fully reflect the complexities of smoking behaviors, such as the concurrent use of combustible cigarettes and e-cigarettes, or the intricate details of the cessation journey. A longitudinal approach would provide a more comprehensive understanding of the interplay between self-construals, cigarette type, and cessation stages on the effectiveness of the campaign.

6. CONCLUSION

This study contributes to the health communication literature by elucidating the nuanced roles that self-construals and stages of change play in smoking cessation. It highlights the importance of tailoring messages not only to the type of smoker but also to their psychological and behavioral readiness to quit. From a practical

perspective, these findings provide valuable guidance for public health campaigns. By addressing the specific perceptions and motivations of both combustible cigarette and e-cigarette users at different stages of their cessation journey, our study offers a comprehensive framework for more effective public health interventions.

In conclusion, this study demonstrates that tailored messaging aligned with smokers' psychological profiles and their stage in the cessation process can significantly enhance campaign effectiveness, ultimately contributing to reduced smoking prevalence and improved public health outcomes. By understanding the interaction between self-construals, cigarette types, and stages of change, public health initiatives can more effectively address the diverse needs and motivations of smokers at different points in their quitting journey, further improving the impact of health campaigns.

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