Effects of Narrative Anti-Smoking PSAs on Forewarning-Induced Resistance to Persuasion*

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【Abstract】

Based on the extended elaboration likelihood model (E-ELM) and the entertainment overcoming resistance model (EORM), this study has tried to see indirectly whether entertainment-education (E-E) can reduce forewarning-induced resistance and the effect of

* An earlier version of this paper has been accepted at the Health Division of the International Communication Association, Puerto Rico, May 21-25, 2015.
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transportation or engagement with the storyline on the viewer's behavioral intentions. An online experiment was conducted using 800 male smokers, among whom 400 were forewarned about viewing an anti-smoking public service announcement (PSA) and the other 400 were not. The 800 participants were classified into the low, moderate, and high nicotine-dependent groups based on the Fagerström Test for Nicotine Dependence. The results indicate that post-message intentions to quit smoking were stronger than pre-message intentions regardless of the presence of a forewarning and the level of nicotine dependence. The forewarning induced resistance only in the high nicotine-dependent group and resistance decreased after PSA exposure. The difference in intentions to quit smoking between the forewarned and non-forewarned groups before PSA exposure decreased after the exposure for the low and high nicotine-dependent groups. The study interprets the results and discusses their theoretical and practical implications for better understanding the ability of narrative persuasive messages.

Key words: Narrative PSAs, Entertainment-Education, Resistance, Transportation, Persuasion

1. Introduction

Recently, many studies have examined the power of the narrative, particularly in the context of promoting prosocial attitudes, intentions, and behaviors. According to Dal Cin, Zanna, and Fong, "narratives touch our emotions, impact what we believe, teach us new behaviors,

and shape our cultural identity."[1] Narratives can ultimately transform individuals or "change the self"[2] by sweeping an individual emotionally into the experience described by the author and transporting him or her into the story by shaping his or her memories, knowledge, and beliefs.[3][4]

Some scholars have focused on the ability of entertainment narratives to suppress counterarguments or overcome resistance to persuasion. Slater and Rouner suggested that entertainment narratives can suppress counterarguments by fostering absorption and thus reducing the motivation to argue persuasive points embedded in the narrative.[5] Dal Cin et al. indicated that the power of narratives lies in overcoming resistance by reducing negative thoughts associated with the persuasive message and increasing positive thoughts about a particular behavior or attitude object.[6] Moyer-Gusé posited that E-E narratives are likely to overcome reactance[7] by weakening

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1) Dal Cin, S., Zanna, M. P., & Fong, G. T., "Narrative Persuasion and Overcoming Resistance." In E. S. Knowles & J. A. Linn (Eds.), *Resistance and Persuasion,* New York: Psychology Press, 2004, pp. 175-191.

2) Oatley, K., "Emotions and the Story Worlds of Fiction." In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative Impact: Social and Cognitive Foundations*, Mahwah, NJ: Erlbaum, 2002, pp. 39-69.

3) Hilgard, J. R., *Personality and Hypnosis: A Study of Imaginative Engagement* (2nd ed.), Chicago: University of Chicago Press, 1979.

4) Johnson, M. K., "Foreword." In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative Impact: Social and Cognitive Foundations,* Mahwah, NJ: Erlbaum, 2002, pp. ix-xii.

5) Slater M. D., & Rouner, D., "Entertainment-Education and Elaboration Likelihood: Understanding the Processing of Narrative Persuasion", *Communication Theory* 12(2), 2002, pp. 173-191.

6) Dal Cin *et al., op cit.*, p. 176.

7) Resistance is defined as "people's motivated effort to defend an attitude

the viewer's perception that the message is intended to persuade.[8] However, the question of whether entertainment narratives actually suppress counterarguments or reduce resistance requires further research.[9][10] Some scholars have argued that an experimental design is necessary to examine the effects of a high level of absorption in the narrative on the possible suppression of counterarguments.[11] Therefore, the primary goal of the present study is to empirically examine whether forewarning-induced resistance decreases after exposure to an anti-smoking public service announcement (PSA) and the role of transportation in behavioral intentions to quit smoking by employing an online experimental design.

2. Entertainment Narratives and Resistance to Persuasion

1) Entertainment Narratives Suppressing Resistance

An increasing number of studies have examined how narrative

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against change" (Dal Cin *et al.*, *Ibid.*, p. 176). Reactance, one of the four faces of resistance that are different but probably related, is initiated "only when the influence is directly perceived and when it threatens a person's alternatives" (Knowles & Linn, 2004, p. 5).

8) Moyer-Gusé, E., "Toward a Theory of Entertainment Persuasion: Explaining the Persuasive Effects of Entertainment-Education Message", *Communication Theory* 18, 2008, pp. 407-425.

9) Moyer-Gusé, E., & Nabi, R. L., "Explaining the Persuasive Effects of Narrative in an Entertainment Television Program: Overcoming Resistance to Persuasion", *Human Communication Research* 36, 2010, pp. 26-52.

10) Slater & Rouner, *op cit.*, pp. 173-191.

11) *Ibid.*, pp. 173-191.

entertainment messages shape the audience's understanding and motivate changes in prosocial behaviors, but few studies have provided a sufficient understanding of this phenomenon.[12][13] In this regard, how such power is exerted over individuals[14][15] needs to be better examined because the mechanisms underlying these effects remain unclear.[16]

Psychological reactance theory[17][18] suggests that any persuasive message may arouse an individual's motivation, the so-called "reactance", to reject the advocacy and has been called upon to explain resistance to persuasion.[19] In this way, two models of E-E

12) Petraglia, J., "Narrative Intervention in Behavior and Public Health", *Journal of Health Communication* 12, 2007, pp. 493-505.

13) Slater, M. D., Rouner, D., & Long, M., "Television Dramas and Support for Controversial Public Policies: Effects and Mechanisms", *Journal of Communication* 56, 2006, pp. 235-252.

14) Green M. C., & Brock, T. C., "In the Mind's Eye: Transportation-Imagery Model of Narrative Persuasion." In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative impact: Social and Cognitive Foundations*, Mahwah, NJ: Erlbaum, 2002, pp. 315-341.

15) Lee, J. K., Hecht, M. L., Miller-Day, M. A., & Elek, E., "Evaluating Mediated Perception of Narrative Health Messages: The Perception of Narrative Performance Scale", *Communication Methods and Measures* 5(2), 2011, pp. 126-145.

16) Murphy, S. T., Frank, L. B., Moran, M. B., & Patnoe-Woodley, P., "Involved, Transported, or Emotional? Exploring the Determinants of Change in Knowledge, Attitudes, and Behavior in Entertainment-Education", *Journal of Communication* 61(3), 2011, pp. 407-431.

17) Brehm, J. W., *A Theory of Psychological Reactance*, New York: Academic Press, 1966.

18) Brehm J. W., & Brehm, S. S., *Psychological Reactance: A Theory of Freedom and Control*, San Diego, CA: Academic Press, 1981.

19) Dillard J. P., & Shen, L., "On the Nature of Reactance and its Role in Persuasive Health Communication", *Communication Monographs* 72, 2005,

mechanisms posit that E-E narrative messages have the distinct ability to suppress or overcome recipients' resistance to the persuasive message. Slater and Rouner noted the limited usefulness of the traditional elaboration likelihood model (ELM) in understanding how E-E messages influence behavioral changes even when the advocated behavior is inconsistent with prior beliefs and attitudes of the intended audience and thus extended the traditional ELM by focusing on the unique feature of E-E narratives to preclude cognitive resistance or counterarguments—"the generation of thoughts that dispute or are inconsistent with the persuasive argument"—to persuasive content in the narrative.[20] The extended ELM (E-ELM) includes two main components of narrative engagement: identification with characters and engagement with the storyline. Successful E-E interventions attract audiences not because of their educational or persuasive content but because they reflect compelling drama. According to Quinn and Wood, because resistance is a thoughtful process, distracted participants as a result of a challenging cognitive task are unable to build cognitive defense against and counterargue the persuasive appeal.[21][22] Similarly, viewers enthralled by engaging entertainment narratives may have fewer cognitive resources to take a critical stance on and counterargue the embedded persuasive

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pp. 144-168.

20) Slater & Rouner, *op. cit.*, p. 180.

21) Quinn J. M., & Wood, W., "Forewarnings of Influence Appeals: Inducing Resistance and Acceptance." In E. S. Knowles & J. A. Linn (Eds.), *Resistance and Persuasion*, Mahwah, NJ: Lawrence Erlbaum Associates, 2004, pp. 193-213.

22) Eagly A. H., & Chaiken, S., *The Psychology of Attitudes*, Fort Worth, TX: Harcourt, Brace, & Janovich, 1993.

message. Therefore, Slater and Rouner suggested that absorption in the narrative and responses to characters in the narrative make it easier to influence viewers' beliefs, attitudes, and behaviors. It is well known that the effectiveness of entertainment narratives is contingent on the appeal of the storyline, the quality of production, and the "unobtrusiveness of persuasive subtext."[23]

In addition to character identification, transportation, and parasocial interaction, the two models include critical components such as homophily, empathy, liking, perceived realism, belivability (and persuadability), and measures of affect or arousal/emotion.[24][25][26]

2) Using Forewarnings to Induce Resistance

To indirectly investigate the power of the E-E narrative to reduce or overcome resistance to persuasion, this study intentionally provides a forewarning about a forthcoming persuasive attempt for research participants because a forewarning is assumed to provoke resistance. However, previous studies have provided somewhat mixed results for the effects of forewarnings. Some studies have indicated that forewarnings induce resistance to impending messages, whereas others have suggested that they induce acceptance. Various forewarnings have differential effects. For example, forewarnings delivering only the persuasive intent of an appeal typically confer resistance, whereas those specifically informing recipients of the message topic and

23) Slater & Rouner, *op. cit.*, p. 178.
24) Moyer-Gusé, *op. cit.*
25) Moyer-Gusé & Nabi, *op. cit.*
26) Slater & Rouner, *op. cit.*

stance can induce resistance or susceptibility.[27][28] Various motives may explain such differential effects, and one may be a defense motive. When forewarnings threaten individuals' existing attitudes, they are likely to form a defensive orientation and be resistant to protect those attitudes.[29] However, when forewarnings include topics that are highly involving in the sense that they concern immediately important outcomes, their effects are quite straightforward. That is, such forewarnings induce resistance in both pre- and post-message attitudes by motivating recipients to scrutinize message-relevant information.[30]

Because resistance to persuasion means resisting changes in existing attitudes and behaviors toward the direction advocated by the persuasive appeal, more resistant recipients' are less likely to have intentions to change their behaviors. Therefore, if forewarnings explicitly inclusive of the persuasive intent successfully induce resistance, then forewarned recipients are less likely to show intentions to change their behaviors. Previous studies have reported that more nicotine-dependent smokers tend to be more resistant to cessation messages and treatment,[31][32] which in turn has negative effects on

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27) Cialdini R. B., & Petty, R. E., "Anticipatory Opinion Effects." In R. Petty, T. Ostrom, & T. Brock (Eds.), *Cognitive Responses in Persuasion*, Hillsdale, NJ: Erlbaum, 1981, pp. 217-235.

28) Petty R. E., &Cacioppo, J. T., "Forewarning, Cognitive Responding, and Resistance to Persuasion", *Journal of Personality and Social Psychology* 35, 1977, pp. 645-655.

29) Quinn & Wood, *op. cit.*

30) Johnson M. K., & Eagly, A. H., "Effects of Involvement on Persuasion: A Meta-Analysis", *Psychological Bulletin* 106, 1989, pp. 290-314.

31) Bittoun, R.,, "The 'Treatment-Resistant' Smoker", *Medicine Today* 8(8), 2007, pp. 16-24.

both pre- and post-message intentions to quit smoking. Thus, the following hypotheses are proposed:

H1: Forewarned individuals are less likely to show pre-message intentions to quit smoking than their non-forewarned counterparts.

H2: High nicotine-dependent individuals are less likely to show pre-message intentions to quit smoking than their low nicotine-dependent counterparts.

Although forewarnings are most likely to induce resistance when attitudes are assessed after the persuasive appeal,[33] E-E narratives following forewarnings may reduce such forewarning-elicited resistance with their distinct ability to cause viewers to lose themselves in the storyline and engage with the characters.[34][35][36] Therefore, the following hypothesis is proposed:

H3: Exposure to a narrative anti-smoking PSA reduces the difference in pre-message intentions between forewarned and non-forewarned individuals.

Finally, the E-ELM and the EORM suggest that the distinct

32) Peele, S., "The Fluid Concept of Smoking Addiction." In C. V. Philips & P. Bergen (Eds.), *Tobacco Harm Reduction 2010: A Yearbook of Recent Research and Analysis,* TobaccoHarmReduction.org, 2010. Retrieved from http://www.peele.net/lib/fluid.php

33) Quinn & Wood, *op. cit.*

34) Moyer-Gusé, *op. cit.*

35) Moyer-Gusé & Nabi, *op cit.*

36) Slater & Rouner, *op. cit.*

ability of narratives to reduce or overcome resistance to the persuasive appeal affects the viewer's behavioral intentions. This suggests that exposure to an anti-smoking PSA may have a positive effect on the viewer's intention to quit smoking.

H4: Post-message intentions to quit smoking are stronger than pre-message ones regardless of forewarnings.
H5: Post-message intentions to quit smoking are stronger than pre-message ones regardless of nicotine dependence.
H6: Transportation has a positive effect on post-message intentions to quit smoking for both forewarned and non-forewarned individuals.

3. Method

1) Online Experiment

An online experiment was conducted in South Korea between October 15 and November 10, 2012. To obtain a total of 800 male cigarette smokers in their twenties and thirties, a web research firm sent 20,000 invitation e-mail messages to males aged 20 to 39 who were randomly chosen from a panel database. The online experiment was continued until the 2,858th participant answered all questions in the experiment, resulting in a total of 800 male smokers aged between 20 and 39. Among the 2,858 participants, non-smokers and those who did not complete the questionnaire were excluded. The experiment focused on male smokers aged

between 20 and 39 because young adults have one of the highest rates of smoking of any age group[37] and young adult smokers tend to resist anti-smoking messages because of their widely held belief that they would not be lifelong smokers.[38] A strategy for recruiting participants was developed to control for or minimize the effects of gender and age on smoking and other variables of interest.

Among the 800 male smokers aged between 20 and 39, 54 (6.8%) were in their twenties, and 746 (93.3%), in their thirties. Half were randomly assigned (using the odd-even assignment method) to the forewarned (experimental) group, and the other half, to the non-forewarned (control) group. Both groups watched the same anti-smoking PSA video clips, and therefore the only difference in treatment for the two groups was the presence of forewarnings. The online questionnaire was composed of three parts (questions before treatment, treatment, and questions after treatment) and designed to prevent the respondents from answering any questions without watching the PSA completely. For their participation, "cybermoney" worth KRW 2,000 (approximately $2) was given to each respondent.

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37) Burford, O., Jiwa, M., Carter, O., Parsons, R., & Hendrie, D., "Internet-Based Photoaging within Australian Pharmacies to Promote Smoking Cessation: Randomized Controlled Trial. *Journal of Medical Internet Research* 15(3), 2013. Retrieved from http://www.jmir.org/ 2013/3/e64/

38) Terry-McElrath, Y. M., Emery, S., Wakefield, M. A., O'Malley, P. M., Szczypka, G., & Johnston, L. D., "Effects of Tobacco-Related Media Campaigns on Smoking among 20-30-year-old Adults: Longitudinal Data from the USA. *Tobacco Control* 22(1), 2013, pp. 38-45.

2) Stimulus

An anti-smoking PSA video clip about three minutes long was chosen from readily available YouTube clips.[39] The clip featured an anti-smoking campaign produced and screened in Malaysia by the Ministry of Health between the years 2008 and 2009. This clip was selected because the participants (Koreans) were not likely to have viewed it. The clip was produced in English and Malay and included English subtitles. The authors downloaded the clips, placed Korean subtitles under the English subtitles, and inserted them in the online questionnaire.

The clip focuses on a son in his late teens waiting for his mother, a hospital nurse. It starts with an ambulance rushing with the siren on. Three patients suffering from various diseases caused by smoking reflect the dramatic narrative throughout the three-minute clip. "Forgive me," a middle-aged father with lung cancer says to his daughter. "I love you," a mother tries to say to her younger son, but she cannot enunciate very clearly because of her mouth cancer. The nurse translates it for her son. "My leg … It's gone," a husband who lost part of his right leg tells his wife. The video part of the clip ends with a remark by the mother to her son, who is contemplating to start smoking. "Don't break my heart," she says, and then the son throws away the cigarette pack into a litter bin. The portrayal of a father and a daughter, a wife and a husband, and a mother and a son represents significant others as part of social norms and delivers a strong message to current and

39) Retrieved from http://www.youtube.com/watch?v=KsJ8kBItxrs.

potential smokers, reminding them of their health in the near future as well as their relationships with their families. The clip ends with two slides that alert and warn the viewer: "Smoking causes lung cancer, mouth cancer, gangrene, and other fatal diseases" and "Quit now. Smoking doesn't pay."

3) Instrument

Forewarnings reflected the explicitly persuasive intent and were offered to the experimental group. The participants in this group were told that they would be viewing an anti-smoking PSA intended to persuade them to quit smoking: "You will shortly watch an anti-smoking PSA depicting a male smoker in his twenties suffering from lung cancer, a female smoker in her thirties with mouth cancer, and a male smoker who lost part of his right leg. The PSA was produced to persuade people to quit smoking."

Nicotine dependence was measured according to the Fagerström Test for Nicotine Dependence (FTND),[40][41] an instrument widely used to assess nicotine dependence.[42] Based on six questions, the test measures whether smoking is just a habit or the individual is

40) This is renamed as the Fagerström Test for Cigarette Dependence (Fagerström, 2012).

41) Heatherton, T. F., Kozlowski, L. T., Frecker, R. C., & Fagerström, K. -O., "The Fagerström Test for Nicotine Dependence: A Revision of the Fagerström Tolerance Questionnaire", *British Journal of Addiction 86*(9), 1991, pp. 1119-1127.

42) Radizius, A., Gallo, J. J., Epstein, D. H. et al., "A Factor Analysis of Fagerström Test for Nicotine Dependence (FTND)", *Nicotine & Tobacco Research* 5(2), 2003, pp. 255-260.

addicted to it. For example, the questions included "Do you find it difficult to refrain from smoking in places where it is forbidden?" and "Do you smoke even if you are so ill that you are in bed most of the day?" Total scores for the scale range from 0 to 10, where 0-2 indicates very low dependence; 3-4 low dependence; 5 moderate dependence; 6-7 high dependence; and 8-10 very high dependence.[43] For conciseness, these scores were regrouped into three levels: low dependence (0-4, M=3.56, SD=0.64, n=344), moderate dependence (5, M=5, SD=0, n=212), and high dependence (scores 6-10, M=6.48, SD=0.71, n=244).

The items for *intentions* to quit smoking were adapted from the scale in Ajzen, Joyce, Sheikh, and Cote.[44] Three items ("I am planning to quit smoking within the next three months," "I expect that I will quit smoking within the next three months," and "I will probably quit smoking within the next three months") for pre- and post-message intentions were measured on a seven- point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). The scale was reliable for both pre-message (M = 4.10, SD = 1.70, Cronbach's α = 0.95) and post-message (M = 4.80, SD = 1.60, Cronbach's α = 0.95) intentions.

Transportation was measured by adapting Green and Brock's transportation scale[45] to a version of the PSA by using eight items. Some of these items were "While watching the PSA, I could easily

43) Heatherton et al., *op. cit.*

44) Ajzen, I., Joyce, N., Sheikh, S., & Cote, N. G., "Knowledge and the Prediction of Behavior: The Role of Information Accuracy in the Theory of Planned Behavior", *Basic and Applied Social Psychology* 33, 2011, pp. 101 - 117.

45) Green & Brock, *op. cit.*

picture the events in it taking place," "The narrative affected me emotionally," and "While I was watching the PSA, the activity going on in the room around me was on my mind." The participants responded to a seven-point Likert-type scale ranging from "not at all" (1) to "very much" (7). A principal component factor analysis with Varimax rotation yielded one unidimensional factor for the 10-item transportation scale (M = 4.91, SD = 1.18, Cronbach's α = 0.93; Eigenvalue = 5.38, total variance = 67.26%, factor loadings = .90 - .64).

4. Results

The results of the 2 x 3 ANOVA with pre-message intentions indicate significant main effects of the forewarning condition (F(1,794) = 4.09, $p < 0.05$, $h^2 = 0.05$) and nicotine dependence (F(1,794) = 4.09, $p < 0.05$, $h^2 = 0.05$). However, the forewarning condition (M = 4.25, SD = 1.75, n = 400) was more likely to increase pre-message intentions to quit smoking than the no- forewarning condition (M = 3.95, SD = 1.63, n = 400), providing no support for H1 (see Table 1).

The results of the same analysis provide support for H2 (F(2,794) = 8.176, $p < 0.001$, $h^2 = 0.02$), with the high nicotine-dependent group (M = 3.73, SD = 1.74, n = 244) less likely to show pre-message intentions to quit smoking than the moderate (M=4.21, SD = 1.59, n = 212) and low (M = 4.30, SD = 1.70, n = 344) nicotine-dependent groups. However, there was no significant difference in pre-message intentions between the moderate and low nicotine-dependent groups (see Table 1).

Table 1: *Comparison of Pre- and Post-Message Intentions to Quit Smoking by Nicotine Dependence and Forewarning*

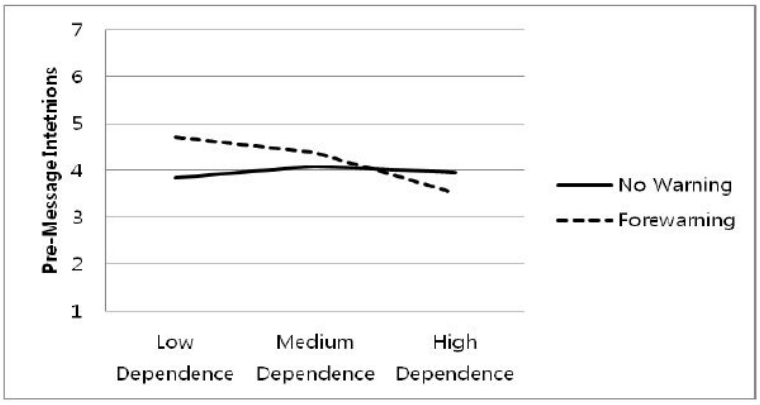
Nicotine Dependence	*Forewarning*		*Mean Difference [95% CI[a]]*	*SD*	*p[a]*	*Cohen's d [95% CI]*
	No	*Yes*				
Pre-Message Intentions						
L (*n*=344)	3.84 (*n*=160)	4.70 (*n*=184)	.862* [.510, 1.214]	.179	.000	.52 [.36, .70]
M (*n*=212)	4.09 (*n*=124)	4.39 (*n*=88)	.303 [-.151, .756]	.231	.191	.19 [-.02, .40]
H (*n*=244)	3.96 (*n*=116)	3.53 (*n*=128)	-.434* [-.851, -.017]	.213	.042	-.25 [-.47, -.03]
Total Mean	3.95 (*n*=400)	4.25 (*n*=400)	.30*			
Post-Message Intentions						
L (*n*=344)	4.70 (*n*=160)	5.24 (*n*=184)	.547* [.216, .878]	.169	.001	.35 [.19, .51]
M (*n*=212)	4.86 (*n*=124)	5.20 (n=88)	.344 [-.082, .771]	.217	.114	.23 [.04, .43]
H (*n*=244)	4.49 (*n*=116)	4.23 (n=128)	-.260 [-.652, .133]	.200	.194	-.16 [-.37, .06]
Total Mean	4.69 (*n*=400)	4.91 (*n*=400)	.22*			

Note: *p 〈 0.05; [a]Adjusted p-values for multiple comparisons: Least significant differences (the same as p-values not adjusted).

To explore the interaction effect of forwarnings on pre-message intentions, the same 2 x 3 ANOVA analysis with pre-message intentions as a dependent variable was conducted. The results indicate a significant interaction effect ($F(2,794) = 10.85$, $p < 0.001$, $h^2 = 0.03$), suggesting that differences in pre-message intentions between the three nicotine-dependent groups were significant between the two different forewarnings conditions.

More specifically, the results for simple effects show that, under the no-forewarning condition, there were no significant differences ($F(2,794) = 0.82$, $p = 0.440$, $h^2 = 0.002$) in pre-message intentions between the high ($M = 3.84$, $SD = 1.83$, $n = 160$), moderate (M

Figure 1: *Interaction Effect of the Forewarning and Nicotine Dependence on Pre-Message Intentions to Quit Smoking*



Note. $F(2,794) = 10.85$, $p < 0.001$, $h^2 = 0.03$.

= 4.09, *SD* = 1.62, *n* = 124), and low (*M* = 3.96, *SD* = 1.33, *n* = 116) nicotine-dependent groups. Under the forewarning condition, however, there were significant differences between the three groups ($F(2,794) = 19.23$, $p < 0.001$, $h^2 = 0.05$).

Here, the low nicotine-dependent group showed the strongest pre-message intentions (*M* = 4.70, *SD* = 1.46, *n* = 184), followed by the moderate (*M* = 4.39, *SD* = 1.53, *n* = 88) and high (*M* = 3.53, *SD* = 2.05, *n* = 128) nicotine-dependent groups (see Table 1 and Figure 1).

The results showing significant interaction effects from the same ANOVA indicate that, before exposure to the narrative anti-smoking PSA, there were significant differences in pre-message intentions between the two forewarning conditions for certain groups. More specifically, the results for simple effects indicate that the high nicotine-dependent group under the forewarning condition (*M* =

3.53, SD = 2.05, n = 128) showed higher resistance or weaker pre-message intentions to quit smoking than the high nicotine-dependent group under the no-forewarning condition (M = 3.96, SD = 1.33, n = 116; $F(1,794)$ = 4.17, $p < 0.05$, h^2 = 0.005), whereas the low nicotine-dependent group under the forewarning condition (M = 4.70, SD = 1.46, n = 184) showed lower resistance or stronger pre-message intentions to quit smoking than the low nicotine-dependent group under the no-forewarning condition (M = 3.85, SD = 1.84, n = 160; $F(1,794)$ = 23.13, $p < 0.001$, h^2 = 0.03). No such significant differences in resistance were found for the moderate nicotine-dependent group between the forewarning (M = 4.39, SD = 1.53, n = 88) and no-forewarning (M = 4.09, SD = 1.62, n = 144; $F(1,794)$ = 1.71, p=.19, h^2 = 0.002) conditions (see Table 1 and Figure 1).

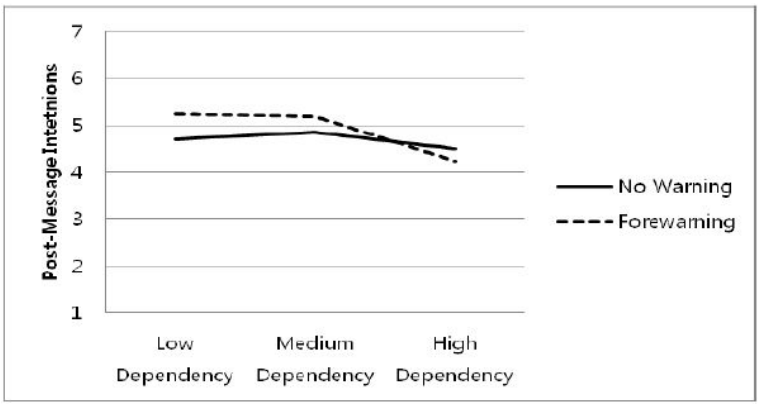
To check the interaction effect of forewarnings on post-message intentions, the same 2 x 3 ANOVA with post-message intentions as a dependent variable was conducted. The results of the analysis indicate a significant interaction effect ($F(2,794)$ = 4.90, $p < 0.01$, h^2 = 0.01), suggesting significant differences in post-message intentions of the three groups between the two forewarning conditions.

More specifically, the results for simple effects show that, under the no- forewarning condition, there were no significant differences ($F(2,794)$ = 1.65, p = 0.192, h^2 = 0.004) in post-message intentions between the high (M = 4.70, SD = 1.76, n = 160), moderate (M = 4.86, SD = 1.40, n = 124), and low (M = 4.49, SD = 1.33, n = 116) nicotine-dependent groups. Under the forewarning condition, however, there were significant differences between some of the three groups ($F(2,794)$ = 17.78, $p < 0.001$, h^2 = .04). More

specifically, the high nicotine-dependent group (M = 4.23, SD = 2.03, n = 128) showed weaker post-message intentions to quit smoking than the low (M = 5.24, SD = 1.32, n = 184) and moderate (M = 5.20, SD = 1.52, n = 88) nicotine-dependent groups. However, there were no significant differences in post-message intentions between the low and moderate nicotine-dependent groups (see Table 1 and Figure 2).

The results showing a significant interaction effect from the same ANOVA indicate that, after exposure to the narrative anti-smoking PSA, the forewarning condition had differential effects on post-message intentions of the nicotine-dependent groups. More specifically, the results for simple effects indicate that the low nicotine-dependent group under the forewarning condition (M = 5.24, SD = 1.32, n = 184) still showed lower resistance or stronger post-message intentions to quit smoking than the low nicotine-dependent group under the no-forewarning condition (M = 4.70, SD = 1.76, n = 160; $F(1,794) = 10.53$, $p < 0.001$, $h^2 = 0.01$). However, there was no significant difference ($F(1,794) = 1.69$, $p = 0.194$, $h^2 = 0.002$) in post-message intentions between the high nicotine-dependent group under the forewarning condition (M = 4.23, SD = 2.03, n = 128) and the high nicotine-dependent group under the no-forewarning condition (M = 4.49, SD = 1.18, n 116), suggesting a significant decrease in the initial difference in intentions of the high nicotine-dependent group between the forewarning and no-forewarning conditions after exposure to the narrative anti-smoking PSA. As indicated by pre- message intentions of the moderate nicotine-dependent group under the forewarning and no-forewarning conditions, there was no significant difference ($F(1,794) = 2.51$, p

Figure 2: *Interaction Effect of the Forewarning and Nicotine Dependence on Post-Message Intentions to Quit Smoking*



Note. $F(2,794) = 4.90$, $p < 0.01$, $h^2 = 0.01$.

= 0.114, $h^2 = 0.003$) in the moderate nicotine-dependent group's resistance between the forewarning ($M = 5.20$, $SD = 1.52$, $n = 88$) and no-forewarning ($M = 4.86$, $SD = 1.39$, $n = 123$) conditions (see Table 1 and Figure 2).

For H3, Cohen's d[46] (which represents the effect size based on the standardized difference between two means) was employed.

For the low and high nicotine-dependent groups, the differences between the forewarning and no-forewarning conditions decreased from 0.52 to 0.35 and from -0.25 to -0.16, respectively.

However, the moderate nicotine-dependent group showed an increase from 0.19 to 0.23 (see Table 1). These results provide partial support for H3. In sum, these results indicate that the high

46) Cohen's $d = \frac{x_1 - x_2}{s}$, where $s = \sqrt{\frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1+n_2-2}}$.

nicotine-dependent group under the forewarning condition "resisted" the impending persuasive effort, demonstrating weaker intentions to quit smoking than the group under the no-forewarning condition, whereas the low and moderate nicotine-dependent groups under the forewarning condition "accepted" the forthcoming persuasive effort, showing stronger intentions to quit smoking than the group under the no-forewarning condition.

For H4 and H5, a 2x3x2 mixed ANOVA was conducted using two points in time (pre- and post-message intentions) as a within-subject factor and two forewarning conditions (forewarnings vs no-forewarnings) and three levels of nicotine dependence (high vs moderate vs low) as two between-subjects factors. When the ANOVA was conducted using message intentions to quit smoking as the dependent variable, post-message intentions (M = 4.80, SD = 1.60, n = 400) were stronger than pre-message intentions (M = 4.10, SD = 1.70, n = 400) regardless of the proposed factor, providing support for H4 ($F(1,794) = 295.22$, $p < 0.01$, $h^2 = 0.27$). The results (95% confidence interval) for Cohen's d verify that post-message intentions were significantly stronger than pre-message intentions for all three groups under both forewarning conditions. That is, the results for Cohen's d (Table 2) show that post-message intentions were stronger than pre-message intentions in all six cases (two forewarning conditions by three nicotine dependence levels) (see Table 2).

Table 2: *Comparisons of Pre- and Post-Message Intentions by Forewarning and Nicotine Dependence*

Forewarning	*Nicotine Dependence*	*Pre-Message Intentions*	*Post-Message Intentions*	*Mean Difference [95% CI[a]]*	*SD*	*p[a]*	*Cohen's d [95% CI]*
No (*n*=400)	L (*n*=160)	3.84	4.70	.858** [.683, 1.033]	.089	.000	.48 [.28, .68]
	M (*n*=124)	4.09	4.86	.769** [.570, .968]	.101	.000	.51 [.32, .70]
	H (*n*=116)	3.96	4.49	.534** [.329, .740]	.105	.000	.42 [.26, .58]
	Total Mean	3.95	4.69	.74			
Yes (*n*=400)	L (*n*=184)	4.70	5.24	.543** [.380, .707]	.083	.000	.39 [.25, .53]
	M (*n*=88)	4.39	5.20	.811** [.575, 1.047]	.120	.000	.53 [.31, .76]
	H (*n*=128)	3.53	4.23	.708** [.513, .904]	.100	.000	.37 [.11, .64]
	Total Mean	4.26	4.91	.66*			
Total (*n*=800)	Total Mean	4.10	4.80	.70*			

Note: Using estimated marginal means. *$p < 0.001$; [a]Adjusted *p*-values for multiple comparisons: Bonferroni.

Finally, regression analyses were conducted to test H6 to examine whether transportation would have a positive effect on post-message intentions to quit smoking for both non-forewarned and forewarned participants (see Table 3). For forewarned participants, their transportation experience during exposure to the PSA had a positive effect on post-message intentions ($\beta = 0.48$, $p < 0.001$), with their nicotine dependence and pre-message intentions controlled for. In a similar fashion, the results of the same analysis indicate that forewarned participants' transportation experience had a positive effect on post-message intentions ($\beta = 0.58$, $p < 0.001$), with their nicotine dependence and pre-message intentions controlled for. These results provide support for H6, implying that transportation played a pivotal role in enhancing the participants' intentions to quit smoking.

Table 3: *Multiple regression analysis for the intentions to quit smoking*

	Post-message Intentions (for non-forewarned group, *n*=400)	Post-message Intentions (for forewarned group, *n*=400)
Transportation	.48***	.58***
Pre-message intention	.56***	.53***
Nicotine dependence	-.12*	.09
R^2	.68	.73
Adjusted R^2	.68	.73
Model significance (F)	282.22***	361.13***

Note. * significant at the 0.05 level; ** significant at the 0.01 level; *** significant at the 0.001 level

5. Discussion

This study addresses a relatively less explored area of E-E theorizing by examining the mechanism underlying the effects of entertainment narratives on recipients' attitudes, intentions, and behaviors.

First, consistent with many studies of E-E worldwide, the results indicate the efficacy of the E-E narrative in influencing the recipients' behavioral intentions. Overall, the forewarning and no-forewarning conditions showed similar significant increases in intentions to quit smoking within the next three months after exposure to the anti-smoking PSA. The moderate nicotine- dependent group showed the largest increase (Cohen's d = 0.51 for the forewarning condition; Cohen's d = 0.53 for the no- forewarning condition), followed by the low nicotine-dependent group (Cohen's d = 0.48 for the forewarning condition; Cohen's d = 0.39 for the no-forewarning

condition) and the high nicotine- dependent group (Cohen's d = 0.42 for the forewarning condition; Cohen's d = 0.37 for the no-forewarning condition). Although the result showing the smallest increase in intentions to quit smoking for the high nicotine-dependent group is understandable, that showing a smaller increase in these intentions for the low nicotine-dependent group than for the moderate nicotine-dependent group requires further analysis. This suggests that the low nicotine- dependent group was less sensitive to and serious about quitting smoking than the moderate nicotine-dependent group and thus that the former was less responsive to the anti- smoking PSA than the latter.

The differences in pre- and post-message intentions between the forewarning and no-forewarning conditions decreased for the low and high nicotine-dependent groups from 0.52 to 0.35 and from -0.25 to -0.16, respectively, after exposure to the narrative anti-smoking PSA. This shows the persuasive ability of the narrative PSA to reduce differences from accepting or rejecting the message before any exposure to it. Overall, the results demonstrate the distinct ability of the narrative PSA to change behavioral intentions by reducing differences before exposure to the narrative or reducing resistance induced by any forewarning about it. Similarly, Stephenson found that narrative elements of anti-heroin PSAs, such as the level of narrative or sensory processing, have considerable influence on high-sensation seekers, who tend to resist anti-drug messages.[47]

Second, the forewarning produced resistance to the persuasive

47) Stephenson, M. T., "Sensation-Seeking as a Moderator of the Processing of Anti-Heroin PSAs", *Communication Studies* 53(4), 2002, pp. 358-380.

message, but the level of this resistance decreased as a result of the persuasive message for certain nicotine-dependence groups. For the high nicotine-dependent group, the result indicating weaker intentions to quit smoking under the forewarning condition (M = 3.53, *SD* = 2.05) than under the no-forewarning condition (M = 3.96, *SD* = 1.33) provides indirect evidence of resistance to the persuasive message both before and after exposure to the anti-smoking PSA. However, the difference in pre-message intentions to quit smoking between the forewarning and no-forewarning groups decreased by 36 percent from -0.25 (Cohen's *d*) in the pre-test to -0.16 (Cohen's *d*) in the post-test. Figures 1 and 2 show the interaction effects of the forewarning and nicotine dependence on pre- and post-message intentions, respectively. As discussed above, intentions to quit smoking showed significant increases after exposure to the PSA regardless of the forewarning and nicotine dependence. That is, forewarning-induced resistance in the pre-test decreased significantly or disappeared after exposure to the anti-smoking PSA. The moderate and low nicotine-dependent groups showed no resistance to the forthcoming persuasive message. These results provide indirect support for the E-ELM and the EORM, which posit that E-E suppresses counterarguments against or overcomes resistance to the persuasive message.

Third, noteworthy is that not all smokers responded reactively to the impending persuasive effort. The forewarning worked effectively in generating "resistance" only in the high nicotine- dependent group. The low nicotine-dependent group under the forewarning condition reported stronger intentions to quit smoking than the low nicotine-dependent group under the no-forewarning condition. That is, the

forewarning induced "acceptance" instead of resistance in the low nicotine-dependent group. These results suggest that the type of reaction to forewarnings—resistance or acceptance—among smokers may be specific to their nicotine dependence. These results are inconsistent with the findings of previous studies concluding that resistance is typically generated by forewarnings conveying only the persuasive intent of the appeal.[48)49)] Quinn and Wood[50)] and Wood and Quinn[51)] provided a comprehensive review of forewarning effects and offered an alternative explanation for this inconsistency. According to their review, when forewarnings threaten audiences' self-concept by suggesting that they are vulnerable to some given influence, they are likely to show a defensive orientation and preemptive changes in attitudes toward the persuasive message to reduce the apparent impact of the message. Alternatively, low and moderate nicotine-dependent smokers are less addicted to smoking and thus may show less aggressive attitudes toward smoking, making their intentions to quit smoking to be more easily influenced by just forewarnings even before being exposed to the anti-smoking PSA.

Finally, transportation had a significant positive effect on post-message intentions to quit smoking for the non-forewarned group as well as the forewarned group. This suggests that transportation may play a key role in overcoming or reducing resistance to persuasive messages and provides support for the E-ELM and the EORM.

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48) Cialdini & Petty, *op. cit.*

49) Petty & Cacioppo, *op. cit.*

50) Quinn & Wood, *op cit.*

51) Wood W., & Quinn, J. M., "Forewarned and Forearmed? Two Meta-Analytic Syntheses of Forewarning of Influence Appeals", *Psychological Bulletin* 129, 2003, pp. 119-138.

The results have important theoretical implications for narrative persuasion and transportation and for health communication campaigns. This study provides one of a few examinations of the mechanism underlying entertaining narratives that can change audiences' intentions. The results indicate that forewarning-induced resistance before exposure to the persuasive message decreased after exposure to it. By indirectly showing the distinct ability of entertainment narratives to reduce resistance to persuasive efforts posited by the E-ELM and the EORM and facilitating a better understanding of the mechanism underlying the transportation process, this study contributes to the development of theories about narratives in general and E-E in particular. In addition, the forewarning with a direct persuasive intent induced the participants' resistance to as well as acceptance of the forthcoming persuasive effort, suggesting a need for further research on the role of forewarnings in resistance and persuasion.

This study has some limitations. First, resistance to the persuasive appeal after the forewarning and exposure to the PSA was not measured. Instead, pre-message intentions to quit smoking were measured as a proxy. In this regard, future research should measure reactance/resistance directly for a clearer demonstration of the distinct ability of E-E to reduce resistance to persuasive messages. In addition, including other components of the engagement process, such as character identification, homophily, empathy, liking, perceived realism, believability, and measures of affect or arousal/emotion, should provide a better understanding of the mechanism underlying the engagement process. Second, the stimulus was originally made for Malaysians, and therefore the characters had ethnic backgrounds

different from Koreans, which might have limited the respondents' narrative engagement. In this way, future research should use stimuli whose characters and cultural backgrounds are the same as those of research participants. Third, in comparison to traditional laboratory experiments, an online experiment typically has several weaknesses such as a lack of experimental control over the circumstances under which individuals participate in the study.[52] However, an online experiment has some advantages such as automation and the generalizability of results to wider populations.[53][54] In addition, previous studies have demonstrated that findings from online experiments are generally consistent with those from traditional laboratory experiments. To compare these two methods, Dandurand, Schultz, and Onishi replicated a lab-based problem-solving experiment as an online experiment and found that online participants are less accurate than their laboratory counterparts; there is no interaction with the learning condition; and online results are consistent with laboratory results.[55] In the experiment, the participants were offered "cybermoney" worth KRW 2,000 (approximately $2) as a financial incentive because a low response rate for a questionnaire can affect the validity of the experiment and introduce some bias. However, such incentives can be problematic for external validity. According

52) Wimmer R. D. & Dominick, J. R., *Mass Media Research: An Introduction* (9th ed.). Boston, MA: Wadsworth, Cengage Learning, 2011.

53) Birnbaum, M. H., "Human Research and Data Collection via the Internet", *Annual Review of Psychology* 55, 2004, pp. 803-832.

54) Reips, U.-D., "Standards for Internet-Based Eexperimenting", *Experimental Psychology* 49, 2002, pp. 243-256.

55) Dandurand, F., Schultz, T. R., & Onishi, K. H., "Comparing Online and Lab Methods in a Problem-Solving Experiment", *Behavioral Research Methods* 40(2), 2008, pp. 428-434.

to Wilson, Petticrew, Calnan, and Nazareth[56], financial incentives can increase response rates for postal questionnaires, but knowledge of a financial incentive does not significantly increase the response rate for online questionnaires.

Finally, a potential issue concerns what is known about the relationship between intentions to change behaviors and actual changes. Therefore, future research should examine whether E-E PSAs have a significant effect on people changing their behaviors in ways that improve their health.

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[국문초록]

내러티브형 금연 공익광고가 금연 설득에 대한 저항에 미치는 효과

아즈만 비딘 · 배현석

이 연구는 E-ELM과 EORM를 토대로 내러티브형 금연 공익광고가 사전경고에 의해 야기된 저항을 줄여주는지 그리고 내러티브에 대한 몰입이 흡연자들의 금연 의향에 미치는 효과를 살펴보았다. 800명(400명은 금연 공익광고를 시청할 거라는 사전경고 제공, 나머지 400명은 사전경고 제공하지 않음)의 남성 흡연자들을 대상으로 한 온라인 실험연구를 실시했으며, 흡연자들은 파거스트룀의 니코틴 의존도 검사를 토대로 높은 의존도, 중간 의존도, 그리고 낮은 의존도 집단으로 나누었다. 실험 결과, 사전경고 유무와 니코틴 의존도와 상관없이 사후-메시지 금연 의향이 사전-메시지 금연 의향보다 유의적으로 높았다. 사전경고는 높은 니코틴 의존도 집단에서만 저항을 야기했으며, 이들의 저항은 금연 공익광고 시청후 유의적으로 감소했다. 그리고 높은 의존도 집단과 낮은 의존도 집단의 경우, 사전경고를 받은 집단과 받지 않은 집단 간의 사전-메시지 금연 의향의 차이는 금연 공익광고를 시청한 후 유의적으로 감소했다. 끝으로, 논의 및 결론 부분에서는 내러티브 공익광고를 포함한 내러티브 메시지의 저항 억제 능력을 더 잘 이해하는데 있어 이 연구가 지니고 있는 이론적 및 실무적 함의에 대해 논의한다.

주제어: 내러티브 공익광고, 교육적-오락물, 저항, 몰입, 설득

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이 논문은 2015년 2월 22일 투고하여
2015년 4월 15일까지 심사 완료하여
2015년 4월 15일 게재 확정함.