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## **Dealing With Anxiety: How Effective Health Messages Undermine Self-Control**

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Health messages that convince consumers of their heightened risk also tend to increase anxiety. The current paper examines the deleterious consequences of such anxiety. We show that processing high versus low health risk messages enhances feelings of anxiety which impair subsequent self-control. Three studies document this effect, examine underlying processes, and identify the condition that overcomes this effect. Anxiety generated from health messages did not undermine subsequent healthful behaviors when the subsequent behaviors were related to the health message domain, because here individuals took a cognitive perspective and engaged in health practice as a way of reducing uncertainty.

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# Dealing with Anxiety: How Effective Health Messages Undermine Self-Control

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## EXTENDED ABSTRACT

Health messages often attract consumers' attention by highlighting the high risk of their contracting a disease. Past research in marketing and health psychology has found that communicating health risk perceptions of a disease increases awareness and interest in that disease, and encourages preventative and healthy behaviors (Raghubir and Menon 1998; Raghunathan and Trope 2002). However, other research has also found that creating high perceptions of vulnerability to a disease might have negative repercussions such as leading consumers to avoid processing the health message or to counter-argue it (Block and Williams 2002; Keller, Lipkus, and Rimer 2003). The existing literature, however, has mainly focused on examining the effect of health risk perception about one disease (e.g., hepatitis) on behaviors related to this disease (e.g., getting tested for hepatitis virus). In this paper we go beyond previous research and examine the impact of processing high-risk health message on self-control behavior in general.

Recent research on health communication has suggested that the negative repercussion of processing high-risk health messages might be related to individuals' emotional deterioration in such contexts (Agrawal, Menon, and Aaker 2007; Raghunathan and Trope 2002). Reading messages describing symptoms and severe disease consequences will make individuals feel disturbed and uncomfortable (Agrawal et al. 2007). Moreover, the perception of high self-risk will challenge individuals' unrealistic optimism regarding their health (Menon and Raghubir 1998; Taylor et al. 2000), which will induce the feeling of uncertainty. Negative emotions with an uncertainty component are typically associated with anxiety (Tiedens and Linton 2001). Kahn and Luce (2003) found that participants who received false positive test results (perceiving at high risk) in the context of breast cancer, as compared with participants who did not receive such a false alarm, felt more stressful and consequently had lower intentions to comply with testing procedures.

Literature on emotion specificity and emotion regulation has suggested that coping with anxiety may consume self-regulation resources—resources involved in the deliberate regulation of responses (Muraven and Baumeister 2000). Anxiety signals to individuals that the situation is uncertain, which will make them feel lack of confidence about the situation and therefore prompt them to engage in effortful cognitive processes to change the state (Pelham and Wachsmuth 1995; Tiedens and Linton 2001). Previous studies have provided evidences that coping with anxiety requires regulatory resources. For example, Richeson and Trawalter (2005) argued that interacting with people of different race will cause anxiety that makes such interactions depleting in regulatory resources. Supporting this view, they found that 1) interracial interaction (vs. same-race interaction) led to poorer performance on Stroop task—an inhibitory task requires regulatory resources (Gailliot et al. 2007); and 2) the negative impact of interracial interaction on the Stroop performance was eliminated when participants' needs to regulate anxiety in their interracial interaction were reduced.

Research on regulatory depletion posits that self-regulation resources are limited in amount, and predicts a *depletion effect*: using regulatory resources in one task reduces the amount of resource available and thus will undermine performance on an

immediate subsequent self-regulation task (Muraven and Baumeister 2000). Depletion effects have been documented to affect a wide range of consumer behaviors involving self-regulation such as impulse purchase (Vohs and Faber 2007) and alcohol drinking (Muraven, Collins, and Nienhaus 2002).

By integrating research on health risk, emotion regulation, and regulatory depletion, we propose that processing high-risk health messages consumes self-regulatory resources and will impair subsequent self-control, whether such self-control is concerned with health or behaviors in general domains. Moreover, this detrimental effect on self-control occurs because of a depletion of resources in coping with anxiety resulting from high self-risk perceptions.

One laboratory experiment and two field studies examine the predicted effect, the underlying mechanism, and the boundary condition. In all studies the first task manipulates self-risk perception in health messages and the second task assessed subsequent self-control.

In Study 1 participants first read a message communicating a perception of being at high or low risk of getting Hepatitis C, a health risk manipulation adapted from past research (Menon, Block, and Ramanathan 2002). Next, participants were provided the opportunity to eat chocolate chip cookies. We found that participants who read the high-risk message ate more cookies than those who read the low-risk message.

Study 2 replicates the finding of Study 1 in a field study where participants firstly viewed advertisements about the consequence of second-hand smoking and then were provided the opportunity to eat cheese sticks. We found that second-hand smokers, perceived at higher self-risks of getting smoking-related diseases, ate more cheese sticks than non second-hand smokers. Moreover, we demonstrated that this effect was mediated by participants' anxiety after viewing the second-hand smoking ads.

Finally, Study 3 identifies the boundary condition for when anxiety from processing health risks has helpful versus harmful effects. We proposed that when individuals take a cognitive perspective to reduce the uncertainty, they will be more likely to engage in health practice because doing so will help them diminish their uncertainty about their health conditions. A typical context where individuals are likely to take a cognitive stance is when the subsequent behavior is obviously related to the focal disease causing the risk perception and anxiety. Supporting this view, Study 3 shows that participants who perceived at high (vs. low) self-risk of contracting Avian flu had greater intention to get tested for the avian flu virus but lower intention to do a check-up in a different health domain—dental health. Anxiety mediated the disease relevance x health risk interaction.

Our research enriches literature on health communication by documenting an unknown repercussion of using high-risk messages—processing high-risk messages impair performances on general self-control beyond health behavior related to the focal risky disease. It also adds to the literature on emotion and self-regulation by showing that coping with a specific emotion—*anxiety* involves depletion of regulatory resources and that taking a cognitive stance of coping with anxiety will overcome the depletion effect. Our findings also provide implication for marketing practice of health information communication.

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