

The Empty Comfort of Vanity: Assessing the Effectiveness of an Interactive Game to Increase Skin Cancer Prevention Outcomes

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Skin Cancer Incidence and Tanning Behavior

Skin cancer is the most commonly occurring cancer in the U.S. (CDC, 2010), with more than 3.5 million Americans diagnosed each year (Rogers et al., 2010). UV radiation exposure can come from outdoor sun-tanning and the use of indoor tanning beds (Report on Carcinogens, 2010). One cause of the recent increase in skin cancer incidence is the growing use of indoor tanning facilities (Robinson, Kim, Rosenbaum, & Ortiz, 2008), particularly among younger (15 – 29) females (Herzog, Pappo, Bondy, Bleyer, & Kirkwood, 2006). In addition, sun-tanning remains popular with youth, and eight out of 10 Canadian teens report exposing themselves (Canadian Cancer Society, 2012). Problematically, these younger individuals are also less likely to appreciate the connection between tanning behavior and skin cancer, which often occurs years, if not decades, after continuous exposure. Young tanners are more focused on the immediate, appearance-related benefits of tanning behavior than the long-term health consequences. Youth exposing themselves to indoor tanning largely misperceive their risk of skin cancer. To illustrate, nearly 70% of youth using tanning beds were unaware that this exposure placed them at an elevated risk of skin cancer (Heckman et al., 2008). In short, the motivation to increase general attractiveness is more salient than protection motivation.

Vanity: A Serious Game for Skin Cancer Prevention

In response to this unfortunate reality, a tabletop game entitled *Vanity* was created. In *Vanity*, participants play the role of aspiring actors competing for acting roles. In the beginning, players take turns spinning the fitness, style, outdoor activity, or indoor tanning wheel in order to increase his or her fitness, style, or tan index by one, two, or three. The latter two wheels involve tanning, which requires the player to roll a die to determine whether his or her health risk level increases (between zero and four) as a result. An increase yields a higher chance of developing skin cancer and of losing the game. At any point, an anxious player can spend a turn 'visiting the dermatologist' and reduce his or her health risk by one. When a player thinks he or she has enough fitness, style, and tan, he or she can draw role cards. All roles require some level of fitness and style, and many require a tanned appearance. In order to earn the points associated with a role, players must meet or exceed its attribute levels and then must adjust their current levels to match the role's. The latter requirement forces players to think twice before taking on a role because it requires spending more time building your attributes back up. When a Skin Exam card is drawn from the role decks, it triggers a die roll (of a D10, D8, or D6 respectively for the first, second, and last exam) by each player. If a player's health risk is higher than the number rolled, he or she has skin cancer and must spend at least three turns undergoing treatment. The third exam triggers the end of the game, and the winner is the player with the most points who is not undergoing recovery. The purpose of *Vanity* is to show people that the short-term benefits in attractiveness granted by tanning behavior do not outweigh the sacrifice in long-term safety. In short, *Vanity* was developed to help youth seriously consider the dangers of using tanning beds, and will be a pillar of the Canadian Dermatology Associations anti-tanning bed outreach campaign in 2014. The purpose of the current project is to understand how *Vanity*, and serious games more generally, can influence health-related outcomes. Particularly, we are interested in understanding the mechanism of effect that occurs between exposure to the gameplay of *Vanity* and ultimate outcomes in intentions and behavior regarding tanning.

Entertainment Media and Persuasive Outcomes

Recent entertainment education theories predict that entertainment media have the potential to impact health outcomes by: (1) increasing story-consistent attitudes and beliefs, (2) reducing the formation of counter-arguments, (3) reducing the belief that the source of the message is trying to dictate your behavior, and (4) increase perceived vulnerability to a health threat highlighted in that narrative (Slater & Rouner, 2002; Moyer-Guse, 2008; Moyer-Guse & Nabi, 2010). Although these theories have largely been proposed in the context of television and written materials, there is ample reason to suggest that similar mechanisms of persuasion exist in response to serious games, as there are some studies that suggest that people have similar responses to games as entertainment narratives; largely, identification with characters and involvement with the storyline (Lin, 2013; Peng, Lee, & Heeter, 2010). The goals of the current study are to test three propositions of the entertainment overcoming resistance model (EORM; Moyer-Guse, 2008) that have been shown to facilitate persuasive outcomes in response to entertainment media in the context of gaming and health-related outcomes. In addition, the current study will compare the effectiveness of *Vanity* to a control condition, to determine the extent to which *Vanity* functions as a preventative tool to keep people from intending to use indoor tanning beds.

Methods

Participants were recruited from a mid-sized Southeastern university in the U.S. All participants played either *Vanity* or a separate board game that will function as a control and completed a brief questionnaire measuring their engagement with the game and attitudes, beliefs, and intentions regarding skin cancer prevention and tanning behavior. Success of the project is measured in two ways: (1) using the EORM to determine how *Vanity* influences subsequent indoor tanning outcomes; and (2) comparing the *Vanity* gaming condition to the control condition to determine if playing *Vanity* can function as a preventative tool to keep people from intending to use indoor tanning beds.

Preliminary results ($N = 61$) are inconclusive but promising. The mean score for tanning intentions is marginally significantly lower ($t(59) = -1.74$; $p = .09$; equal variances not assumed) in the *Vanity* condition ($M = 1.19$; $SD = 0.71$; $n = 36$) than the control condition ($M = 1.80$; $SD = 1.63$; $n = 25$), suggesting that *Vanity* may be an acceptable preventative tool to keep people from engaging in tanning behavior that could lead to skin cancer. Data collection is ongoing, and we currently lack adequate power to assess the mediational relationships identified above.

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