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Brief research report

Preliminary development and evaluation of an appearance-based dissonance induction intervention for reducing UV exposure

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ABSTRACT

The current study examined the feasibility of an appearance-based dissonance induction approach for the modification of tanning and sunscreen use behaviors. Undergraduate female students were randomized to: a healthy lifestyle condition, an appearance-based dissonance condition, or an appearance-based psychoeducation condition. Reports of tanning and sunscreen use were collected immediately before and 1 month following intervention ($N = 225$). Relative to the healthy lifestyle condition, participants in the dissonance condition reported a significant reduction in daily hours spent tanning. Additionally, sunscreen use on the body decreased significantly for the healthy lifestyle group, but did not change for the dissonance group. The psychoeducation condition did not differ from the healthy lifestyle condition on any measure. These findings should encourage additional research into the use of dissonance induction as an appearance-based strategy for promoting reductions in UV exposure.

Introduction

Melanoma is one of the most common types of cancer in the United States, with 76,100 new cases predicted for 2014 and 9,710 predicted deaths – numbers that have been rising for the past 30 years (American Cancer Society, 2014). Ultraviolet (UV) exposure, from sun, tanning beds, and tanning lamps is the primary risk factor for melanoma. As such, it is important to identify interventions that successfully decrease indoor and outdoor tanning and increase use of sunscreen. Research suggests that education on health risks alone is not an effective strategy for changing UV-related behaviors (Hillhouse & Turrisi, 2002).

Many individuals who engage in intentional UV exposure are motivated to achieve what may be considered the "tan ideal," a smooth, even, darker pigmentation than what is natural (Cafri, Thompson, Jacobsen, & Hillhouse, 2009; Thompson, Ata, Chait, & Roehrig, 2012). This pursuit of the tan ideal places many young people at greater risk of developing skin cancer, as they focus on feeling more attractive rather than on the long-term health consequences of sun exposure (Blashill, 2013; Cafri et al., 2006; Cafri et al., 2008). Accordingly, recent efforts to alter UV-related behavior have emphasized the negative effects UV exposure may have on one's appearance, including the development of wrinkles, age spots, and uneven pigmentation (e.g., Gibbons, Gerrard, Lane, Mahler, & Kulik, 2005; Hillhouse & Turrisi, 2002; Jackson & Aiken, 2006; Mahler, Kulik, Gerrard, & Gibbons, 2007).

A dissonance induction approach may offer an appearance-based strategy for altering UV-related behaviors. Dissonance theory maintains that when people's attitudes and behaviors conflict with one another, they experience psychological discomfort (Festinger, 1957). This discomfort often leads them to change their attitudes to fit their behaviors (or vice versa) in an attempt to restore a sense of consistency. With regard to health behaviors, cognitive dissonance interventions have been studied primarily for their utility in decreasing eating disorder behaviors and preventing such behaviors in at-risk populations (Becker, 2012; Mitchell, Mazzeo, Rausch, & Cooke, 2007; Roehrig, Thompson, Brannick, & van den Berg, 2006; Stice, Marti, Spoor, Presnell, & Shaw, 2008; Stice, Shaw, Burton, & Wade, 2006). In these studies, the interventions seek to alter participants' attitudes and behaviors surrounding the pursuit of the thin ideal, the belief that having a thin body is ideal (Thompson & Stice, 2001). Many studies have demonstrated the utility of these interventions, showing dissonance induction to be comparable to other behavioral interventions or superior to control conditions

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Table 1
Baseline demographic, tanning, and sunscreen behaviors across all conditions.

	All participants (n = 225)	Dissonance condition (n = 79)	Healthy lifestyle condition (n = 76)	Psycho-education condition (n = 70)	Test statistic (p)
Age (mean, *SD*)	20 (1.45)	20 (1.30)	20 (1.51)	20 (1.54)	F = 0.84 (.43)
Race					
% White	86	89	88	87	χ^2 = 1.12 (.57)
Ethnicity					
% Not Hispanic or Latina	92	92	88	94	χ^2 = 1.85 (.40)
Education					
% Freshmen	45	43	52	39	F = 2.71 (.07)
Skin type (mean, *SD*)[a]	3.18 (1.23)	3.16 (1.16)	3.33 (1.36)	3.04 (1.15)	F = 1.00 (.37)
Outdoor tanning behaviors (mean, *SD*)	2.48 (3.55)	1.97 (2.53)	3.05 (4.56)	2.43 (3.24)	F = 1.80 (.17)
Hours spent sunbathing (mean, *SD*)	1.73 (1.89)	1.87 (2.10)	1.62 (1.47)	1.69 (2.07)	F = 0.36 (.70)
Indoor tanning behaviors (mean, *SD*)	1.52 (4.15)	1.72 (4.30)	1.83 (5.04)	0.94 (2.62)	F = 0.98 (.38)
Sunscreen behaviors: face (mean, *SD*)[b]	3.00 (1.64)	2.94 (1.64)	3.14 (1.60)	2.91 (1.71)	F = 0.45 (.64)
Sunscreen behaviors: body (mean, *SD*)[b]	2.35 (1.40)	2.29 (1.39)	2.51 (1.43)	2.23 (1.37)	F = 0.85 (.43)

[a] Scale ranges from 1 (*Always burn, never tan*) to 6 (*Never burn, grow deeply darker in pigmentation*).
[b] Scales range from 1 (*Never*) to 5 (*Always*).

(e.g., Becker, 2012; Thompson et al., 2012). A dissonance induction intervention seeking to alter the tan ideal may be similarly successful in changing UV-related behaviors. If women do in fact tan in an attempt to achieve the tan ideal, then an adoption of beliefs regarding the negative effects tanning has on one's appearance should cause cognitive dissonance. In an attempt to decrease the psychological discomfort known to arise from dissonance, these women should alter their behaviors.

The current study sought to examine the utility of an appearance-based dissonance induction approach. The primary aim was to compare the effectiveness of an appearance-based dissonance intervention targeting tanning (dissonance condition) to a comparison condition that consisted of a dissonance intervention targeting healthy eating and exercising (healthy lifestyle control condition). This methodology would allow for control of the effects of dissonance induction across groups, and help determine if any differential effects were specific to the targeting of the dissonance (tanning vs. general health). The study was, therefore, somewhat of a feasibility study for the novel dissonance intervention (e.g., Mohr et al., 2009) to determine the viability of this new approach. A second rather exploratory goal was to adapt information contained on the American Cancer Society (2008) website to develop a psychoeducation condition, as an initial test of whether material widely disseminated via the website might be effective in changing tanning behaviors. In order to protect against Type II error, and to enhance the determination of potentially small effects, we used planned comparisons to augment power.

H1. It was hypothesized that relative to the healthy lifestyle condition, participants in the dissonance condition would show a decrease in tanning and an increase in sunscreen use from pre- to post-intervention.

Exploratory Research Question: Will material adapted from the American Cancer Society website produce changes in tanning and sunscreen behavior when compared to a healthy lifestyle condition?

Method

Participants

Participants were 260 female students recruited from undergraduate psychology courses at a university in Florida through the use of an online recruiting and scheduling program. In exchange for participation in the study, participants received course credit and a $10.00 gift certificate to a large retail company. Eligibility criteria were: (a) being between 18 and 25 years of age, (b) being female, (c) engaging in indoor or outdoor tanning at least six times in the past 12 months, (d) having no personal history of skin cancer, (e) being able to read and speak English, and (f) not planning to graduate or transfer at the conclusion of the semester in which the study took place. Participants ranged in age from 19 to 25 years (M = 19.82; SD = 1.50) and had an average body mass index (BMI) of 22.65 (SD = 3.60). The majority of participants were Caucasian (86%), non-Hispanic (90%), and in their first year of college (45%). In addition, the majority of participants described their skin type as "sometime mild burn, tan about average" (36%). See Table 1 for complete demographic information.

Three individuals were excluded due to having had skin cancer. Of the 257 remaining individuals, 32 did not complete the 1 month follow-up questionnaire. Consequently, the sample size for final analyses is 225, with 79 participants in the dissonance condition, 70 in the psycho-education condition, and 76 in the healthy lifestyle condition. This sample size was powered sufficiently to detect a medium effect size with power of .80 and a $p < .05$ (Cohen, 1988).

Procedure

The study was advertised to all undergraduate psychology students. Those interested in participating were required to complete an online survey in which questions assessing the eligibility criteria listed above were embedded. This survey was designed so that students would be unaware of what deemed them eligible or ineligible to participate. Eligible students were then directed to sign up for a specific timeslot. A maximum of 10 students could sign up for each timeslot. The timeslots were randomized in equal numbers to the dissonance condition, the healthy lifestyle condition, or the psychoeducation condition. This procedure, rather than randomization of individual participants, was conducted to form groups of reasonable size able to meet at a common time.

At the study session, and prior to the start of the intervention, all participants were provided with an informed consent form to review. Those who provided written consent were then administered a questionnaire, followed by the delivery of the appropriate intervention by a trained masters level graduate psychology student. At 1 month post-intervention, all participants were sent an e-mail asking them to complete another questionnaire via an online survey. Following the completion of the questionnaire, all participants were mailed a gift certificate and an explanatory debriefing statement. Those participants who chose not to complete the follow-up questionnaire were emailed the debriefing information. Variables assessed in the baseline and follow-up questionnaires are described below.