
Tanning addiction and psychopathology: Further evaluation of anxiety disorders and substance abuse

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Background: Little research has investigated the correlates of problematic tanning and tanning dependence.

Objective: We sought to identify characteristics associated with problematic tanning and tanning dependence, and to evaluate simultaneously the associations of variables as correlates of problematic tanning and tanning dependence.

Method: To assess tanning-related characteristics, psychopathology, and demographics, we administered questionnaires to 533 tanning university students; 31% met criteria for tanning dependence, 12% for problematic tanning.

Results: Both problematic tanning and tanning dependence were significantly associated with being female ($P < .001$ and $P < .001$, respectively) and with screening positive on measures of obsessive-compulsive ($P < .001$ and $P = .005$, respectively) and body dysmorphic ($P = .019$ and $P < .001$, respectively) disorders. Frequency of tanning in the past month was the strongest correlate of problematic tanning ($P < .001$) and tanning dependence ($P < .001$) when included in a model that controlled for shared variance among demographics and psychopathology.

Limitations: The sample was recruited from 1 university and contained only self-report measures.

Conclusion: Results suggest that many who engage in excessive tanning may also have significant psychiatric distress. Additional research is needed to characterize compulsive, problematic tanning and its rates, correlates, and risk factors among diverse samples. (J Am Acad Dermatol 2014;70:473-80.)

Key words: behavioral addictions; obsessive-compulsive disorder; problematic tanning; tanning dependence; university students.

Skin cancer is among the most common types of cancer in the United States¹ with an estimated 76,900 new cases of melanoma for 2013.² Because most skin cancers are a result of exposure to ultraviolet (UV) radiation,³ skin cancer is one of the most preventable types of cancer.² The public is generally aware of this potential harm,⁴ yet many continue to tan purposefully.⁵⁻¹⁰

Some researchers suggest that excessive tanning is a symptom of psychiatric disorders, such as

Abbreviations used:

BDD:	body dysmorphic disorder
DSM-IV:	Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition
OCD:	obsessive-compulsive disorder
Tanning-DSM:	assessment tools for ultraviolet tanning using modified Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition criteria for substance-related disorders
UV:	ultraviolet

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body dysmorphic disorder (BDD) or obsessive-compulsive disorder (OCD).⁵ For example, some individuals who excessively tan endorse preoccupation with deficits in appearance and others endorse obsessive and intrusive thoughts about tanning.⁵ Other investigations report significant positive associations between tanning and anxiety and affective disturbance.^{5,6}

Alternatively, many researchers^{5,7-10} suggest conceptualizing excessive UV tanning as a behavioral addiction. Empirical support for this conceptualization comes from research demonstrating shared characteristics between those with excessive engagement in activities and those who are dependent on substances.¹¹ Further, tanning bed UV exposure increased cerebral blood flow in brain areas associated with drug reward

to a greater extent than exposure to tanning beds without UV light.¹² Recently, researchers have applied substance dependence criteria provided by the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* to tanning.^{13,14} For example, in addition to continuing to tan despite experiencing negative consequences,¹⁰ some individuals continue to tan past the point of what is necessary to achieve their desired appearance.⁷

To identify individuals who engage in potentially addictive tanning, researchers developed assessment tools for UV tanning using modified *DSM-IV* criteria for substance-related disorders (Tanning-DSM) and the CAGE (a brief alcohol problem screening measure; hereafter referred to as Tanning-CAGE).¹⁰ Prior investigations provide initial support for the validity of both of these measures.^{7,8,15} Research using these tools has found that a substantial proportion of university students engage in problematic tanning and tanning dependence.^{8,15,16}

Prior research has also demonstrated that both problematic tanning and tanning dependence are associated with more frequent tanning, preference for indoor tanning, and initiation of tanning at a younger age.^{7,8,10,15,16} These studies have also linked excessive tanning to demographics including being younger, white, and female. In addition, individuals meeting proposed criteria for both problematic tanning and tanning dependence are more likely to have used alcohol and marijuana in the past 30 days and to report more anxiety symptoms.⁸

The research reviewed above provides a foundation for understanding problematic tanning behaviors, but assessing additional characteristics of excessive tanning may help clarify its conceptualization and may guide the development of screening and intervention protocols. We developed the current study to evaluate: (1) whether a variety

of tanning-related, demographic, psychological, and substance use characteristics were associated with problematic tanning and/or tanning dependence; and (2) the relative associations of tanning behavior, sex, and previously uninvestigated symptoms of psychopathology as correlates of problematic tanning and tanning dependence.

METHODS

After receiving institutional review board approval, we recruited undergraduates in psychology courses via a World Wide Web-based subject pool during the fall semester of 2011 from a large public Midwestern university. Potential participants reviewed a study description in the subject pool system that described the chief purpose as “to study tanning (exposure to UV light through tanning in the sun or a tanning bed) in university students” and that they would “be asked to read and answer several sets of questionnaires about [their] tanning, other health-related behaviors, and basic background information.” Those interested in participating could click a link to the study World Wide Web site, where they could provide informed consent and complete the self-report questionnaires anonymously. Individuals could participate regardless of whether they had ever tanned. Participants received research credit in their psychology course.

A total of 684 individuals participated and were assessed for lifetime prevalence of tanning (“Have you ever gone tanning, indoors or outdoors?”).¹⁷ Of those 684 individuals, 533 (78%) indicated they had tanned before and comprised the sample for the current analyses (see [Table I](#), column 2 for additional data).

We used the Tanning-DSM⁷ designed to assess tanning dependence. Consistent with prior research, participants who endorsed 3 or more of the 8 criteria on this questionnaire were considered to meet criteria for tanning dependence.^{7,8,10} From Harrington et al⁷ we also used the 4-item tanning-specific version of the CAGE alcohol screener.^{18,19}

CAPSULE SUMMARY

- Tanning-related characteristics, sex, and certain psychopathology are associated with excessive tanning.
- We identify relationships between obsessive-compulsive and body dysmorphic disorders with excessive tanning.
- These results suggest the need to address mental health correlates of tanning behaviors, and the need for screening and intervention protocols.

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