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Correlates of Positive Parental Attitudes Towards Adolescent Indoor Tanning in the United States

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To the Editor,

Indoor tanning greatly increases skin cancer risk, with exposure before age 35 associated with a 60% increase in the risk of melanoma.[1,2] Unfortunately, despite recent declines, indoor tanning remains common among U.S. adolescents with 1.2 million high school students reporting use in 2015.[3] Parental permission to tan and positive parental attitudes toward tanning are strong predictors of adolescent indoor tanning.[4,5] To guide outreach efforts, we sought to identify factors associated with positive parental attitudes toward adolescent indoor tanning.

In 2016, we conducted a national online survey of U.S. parents of adolescents, ages 11–17 (N=1,205, response rate = 59%). The survey assessed parental attitudes toward adolescent indoor tanning with a 5-point response scale (1=strongly disagree, 5=strongly agree). Four survey items assessed perceived harm with regard to skin cancer, aging teens' skin, harming teens' health, and being addictive (α=0.78). Six items assessed perceived benefit with regard

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Author Contributions:
Dr. Gilkey had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.
Study concept and design: Asgari, Gilkey
Acquisition, analysis, or interpretation of data: Feng, Kim, Asgari, Gilkey, McRee
Drafting of the manuscript: Feng, Gilkey
Critical revision of the manuscript for important intellectual content: All authors
Statistical analysis: Kim
Obtaining funding: Asgari, Gilkey
Administrative, technical, or material support: Kornides
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to whether indoor tanning offers sunburn protection, improves teens' mood, increases confidence, is safer than natural sunlight, is fun to do with friends, and provides Vitamin D (α=0.84).

Separately for perceived harm and benefit, we averaged item responses to create composite measures. For perceived harm, we categorised averages as low (<4) or high (≥4), defining these categories to reflect the public health goal that parents will view adolescent indoor tanning as harmful. We categorised perceived benefit as low (≤2) or high (>2) to reflect the public health goal that parents will disagree that adolescent indoor tanning is beneficial. The survey also assessed parent and adolescent characteristics and household demographics. Separate multivariable logistic regression models assessed demographic and behavioural correlates of perceiving low harm or high benefit. Statistical tests were two-tailed with a critical α of 0.05. Harvard Pilgrim Health Care Institute's Institutional Review Board approved the study protocol.

A similar proportion of mothers and fathers completed the survey (51% female) with a mean parent age of 44.3 years. The sample included non-Hispanic white (67%), non-Hispanic black (9%), Hispanic (19%), and other (5%) parents. Respondents resided in 49 states and the District of Columbia. The representation of adolescents was similar by sex (48% female) with a mean age of 14.1 years. About one-third (34%) of parents reported having a college degree, and half (51%) reported annual household incomes >$75,000.

In multivariable analyses, parent factors associated with low perceived harm of adolescent indoor tanning were: parents' indoor tanning use (OR 2.92, 95% CI 1.74–4.88), male sex (OR 1.59, 95% CI 1.24–2.05), non-Hispanic black versus white race (OR 1.91, 95% CI 1.25–2.91), and no family history of skin cancer (OR 1.72, 95% CI 1.19–2.51, Table 1). Adolescent factors associated with low perceived harm were: male sex (OR 1.32, 95% CI 1.02–1.70), age >16 years (OR 1.51, 95% CI 1.08–2.09), and less sun-reactive skin type (OR 1.70, 95% CI 1.23–2.33). High perceived benefit was associated with male parent sex (OR 1.62, 95% CI 1.28–2.05), parent indoor tanning (OR 4.76, 95% CI 2.46–9.23), and no reported skin cancer prevention counselling from paediatric healthcare providers (OR 1.32, 95% CI 1.04–1.66). No adolescent characteristics were associated with high perceived benefit.

This national study identified populations of parents with higher odds of having positive attitudes towards adolescent indoor tanning. To our knowledge, the finding that male parent sex is associated with perceiving low harm and high benefit is novel and suggests a need to include fathers in skin cancer prevention. The association between parents' own indoor tanning use and their attitudes toward adolescents' use is also consistent with a family-centred approach to indoor tanning prevention.

Our findings suggest that a family history of skin cancer and provider counselling influence parents' attitudes about adolescent indoor tanning. Both experiences may offer "teachable moments" for communicating the harm of indoor tanning. However, fewer than half of parents in our sample reported receiving skin cancer prevention counselling. Improving

support to primary care providers is needed, especially to reach current skin cancer prevention counselling guidelines.[6,7]

Strengths of this study include a large, national sample of both mothers and fathers. Limitations include a cross-sectional design that precludes the determination of causality and less generalisability to non-US parents or those less inclined to survey participation.

In conclusion, our study identified populations of parents, including fathers, parents of sons, and indoor tanning users, who may benefit from targeted indoor tanning education. Promising outreach strategies include family counselling by healthcare providers and broader public health campaigns to shift social norms around the desirability of tanned skin.[8]

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References

1. The association of use of sunbeds with cutaneous malignant melanoma and other skin cancers: A systematic review. Int J Cancer. 2006;120(5):1116–1122. doi:10.1002/ijc.22453
2. Boniol M, Autier P, Boyle P, Gandini S. Cutaneous melanoma attributable to sunbed use: systematic review and meta-analysis. BMJ. 2012;345(724 2):e4757–e4757. doi:10.1136/bmj.e4757 [PubMed: 22833605]
3. Guy GP, Berkowitz Z, Everett Jones S, Watson M, Richardson LC. Prevalence of Indoor Tanning and Association With Sunburn Among Youth in the United States. JAMA Dermatol. 2017;153(5): 387. doi:10.1001/jamadermatol.2016.6273 [PubMed: 28257531]
4. Holman DM, Watson M. Correlates of Intentional Tanning Among Adolescents in the United States: A Systematic Review of the Literature. J Adolesc Health. 2013;52(5):S52–S59. doi:10.1016/j.jadohealth.2012.09.021 [PubMed: 23601612]
5. Hoerster KD, Mayer JA, Woodruff SI, Malcarne V, Roesch SC, Clapp E. The influence of parents and peers on adolescent indoor tanning behavior: Findings from a multi-city sample. J Am Acad Dermatol. 2007;57(6):990–997. doi:10.1016/j.jaad.2007.06.007 [PubMed: 17658194]
6. Balk SJ, Gottschlich EA, Holman DM, Watson M. Counseling on Sun Protection and Indoor Tanning. Pediatrics. 2017;140(6). doi:10.1542/peds.2017-1680
7. US Preventive Services Task Force, Grossman DC, Curry SJ, et al. Behavioral Counseling to Prevent Skin Cancer: US Preventive Services Task Force Recommendation Statement. JAMA. 2018;319(11):1134. doi:10.1001/jama.2018.1623 [PubMed: 29558558]
8. Falzone AE, Brindis CD, Chren M-M, et al. Teens, Tweets, and Tanning Beds: Rethinking the Use of Social Media for Skin Cancer Prevention. Am J Prev Med 2017;53(3):S86–S94. doi:10.1016/j.amepre.2017.04.027 [PubMed: 28818251]

Table 1:

Correlates of perceiving low harm or high benefit to indoor tanning for adolescents (*N*=1,205)

	Low Perceived Harm		High Perceived Benefit	
	***n/N* (%)**	**aOR (95% CI)**	***n/N* (%)**	**aOR (95% CI)**
Parent Characteristics				
Sex				
Female	172/616 (28)	1	319/616 (52)	1
Male	219/589 (37)	1.59 (1.24-2.05) **	367/589 (62)	1.62 (1.28-2.05) **
Race and Ethnicity				
Non-Hispanic white	240/810 (30)	1	477/810 (59)	---
Non-Hispanic black	52/108 (48)	1.91 (1.25-2.91) **	60/108 (56)	---
Hispanic	78/225 (35)	1.17 (0.84-1.62)	116/225 (52)	---
Other	21/62 (34)	1.12 (0.64-1.98)	33/62 (53)	---
Indoor tanning in past 12 months				
0 times	356/1137 (31)	1	629/1137 (55)	1
≥1 time	35/68 (51)	2.92 (1.74-4.88) **	57/68 (84)	4.76 (2.46-9.23) **
Family history of skin cancer [a]				
Yes	44/207 (21)	1	109/207 (53)	---
No	347/998 (35)	1.72 (1.19-2.51) **	577/998 (58)	---
Received provider counselling [b] on skin cancer prevention				
Yes	174/591 (29)	1	318/591 (54)	1
No	217/614 (35)	1.24 (0.96-1.60)	368/614 (60)	1.32 (1.04-1.66) *
Adolescent Characteristics				
Sex				
Female	167/573 (29)	1	324/573 (57)	---
Male	224/632 (35)	1.32 (1.02-1.70) *	362/632 (57)	---
Age (years)				
11-12	92/322 (29)	1	182/322 (57)	---
13-15	156/501 (31)	1.14 (0.83-1.57)	281/501 (56)	---
16-17	143/382 (37)	1.51 (1.08-2.09) *	223/382 (58)	---
Skin reactivity [c]				
More sun-reactive	66/289 (23)	1	153/289 (53)	---
Less sun-reactive	325/916 (35)	1.70 (1.23-2.33) **	533/916 (58)	---

aOR: adjusted odds ratio. CI: confidence interval.

* $P<0.05$.

** $P<0.01$.

Dashes (---) indicate the variable was not included in the multivariable model because it was not statistically significant at the bivariate level. Models also exclude variables associated with neither perceived harm nor benefit in bivariate analyses: parent's age, parent's education, annual household income, climate sunniness, and rural residence.

[a]Parental report of a personal or family history of skin cancer in a first-degree relative (parent, sibling).

[b]Parental report of skin cancer prevention counselling by their child's healthcare provider on ≥1 of 6 topics: using sunscreen; wearing clothing to block sun; limiting time outdoors; seeking shade when outdoors; using indoor tanning devices; and checking skin regularly.

[c]Parental report of skin reactivity based on how their adolescent's skin would reaction after 1 hour of mid-day sun for the first time in the summer.