Published in final edited form as:

J Health Psychol. 2016 July ; 21(7): 1261–1270. doi:10.1177/1359105314551621.

Tanning and beauty: Mother and teenage daughters in discussion

Jennifer L. Hay,

Memorial Sloan Kettering Cancer Center

Alan C. Geller,

Harvard School of Public Health

Maria Schoenhammer,

Adelphi University

Mallorie Gordon,

The New School for Social Research

Marilyn Bishop,

The Framingham School District

Elyse Shuk,

Memorial Sloan Kettering Cancer Center

Susan Oliveria, and

Memorial Sloan Kettering Cancer Center

Allan C. Halpern

Memorial Sloan Kettering Cancer Center

Abstract

Tanning increases dramatically through the teenage years, but the family context of this health risk behavior is relatively unstudied. We conducted videotaped conversations between teenage girls (10th and 11th grade) and their mothers. We developed a coding system for discussion content, and highlight findings including inadequate knowledge concerning the harms of tanning, positive views of outdoor tanning over indoor tanning, yet agreement that all tans are attractive. Many teens believed that indoor tanning is sometimes necessary to achieve the tanned look. These findings can usefully guide intervention development regarding the harms of all tanning, rather than indoor or outdoor tanning specifically.

Introduction

Rates of melanoma, the most serious form of skin cancer, have been increasing dramatically among teenagers and young adults in the United States over the past 40 years. The most dramatic rise has been among young women (Jemal et al., 2011; Wong et al., 2013; Purdue

et al., 2008). Most (50% to 90%) melanoma and other skin cancers are caused by ultraviolet (UV) radiation (Lucas et al., 2008), delivered by sunlight and indoor tanning devices (Armstrong and Kricker, 2001; El Ghissassi et al., 2009; Wehner et al., 2012; Boniol et al., 2012; Lazovich et al., 2010). Childhood and adolescence are critical periods of UV vulnerability and ideal times for intervention to prevent melanoma (Balk et al., 2013b).

By age 14, the belief that people look better with a tan increases dramatically (Dusza et al., 2012) Hedges and Scriven, 2010; Robinson et al., 2008). The highest sunburn rates occur among teenagers who believe burning is “worth it” to get a good tan (Geller et al., 2002). Nearly half (44%) of Non-Hispanic White girls have tanned indoors by age 18 (Geller et al., 2002; Guy et al., 2013; Lazovich et al., 2004). There is currently no federal legislation prohibiting minors from indoor tanning; state and local legislation is variably enforced (Balk et al., 2013a). The American Academy of Pediatrics (Balk et al., 2011), the American Academy of Dermatology (American Academy of Dermatology, 2014), and the Society of Behavioral Medicine (Pagoto et al., 2014) all recommend indoor tanning bans for minors.

Family influences are important in teen risk behaviors. In the tanning context, parental permissiveness is associated with teen indoor tanning (Cokkinides et al., 2002; Magee et al., 2007; Stryker et al., 2004), yet only 32% of parents in one study had ever discussed indoor tanning with their children over age 10 (Magee et al., 2007). Family contextual factors that may promote or inhibit teen tanning have not been extensively examined.

Given that multiple aspects of family socialization, including modeling of parental behaviors, the establishment of family habits and social norms, values around appearance, as well as specific rule-setting around tanning may all be relevant in determining teen decisions about tanning onset and frequency (Bandura, 1986), we sought to gain a better understanding of mother-teen daughter discussion patterns around tanning. We focused on discussions between mother-daughter pairs since tanning is common among teenage girls, and we thought they would be most likely to have discussed these issues with their mothers compared with their fathers, given mothers’ central role in their children’s health. We believe this strategy may prove fruitful in identifying mechanisms through which family processes influence teen tanning practices, and generate intervention targets to address this developing problem in young people. Our aims were to: 1) adapt a coding scheme to capture variability in observed family communications between mothers and daughters about tanning and beauty, and 2) to describe the content of these communications. We took a qualitative approach to this research given the potentially complex nature of family talk about tanning.

Methods

Participants

Participants were recruited from Framingham High School in Framingham, MA, the site of our ongoing study on nevus development in children (Geller et al., 2007; Oliveria et al., 2009). Letters of invitation were sent to parents of all 10th and 11th grade girls (N=460) in the Spring of 2012 requesting their participation in an interview study involving mothers and daughters and tanning. The letter of invitation clarified that 10th and 11th grade mother/

daughter pairs were eligible for the study if either mother OR daughter endorsed any one of the following questions: 1) tanned indoors in the past year, 2) planned to tan indoors in the next year, or 3) felt they looked better with a tan. Of the 43 families that responded to the mailing, 22 mother-daughter pairs (44 participants) agreed to participate in the study and were scheduled for an interview. The most commonly cited reasons for nonparticipation included lack of time and scheduling conflicts. Informed consent and interviews were conducted in May and June 2012. Each participating family pair received \$50 in compensation for their valued time and effort. The study was approved by the Institutional Review Board at the Harvard School of Public Health.

Of the 22 discussions (which lasted from 5 to 15 minutes in duration) among the total 44 participants, four were conducted in Portuguese by a bilingual (English/Portuguese) teacher, who provided interpretation and translation of the completed Portuguese interviews.

Measures

We utilized a direct observation and coding method adapted from The Family Talk about Smoking (FTAS) paradigm, used to characterize heterogeneity in parent-teen discourse about smoking in teens (Wakschlag et al., 2011). Consistent with FTAS, we used a trigger card method (Cui and Conger, 2008; Wakschlag et al., 2011) to facilitate a mother-daughter discussion about indoor tanning, parental restrictions on indoor tanning, as well as more global beliefs and attitudes about tanning, and appearance and beauty. See Table 1 for the 12 trigger card topics.

Study Approach

Facilitator training—Facilitators included two school nurses and one high school teacher, who were trained to provide instructions and answer participants' questions regarding the study procedure a qualitative methods specialist (ES) in a two-day training that involved study rationale, use of the video equipment, avoiding intrusion, answering questions, and role plays.

Discussion procedure—Family discussions took place in the family home. After briefly introducing the study, the facilitator explained the trigger card procedure to the mother-daughter pair and described how to use the trigger cards to prompt their discussions, set up the video-recording equipment, and left the room in order to facilitate more natural discussions between mother and daughter. All videotapes were transcribed to Word documents for data analysis.

Data Analysis

Code creation—The preliminary codebook was derived from prior work in the tobacco context (Wakschlag et al., 2011), and a grounded theory approach (Corbin & Strauss, 2008; Glaser & Strauss, 1999) utilizing a-priori examination of the videotapes. We randomly selected (via online random number generator) 25% of the total number of participants interviewed (11 of 44 participants) to generate our preliminary codebook (Rubin and Rubin, 2012). In step 1, we randomly selected and reviewed the discussions of four participants (two mother-daughter pairs) from this subsample of 11 participants to familiarize ourselves

with the data. In step 2, we reviewed the discussions of the remaining seven participants to expand and refine the preliminary codebook; these seven participants consisted of four daughters and three mothers. These steps were conducted by each of four analysis team members working independently and then establishing team consensus. For example, we split “Level and Consistency of Disapproval of Indoor Tanning” into two codes: “Level and Consistency of Disapproval of Indoor Tanning,” and “Level and Consistency of Disapproval of Tanning through Sun Exposure” because we observed inconsistencies in the participant’s disapproval of indoor tanning versus tanning through sun exposure.

Response options—Coding involved a continuum using a 9-point scale (1–9) ranging from “Not at all characteristic” to “Mainly characteristic.” Coding required judgment of both qualitative (clarity, intensity) and quantitative (frequency mentioned) aspects of the conversation. For example, for the code, “Endorsement of Intentional Tanning through Sun Exposure,” at the low end of the scale, the participant’s endorsement of tanning through sun exposure was judged by the coder to be minimal; at the moderate level, endorsement was observed to be clearer but lacked elaboration or complexity; and at the high end of the scale, endorsement was judged to be emphatic and richly coherent.

Coding procedure—Consistent with prior work (Wakschlag et al., 2011), the recorded discussions were coded according to a global (rather than event-based) coding system, meaning that the coding was based on observation of the full discussion. We thus did not apply codes to specific responses, unique trigger cards or conversation topics. Each coder viewed the entire video recording a total of three times – once for overall orientation, once focusing on mother and once focusing on daughter, pausing and replaying as needed and taking general notes. After the viewings, the coder would score along all codes based on observation of the full discussion.

Two analysis team members independently coded the 33 participants with coder reliability calculated with Intraclass Correlations (ICC). The ICCs were in the good to very good range (.69 - .94), with the exception of three codes. These were code 2, “Level and Consistency of Disapproval of Tanning through Sun Exposure,” (.33), code 3 “Establishment and Elaboration of Consequences for Indoor Tanning (Mother ONLY)” (.38) and code 10 “Awareness of Risks or Harm Related to Indoor Tanning” (.47). Examination of diverse interpretations of these codes was discussed, and the code wording was clarified in each case. The final codes names, definitions, and a representative quotation for each code are listed in Table 2.

We kept detailed notes on the process of developing the codebook parallel to our work on codebook generation and refinement. Specifically, we kept an “audit trail” in the form of a timeline, and in a separate document, we recorded the generation of each code and its modifications along with the rationales behind it and the surrounding circumstances. To develop the Results we worked collaboratively as a team to identify the predominant overarching concepts identified via the coding.

Results

Of the 44 participants, the 22 daughters (aged 15–17) were Caucasian ($n=17$) or Hispanic ($n=5$). In these results we report on findings from 33 participants (17 mothers; 16 teen girls), which comprised our *final* round of analysis. Most (29/33) participants were not currently tanning indoors, and of the remainder, two (one mother and one daughter) were seasonal users (defined as someone who tans regularly but only in one season of the year), one daughter was an experimenter (defined as someone with 1–3 indoor tanning experiences), and one mother a regular indoor tanner (defined as someone who indoor tans regularly throughout the year). While most mothers were not currently tanning, many (8 of 17 mothers) had tanned in the past. Four daughters reported an intention to tan over the next year.

Code frequency

See Table 3 for code means. The level of commitment not to indoor tan was quite high, as was the disapproval of indoor tanning behavior. Endorsement of intentional tanning through sun exposure was in the midrange as was tanned appearance as an aspect of beauty. Codes with endorsement levels at the low end included elaboration of consequences for indoor tanning.

For mothers and daughters combined, disapproval of indoor tanning ($r = -.60, p < .001$) as well as commitment not to indoor tan ($r = -.63, p < .001$) were each negatively associated with current indoor tanning behavior, reflecting consistency between attitudes and behaviors. Stronger statements of personal distinction (defined as the degree with which an individual distances herself from her discussion partner by expressing distinct opinions or behaviors) were positively associated with current indoor tanning behavior ($r = .61, p < .001$).

Tanned skin is attractive and healthy—Mothers and daughters alike overwhelmingly expressed the opinion that tanned skin is beautiful skin. This sentiment was articulated with such uniformity that it seemed to be viewed as a fact rather than a personal opinion, as stated by one mother: “Well, people, when they have tanned skin, of course they look prettier,” and by a daughter: “You just look better with a tan.” These opinions were often modestly tempered by knowledge of the risks of tanning, as stated by the following mother, “I think over-tanned skin obviously leads to issues...premature aging, skin cancer, but a little bit of color...is not the end of the world.” Additionally, tanned skin was often described as promoting an appearance of health, or as actually being healthy. One daughter stated that being tan makes “you look healthy, because you aren’t washed out and pale. You have more color to you.”

Distinguishing outdoor from indoor tanning—Those who reported valuing a tanned appearance generally considered outdoor tanning to be “natural” and “safe.” The belief that there were healthy ways to get a tan are described by a daughter, “The best way is to just go to the beach or just being outside and get a tan.” Sunscreen was often mentioned as a method to allow safer outdoor exposure. As one mother stated, “I agree that skin looks prettier tan, but that you need to get a tan naturally, taking proper care, and using sunscreen.” For some, the use of sunscreen outdoors strengthened their view that indoor tanning (where

they felt sunscreen was rarely used) was a riskier way to get a tan. Another mother explained her decision to stop using tanning beds led to her using what she felt to be a safer alternative, “Now I just put on my sunscreen and get my tan in the summertime” she noted. A daughter stated, “My decision is not to go into a tanning bed. I’d rather lay out in the sun with lotion on. I wouldn’t go tanning indoors [because] it can cause cancer.”

Negative attitudes towards indoor tanning—Negative views of indoor tanning predominated, and included beliefs that indoor tanning was not natural, not seasonal, and engendered health risks. Interestingly, many of the negative comments about indoor tanning were framed in contrast to positive aspects of outdoor tanning. For example, the belief that indoor tans are not natural were framed by the way the tan is obtained (natural sunlight and in the outdoors vs. artificially by way of a “machine”) but it also extends to the quality of the tanned appearance. An indoor tan isn’t “naturally pretty;” it looks “fake,” “dirty,” or “too even” compared to an outdoor tan. It can easily be overdone, resulting in an “orange” look. Spray tans, rather than presenting a good alternative to indoor tanning, were also seen as fake or unattractive. Additionally, indoor tanning was frowned upon by some because it could be incongruous with the season; some daughters expressed that being tan looks unnatural in the winter. Further, some mentioned that a dark skin tone can appear incompatible with one’s ethnicity. The health risks of indoor tanning were frequently discussed, as well: “You’re injuring your body and that just isn’t worth it.” Mothers who went indoor tanning in the past often cited health dangers as the reason for discontinuing it, but also discussed some positive aspects of this behavior:

“Well, I’ve used a tanning bed, and I’ve used a tanning booth, when I was younger. I actually used one probably four years ago before we went on a cruise. I thought that if I did that, again, in moderation – I only did it for a few weeks before – that when I got on the cruise in the Caribbean sun, that I wouldn’t burn. And I didn’t. So I thought burning, in my head, was worse than actually tanning in the booth.”

“...When I went [indoor tanning], the experience was pretty good. It was really time for me to listen to the music and relax.”

These mothers were also able to discuss how they made their decisions to stop indoor tanning. Among some mothers, there was substantial knowledge regarding the risks of indoor tanning:

“Now, obviously, my attitude has changed. I always said that if they came out and proved that there was a link to skin cancer and tanning, that I would stop, and when they did sort of start coming out with those studies, I had stopped. I even had a membership that I was going to every once in a while, and once the studies started coming up, I just stopped and I just let the money go.”

Many mothers expressed little to no knowledge of the specific risks involved with this behavior, relying instead on a general understanding that indoor tanning is unhealthy in some way. As one mother said, “I know that those rays are very bad for your health...I don’t know how they work, where they come from, or what can happen in there.” This was also commonly observed among daughters as well, many of whom expressed the idea that they knew that they did not want to engage in indoor tanning behavior because it is unhealthy, but

that they did not understand much about indoor tanning or what about it was dangerous in particular. Surprisingly, daughters who were either currently engaged in indoor tanning behavior or seriously considering it for future use reported relatively specific knowledge on the risks involved with indoor tanning. These daughters expressed knowledge of the risks of developing skin cancer and wrinkles in the context of indoor tanning use. Perhaps to cope with this extra knowledge, these daughters also expressed a denial of their vulnerability to the risks of indoor tanning, making statements such as the following:

Daughter: "I don't do it a lot. I don't even remember the last time I went tanning."

Mother: "You don't have to do it a lot though."

Daughter: "Exactly."

Mother: "No, I mean, you don't have to do it a lot for it to cause cancer."

Daughter: "Oh. Yeah. I don't even have that kind of skin or history in the family that would make me easily prone to getting it."

Mother: "That doesn't mean you're not going to get it."

Daughter: "I know. Anyone can get cancer. Of any kind."

Mother: "It seems kind of, it's like, it's something that you easily could not do to not put yourself in harm's way."

Daughter: "Yeah, but, I don't like looking pale all the time, in the winter."

Most of the mothers expressed a negative attitude toward indoor tanning, regardless of whether they had had some kind of experience with it in the past. Of those mothers who had previously engaged in regular indoor tanning, their rejection of the practice for their daughters seemed to be more emphatic. This was expressed in statements such as: "What I know, I don't think young girls should be doing it at all," and "I, as a parent, would not let you, I would forbid you to do it." Still, mothers who claimed to have had no experience with indoor tanning were definitively against the behavior as well. This did not, however, translate into a clear expression of consequences that would result if their daughters did engage in indoor tanning. Most mothers, especially those with daughters who had expressed no interest in indoor tanning up to this point, seemed confident that there was no need to address the issue of indoor tanning in real terms. In contrast, other mothers felt powerless regarding their daughters' decisions around indoor tanning. Exclusively seen in the mothers of daughters who were already engaging in indoor tanning behavior, this sentiment was expressed in statements such as: "I feel not comfortable, because you [the daughter] don't agree with me, with my opinions, with my decisions, and doesn't agree with the dangers that I tell you that you are running, maybe not now, maybe, but in the future we know that this will bring a lot of problems, including causing a skin cancer."

"Leaving the door open" for indoor tanning—Despite the many negative attitudes expressed regarding indoor tanning, several daughters conceded that in certain situations indoor tanning might be the *only* practical option for obtaining a tan, and that under these conditions, they may engage in it. These situations included weddings or proms where attractiveness became a paramount goal, tempering health concerns. Of note, a spray tan was

only rarely considered a viable way for getting a tan on special occasions, and due to the perceived inferior aesthetic quality of spray tans, most teens completely ruled it out as an option. Indoor tanning had the perceived benefit of being controllable and available despite weather variations. For example, in a family where the mother displayed great awareness of the harms of tanning and described monitoring her daughter's sun protective behavior, the daughter appeared to share her mother's high level of risk awareness and initially was highly disapproving of indoor tanning. As the discussion progressed, however, the daughter conceded that she would not entirely rule out indoor tanning at some point in the future if circumstances justified its use:

Daughter: "I would never use a tanning bed in my life. Maybe I would get a spray tan, but that doesn't really, that's just like putting paint on your skin basically but I probably wouldn't do that except if it was for cotillion or prom."

[...]

Daughter: "I think it [indoor tanning] is kind of not worth it. You might as well just spend time outside [...] I would maybe do it once but that would be for like some –

Mother: "You would maybe do it? I thought you said you would never ever do it!"

Daughter: "Well, no, it depends, I wouldn't do it for like prom or something but I'm not saying that I'm not ever gonna do it. I don't know. They'll probably be gone by the time that I would want to."

Mother: "Hm. Ok."

Daughter: "You went once."

Mother: "Yeah, but that was like back before we knew any better."

[...]

Mother: "I just say I don't recommend them [tanning beds] 'cause (a family member) had skin cancer and you're blue-eyed and fair. I don't think it's a good idea. Do I know whether once or twice is going to irreparably damage you? I don't really know that much about them so I can't say. I personally wouldn't advocate it unless there was like one heck of a good reason."

Daughter: "That's what I'm saying. I'm saying if there was one reason like what if I had the worst [Lacrosse] tan on my wedding day?"

Here, indoor tanning is not entirely out of the question even for a daughter who at first appears not to care much about a tanned appearance, is very aware of health risks of indoor tanning, and voices strong disapproval of it. Maximizing one's attractiveness for a special occasion was considered to be a "good reason" to indoor tan even by a risk-aware teen. For other teens, who are less risk-aware and who place a higher value on being attractive and tan, special occasions such as cotillion and prom might indeed be "good reasons" to go indoor tanning.

Additional positive aspects of indoor tanning that were mentioned included year-round availability, the fact that it is an “easier” option for getting a tan since it requires only a short time investment, and that it can provide a deeper tan in a shorter amount of time.

Social norms around indoor tanning—Most daughters perceived indoor tanning to be a common behavior, as they reported that they knew many peers—girls and some boys—who indoor tanned. In fact, according to some daughters indoor tanning seems to be ubiquitous: “Everybody at my school goes.” One daughter who engages in indoor tanning reported that feedback regarding when to tan was readily available, as she mentioned, “people will tell you when it’s time for you to get a tan.”

Discussion

The overall purpose of the study was to examine mother-daughter discussions to identify themes regarding the attitudinal context surrounding tanning, issues that encourage interest in tanning via indoor tanning and sun exposure, awareness of tanning risks, and the role of social relationships in shaping daughters’ perspectives about indoor tanning. We used a direct observation method to capture variability in observed communications between mothers and daughters. This approach was ideally suited to capture the complexity of family talk about tanning. Most prior work examining factors predicting the uptake of tanning behaviors in adolescents has generally taken an individual-level approach, assessing self-reported factors such as appearance motivation that are certainly highly relevant to decisions to tan (Reid and Aiken, 2013; Hillhouse et al., 2009; Fogel and Krausz, 2013). Family processes may be important, unaddressed discriminators of these different paths and so our work may usefully inform both individual-level and family-level approaches addressing persistent as well as sporadic tanning in adolescents. Future work could examine the predictive validity of this reliable coding system with regard to the propensity to begin tanning in younger girls.

One important finding from this study involves the fluid nature regarding approaches to tanning in both teen girls and their mothers. While indoor tanning was generally viewed negatively, the end-goal - having a tan - was not viewed negatively. Accordingly, the participant pairs generally engaged in discussions where they may have disagreed on the best way to get a tan, but did not at all disagree that a tan was attractive and sought after. Mothers were actually more likely than their daughters to endorse the belief that tans looked healthy, as well as attractive. There was significant discussion as to when an indoor tan might be absolutely necessary to get a tanned look, especially for a party or special event when appearance motives are a top priority. The general discussion regarding their preferences for outdoor tans was generally endorsed by mothers as well as daughters. Tans achieved through outdoor exposure were believed to be more natural, more attractive, and less risky. Accordingly, our results indicate that a behavioral focus on indoor tanning alone might overlook girls’ decisions to shift back and forth between indoor and outdoor tanning seasonally. These choices may place them at similar or higher risk levels to those who exclusively tan indoors. The practice of both indoor and outdoor tanning may be more common in regular, very frequent tanners. These findings dovetail well with prior research indicating that indoor tanners are less likely to use sunscreen when they are outdoors than

those who avoid indoor tanning, and the fact that indoor tanners often have a false sense of security that tanning reduces their sunburn vulnerability (Geller et al., 2002; Lazovich et al., 2004). Accordingly, the endorsement of either indoor or outdoor tanning may increase the risk for a range of tanning behaviors.

Other important study findings involve the stated use of sunscreen as a harm reduction or risk reduction strategy. This was mentioned in the context of outdoor tanning rather than indoor tanning, and further underscores teens' preferences for outdoor tanning. There were variable degrees of knowledge regarding tanning in our sample, and in many cases lack of specific information concerning indoor tanning facilities and risks. Some teen daughters were knowledgeable about the cancer risks associated with indoor tanning and believed outdoor tanning with sun protection was a safe alternative to tanning indoors. Although some mothers and daughters were knowledgeable about the specific risks of indoor tanning, others had only a very general understanding about the health risks associated with indoor tanning. Some daughters who were engaging in indoor tanning, or were open to doing so were highly knowledgeable about the specific risks of indoor tanning, a finding that has been substantiated in prior literature (Dennis et al., 2009; Hay and Lipsky, 2012; Hillhouse and Turrisi, 2012). In teen girls, beliefs about the benefits of having a tan often override accurate knowledge about the dangers of tanning.

Our study has limitations

Tanning behavior was assessed through self-report, and so could have been underreported. Our study was cross-sectional, and so we could not test the predictive validity of the coding system regarding tanning behavior uptake. Our sample was limited in size, due to the stringent requirements of involving parent and child together for a 60 minute time period. We included four Portuguese families, but could not conduct stratified analyses to examine differences across groups due to sample size. Finally, our sample likely represented families with high rapport and cooperation, given their willingness to participate in a family communication study, and so we cannot generalize to families with more discord or communication difficulties.

In conclusion, we have taken a first step in examining family processes surrounding tanning preferences and priorities in teen girls and their mothers. Intervention strategies could better clarify the specific harms of UV exposure, including both outdoor and indoor exposure, address family-wide ambivalence about the risks and benefits of tanning, and encourage deliberate, repeated family communication about tanning harms that could lead to better-developed family norms against intentional tanning. While indoor tanning is on the increase in the United States, this might be the tip of the iceberg. Interventions to engage teenagers individually and along with their families may usefully focus on all tanning, or intentional tanning, rather than indoor tanning specifically.

References

- American Academy of Dermatology. Indoor Tanning. 2014. Available at: <http://www.aad.org/media-resources/stats-and-facts/prevention-and-care/indoor-tanning> (accessed 1 October 2013)

- Armstrong BK, Kricker A. The epidemiology of UV induced skin cancer. *Journal of Photochemistry and Photobiology B: Biology*. 2001; 63(1–3):8–18.
- Balk SJ, Council on Environmental Health and Section on Dermatology. Ultraviolet radiation: A hazard to children and adolescents. *Pediatrics*. 2011; 127(3):e791–817. [PubMed: 21357345]
- Balk SJ, Fisher DE, Geller AC. Stronger laws are needed to protect teens from indoor tanning. *Pediatrics*. 2013a; 131(3):586–588. [PubMed: 23439900]
- Balk SJ, Fisher DE, Geller AC. Teens and indoor tanning: A cancer prevention opportunity for pediatricians. *Pediatrics*. 2013b; 131(4):772–785. [PubMed: 23509165]
- Bandura, A. *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs, NJ: Prentice-Hall; 1986.
- Boniol M, Autier P, Boyle P, et al. Cutaneous melanoma attributable to sunbed use: Systematic review and meta-analysis. *British Medical Journal*. 2012;345:e4757.
- Cokkinides VE, Weinstock MA, O'Connell MC, et al. Use of indoor tanning sunlamps by US youth, ages 11–18 years, and by their parent or guardian caregivers: Prevalence and correlates. *Pediatrics*. 2002; 109(6):1124–1130. [PubMed: 12042553]
- Corbin, J., Strauss, A. *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage Publications; 2008.
- Cui M, Conger RD. Parenting behavior as mediator and moderator of the association between marital problems and adolescent maladjustment. *Journal of Research on Adolescence*. 2008; 18(2):261–284.
- Dennis LK, Lowe JB, Snetselaar LG. Tanning behavior among young frequent tanners is related to attitudes and not lack of knowledge about the dangers. *Health Education Journal*. 2009; 68(3):232–243. [PubMed: 22707763]
- Dusza SW, Halpern AC, Satagopan JM, et al. Prospective study of sunburn and sun behavior patterns during adolescence. *Pediatrics*. 2012; 129(2):309–317. [PubMed: 22271688]
- El Ghissassi F, Baan R, Straif K, et al. A review of human carcinogens—part D: Radiation. *The Lancet Oncology*. 2009; 10(8):751–752.
- Fogel J, Krausz F. Watching reality television beauty shows is associated with tanning lamp use and outdoor tanning among college students. *Journal of the American Academy of Dermatology*. 2013; 68(5):784–789. [PubMed: 23261546]
- Geller AC, Colditz G, Oliveria S, et al. Use of sunscreen, sunburning rates, and tanning bed use among more than 10,000 US children and adolescents. *Pediatrics*. 2002; 109(6):1009–1014. [PubMed: 12042536]
- Geller AC, Oliveria SA, Bishop M, et al. Study of health outcomes in school children: Key challenges and lessons learned from the framingham schools' natural history of nevi study. *The Journal of School Health*. 2007; 77(6):312–318. [PubMed: 17600588]
- Glaser, B., Strauss, A. *The discovery of grounded theory: Strategies for qualitative research*. New Brunswick, NJ: Aldine Transaction; 1999.
- Guy GP Jr, Berkowitz Z, Watson M, et al. Indoor tanning among young non-Hispanic white females. *JAMA Internal Medicine*. 2013; 173(20):1920–1922. [PubMed: 23959651]
- Hay, J., Lipsky, S. International Perspectives on Indoor Tanning. In: Heckman, CJ., Manne, SL., editors. *Shedding Light on Indoor Tanning*. Netherlands: Springer; 2012. p. 179-193.
- Hedges T, Scriven A. Young park users' attitudes and behaviour to sun protection. *Global Health Promotion*. 2010; 17(4):24–31. [PubMed: 21510096]
- Hillhouse, J., Turrissi, R. Motivations for Indoor Tanning: Theoretical Models. In: Heckman, CJ., Manne, SL., editors. *Shedding Light on Indoor Tanning*. New York: Springer; 2012. p. 69-86.
- Hillhouse JGC, Thompson JK, Jacobsen PB, et al. Investigating the role of appearance-based factors in predicting sunbathing and tanning salon use. *Journal of Behavioral Medicine*. 2009; 32(6):532–544. [PubMed: 19653089]
- Jemal A, Saraiya M, Patel P, et al. Recent trends in cutaneous melanoma incidence and death rates in the united states, 1992–2006. *Journal of the American Academy of Dermatology*. 2011; 65(5 Suppl 1):S17–25. e11–13. [PubMed: 22018063]

- Lazovich D, Forster J, Sorensen G, et al. Characteristics associated with use or intention to use indoor tanning among adolescents. *Archives of Pediatrics and Adolescent Medicine*. 2004; 158(9):918–924. [PubMed: 15351760]
- Lazovich D, Vogel RI, Berwick M, et al. Indoor tanning and risk of melanoma: A case-control study in a highly exposed population. *Cancer Epidemiology Biomarkers & Prevention*. 2010; 19(6):1557–1568.
- Lucas RM, McMichael AJ, Armstrong BK, et al. Estimating the global disease burden due to ultraviolet radiation exposure. *International Journal of Epidemiology*. 2008; 37(3):654–667. [PubMed: 18276627]
- Magee KH, Poorsattar S, Seidel KD, et al. Tanning device usage: What are parents thinking? *Pediatric Dermatology*. 2007; 24(3):216–221. [PubMed: 17542867]
- Oliveria S, Satagopan J, Dusza S, et al. Study of nevi in children (SONIC): Baseline findings and predictors of nevus count. *American Journal of Epidemiology*. 2009; 169(1):41–53. [PubMed: 19001133]
- Pagoto S, Hillhouse J, Heckman CJ, et al. Society of Behavioral Medicine (SBM) position statement: Ban indoor tanning for minors. *Translational Behavioral Medicine*. 2014; 4(1):124–126. [PubMed: 24653783]
- Purdue MP, Freeman LE, Anderson WF, et al. Recent trends in incidence of cutaneous melanoma among us caucasian young adults. *The Journal of Investigative Dermatology*. 2008; 128(12):2905–2908. [PubMed: 18615112]
- Reid AE, Aiken LS. Correcting injunctive norm misperceptions motivates behavior change: A randomized controlled sun protection intervention. *Health Psychology*. 2013; 32(5):551–560. [PubMed: 23646838]
- Robinson JK, Kim J, Rosenbaum S, et al. Indoor tanning knowledge, attitudes, and behavior among young adults from 1988–2007. *Archives of Dermatology*. 2008; 144(4):484–488. [PubMed: 18427042]
- Rubin, HJ., Rubin, IS. *Qualitative interviewing: The art of hearing data*. Thousand Oaks, CA: Sage Publications; 2012.
- Stryker JE, Lazovich D, Forster JL, et al. Maternal/female caregiver influences on adolescent indoor tanning. *The Journal of Adolescent Health*. 2004; 35(6):528, e521–529.
- Wakschlag LS, Metzger A, Darfler A, et al. The family talk about smoking (FTAS) paradigm: New directions for assessing parent-teen communications about smoking. *Nicotine & Tobacco Research*. 2011; 13(2):103–112. [PubMed: 21183588]
- Wehner MR, Shive ML, Chren MM, et al. Indoor tanning and non-melanoma skin cancer: Systematic review and meta-analysis. *British Medical Journal*. 2012;345e5909.
- Wong JR, Harris JK, Rodriguez-Galindo C, et al. Incidence of childhood and adolescent melanoma in the united states: 1973–2009. *Pediatrics*. 2013; 131(5):846–854. [PubMed: 23589817]

Table 1**Mother-Daughter Discussion Trigger Cards**

Trigger Card
1. What does our family like to do together? (Mother starts discussion)
2. When members of our family have differing views, how do we resolve it? (Daughter starts discussion)
3. What thoughts do we have about appearance and the meaning of physical beauty? (Mother starts discussion)
4. What are some ways that girls and women can improve their appearance? (Daughter starts discussion)
5. What beliefs do we have about the appearance of tanned skin? (Mother starts discussion)
6. What experiences and opinions do we have about different ways of getting a tan? (Daughter starts discussion)
7. How do today's teens make decisions about whether to go indoor tanning? (Daughter starts discussion)
8. What experiences have we had with indoor tanning? (Mother starts discussion)
9. How do people in our family feel about indoor tanning or tanning beds? (Daughter starts discussion)
10. What do we know about tanning beds? (Mother starts discussion)
11. How comfortable am I—the mother—in discussing indoor tanning and tanning beds with my daughter? (Mother starts discussion)
12. How do I—the daughter—respond to my mother's discussions concerning indoor tanning or tanning beds? (Daughter starts discussion)

Table 2**Code Definitions and Representative Participant Quotations**

Code Name and Definition	Representative Participant Quotations
Level and Consistency of Disapproval of Indoor Tanning	
Strength, consistency, and pervasiveness of expressed disapproval of indoor tanning as conveyed both verbally and nonverbally.	“My decision is not to go into a tanning bed. I’d rather lay out in the sun with lotion on. I wouldn’t go tanning indoors [because] it can cause cancer.” – Daughter
Endorsement of Intentional Tanning through Sun Exposure	
Strength and consistency of explicitly expressed endorsement of intentional tanning through sun exposure for this participant, taking into account reported behavior such as sunbathing and/or sun protection	D: I don’t like to wear sunblock, but my mom does [...] M: So what are the different ways that you like to get a tan? D: Lay out without sunblock on.
Establishment and Elaboration of Consequences for Indoor Tanning (Mother ONLY)	
The clarity with which the mother communicated specific, realistic, and firm consequences for indoor tanning she would impose and enforce.	“I as a parent would not let you, I would forbid you to do it.” – Mother
Salience of Social Norm to Indoor Tan (Teen ONLY)	
Closeness or strength of association with an individual or group that indoor tans as expressed by the teen - not based on a sense of approval.	“P.J., my best friend, she goes [tanning] a lot... she gets burned sometimes... I’m not a big fan.” – Daughter
Level of Commitment Not to Indoor Tan	
The degree to which the participant expressed a commitment not to indoor tan, both verbally and nonverbally, both now and in the future.	“If it weren’t so bad for you, maybe... If they weren’t so bad for you and you got tan from them, then maybe, but spray tan is just as good, without the cancer.” – Daughter
Tanned Appearance as an Aspect of Beauty	
The role of tanned appearance in the participant’s overall concept of beauty.	“It’s pretty much whether you want to look good during winter when there’s no sun out, and now prom and cotillion are coming up, so everyone is tanning.” – Daughter
Tanned Appearance as a Sign of Health	
The degree to which the participant perceives tanned skin as conveying the appearance of health.	“You look healthy, you’re feeling good. Just basically looking healthy.” – Mother
Statement of Personal Distinction	
The degree to which the participant distances herself from the other by expressing separate and distinct opinions and/or behaviors as conveyed through verbal and nonverbal means.	D: But I also think that it is my decision to make. It is my skin, I know the danger, I am big, and if I decide that I want to do... I am big, I am 16 years old, mother M: Being 16 does not allow you to make decisions on your own; yes, you do need the opinion of your parents D: I didn’t say that I don’t hear your opinion; I am saying that I don’t have to accept your opinion.
Quality of Personal Disclosure and Overall Openness in Discussion Regarding Indoor Tanning	
The level of openness in the participant’s discussion of indoor tanning, including elaboration, spontaneity, reflectiveness, and depth of personal disclosure.	“I’m not going to fib, I had tanning memberships even when I was working in Boston right after college. That’s what we’d go off and do on our lunch hour. We’d go down Newbury Street and tan for like, half an hour, and then go back to work. So we were pretty much tan year round.” – Mother
Quality of Expression of Awareness of Risks or Harm Related to Indoor Tanning	
Level and quality of elaboration, reflectiveness, and complexity of the risks of indoor tanning as expressed by the participant.	“I know they [tanning beds] are bad for you. I know that you can increase your risk of getting skin cancer because of them... They can burn. You can get burned.” – Daughter

Table 3

Rating Means for All Codes

Code	Overall n=33 Mean(SD)	Mother n=17 Mean(SD)	Daughter n=16 Mean(SD)
Code 1: Level and Consistency of Disapproval of Indoor Tanning	6.48(2.33)	6.71(2.37)	6.25(2.34)
Code 2: Endorsement of Intentional Tanning through Sun Exposure	5.45(2.11)	5.25 (2.21)	5.67 (2.06)
Code 3: Endorsement and Elaboration of Consequences for Indoor Tanning	—	1.82(1.24)	—
Code 4: Salience of Social Norm to Indoor Tan	—	—	5.00(2.13)
Code 5: Level of Commitment Not to Indoor Tan	7.36(2.47)	7.71(2.37)	7.00(2.61)
Code 6: Tanned Appearance as an Aspect of Beauty	5.33(2.46)	5.53(2.72)	5.13(2.22)
Code 7: Tanned Appearance as a Sign of Health	2.42(2.44)	3.12(2.74)	1.69(1.89)
Code 8: Statement of Personal Distinction	3.18(1.76)	2.88(1.36)	3.50(2.10)
Code 9: Quality of Personal Disclosure and Overall Openness in Discussion Regarding Indoor Tanning	5.00(1.95)	5.35(1.87)	4.62(2.03)
Code 10: Quality of Expression of Awareness of Risks or Harms Related to Indoor Tanning	2.79(1.52)	2.59(1.00)	3.00(1.93)

Note: Results are based on the 33 participants used for data analysis; data from the remaining 7 participants was used to develop the codebook.