

TANNING BED USE, DEVIANCE REGULATION THEORY,
AND SOURCE FACTORS

A Thesis

by

KATHARINE J. HEAD

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

December 2008

Major Subject: Communication

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ABSTRACT

Tanning Bed Use, Deviance Regulation Theory, and Source Factors. (December 2008)

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Tanning bed use, especially among young, white females, has become a serious health problem in the United States. Those who use tanning beds value a tanned appearance; thus, one possible way to get individuals to stop using tanning beds is to persuade them to begin using an alternative method: a sunless tanner. This study sought to use persuasive messages to encourage individuals to both stop using tanning beds and start using a sunless tanner. Deviance Regulation Theory (DRT) was used to design three messages, and source expertise was manipulated (high and low). In addition, attitudes, perceived norms, benefits and threats about tanning were examined.

Results indicate that the combination of DRT message design and source expertise produced several message conditions that were effective at decreasing tanning bed use intent. No combined message condition was effective at changing sunless tanner use intent. DRT message design alone did not produce results, nor did source expertise. Tanning attitudes were influenced by reference groups, and perceived norms about tanning predicted individual's tanning bed use for several reference groups. In addition, there was an interaction between benefits and threats of tanning.

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CHAPTER I

INTRODUCTION

Few people realize that Coco Chanel, best known for her fashion designs and trend-setting ways, is responsible for a trend that actually has to do with an absence of clothing: the suntan. Up until then, “at least since the sixteenth century, European [and subsequently European American] women strove after the ideal of a pure white skin” (Connor, 2004, p. 161). However, the story goes that in 1923, after spending the day on a yacht on the French Riviera with the Duke of Westminster, Ms. Chanel stepped off the boat with an accidental tan. In an ironic twist of history, and “because she was the undisputed queen of fashion...the fashion press assumed she was challenging what was, up until then, the pale standard” (Thompson Smith, 2007, p. C3).

There were other factors at the time that helped contribute to a change in the ideal skin color for white women, especially for white American women. Hem lines were rising during the Roaring Twenties, women were leaving the house now without wearing stockings, and in general, people began going outdoors more frequently for recreation. Also leading up to this time, the United States was moving from an agrarian society to an industrial and business society, and this changed the very color of wealth. As Sikes (1998) points out, in the past “pale skin belonged to the leisure upper classes, while darker skin indicated a life of outdoor labor” (p. 6). Starting in the 20th century, however, a suntan represented the leisure to spend time outside of the office or

This thesis follows the style of *Communication Research*.

factory. In fact, according to Sikes (1998), “the suntan had arrived...as the symbol of wealth and leisure. A tan in the winter meant the bearer had enough money and status to afford a vacation to an exotic, warm climate” (p. 6). Randle (1997) echoes this idea when he says that “a dark tan became a sign of distinction associated with sufficient wealth to enjoy leisure pursuits in warm and sunny climates” (p. 463). From the beginning of the tanning trend, it seems, having a tan is linked to having the lifestyle and the money to afford a tan. By the 1960s, a relatively short amount of time, sunbathing and the ‘tan ideal’ became an essential part of American culture (Randle, 1997).

Dangers of Tanning

Unfortunately, unlike other trends that might make one’s pocket book a little lighter, tanning was one trend which had serious implications for people’s lives. As Naylor, a cancer biologist and an assistant professor of dermatology at the University of Oklahoma Health Sciences Center, puts it: “sun exposure causes skin cancer” and even a “lifetime of ‘incidental exposures’ adds up” (Uhlenhuth, 1999, p. 1F).

According to the American Cancer Society (ACS) (2007), skin cancer is the most common of all cancers (it accounts for about half of all cancers in the United States). Of the three types of skin cancer, the ACS (2007) reports that there are about 850,000 cases of basal cell skin cancer each year, 250,000 cases of squamous cell skin cancer each year, and with melanoma on the rise in the United States, they estimate that there will be over 60,000 cases of melanoma skin cancer this year. Melanoma, while the least common, is the most serious and dangerous of the skin cancer types, and the ACS

estimates that approximately 8,000 people will die of this disease in 2008. The major risk factor associated with skin cancer is ultraviolet (UV) light, and sunlight is the most common source of UV light (ACS, 2007). The ACS recommends that the best way to prevent skin cancer is to limit exposure to UV light by wearing protective clothing, seeking shade while outdoors, and using sunscreen with a high SPF (ACS, 2007).

Despite the risk involved, there are many Americans who sun bathe. It must be noted that it is difficult to ascertain an exact number of sunbathers, as this behavior is often linked with other outdoor activities (i.e. swimming at the beach or playing baseball). However, several studies have attempted to measure the amount of sunbathers and sunbathing in the United States. Koh et al. (1997) found that 59% of their respondents had sunbathed at least once in the previous year, and 25% of their respondents had sunbathed at least 11 times in the previous year. Robinson, Rigel, and Amonette (1997) echoes this with their findings that 93% of the population spent more than an hour outside on summer weekends, with 43% of the population spending more than 5 hours outside.

As with almost any behavior, sunbathing tendencies differ with certain demographics such as gender, education level, age, race and geographic location. In a study by Koh et al. (1997), women who were young and in the middle and higher education groups reported the highest incidences of intentional sunbathing. However, Koh et al. (1997) found that among those who reported to be sunbathers, only 36% of male respondents used sunscreen on a regular basis compared to 53% of female respondents. In a study done by Saraiya, Hall, and Uhler (2002) of more than 150,000

U.S. adults, they found that 58% of people aged 18- to 29-years-old reported having had one or more sunburns in the past year, and the odds of this age group having reported sunburns in the past year was 11 times higher than people aged 65 years or older. This is problematic because the ACS states that UV light which is strong enough to cause sunburn will increase a person's risk for skin cancer (2008). Robinson et al. (1997) found that white people were 3.4 times more likely to intentionally sunbathe than other races. And finally, the closer a population is to the equator, the higher the incidence of skin cancer. The National Cancer Institute (NCI) states that skin cancer is related to geographic location, and "people who live in areas with higher levels of UV radiation, such as those living closer to the equator, have higher risk" (Schroeder, 2003). Robinson et al. (1997) support this finding with their results that sunburns are significantly more common among people living in the Southern United States.

Even though many Americans do engage in the risky behavior of sunbathing, agencies such as the American Academy of Dermatology and the American Cancer Society have made great strides in educating Americans about how to protect themselves while out in the sun. In addition, many efforts have been made in persuading people to protect themselves by applying sunscreen or wearing cover-ups (see Baum & Cohen, 1998; Broadwater, Heins, Hoelscher, Mangone, & Rozanas, 2004; Graffunder, Wyatt, Bewerse, Hall, Reilley, & Lee-Pethel, 1999; and Jorgensen, Wayman, Green, & Gelb, 2000). Many of these studies have shown promising results. For instance, Cokkinides, Weinstock, Glanz, Albano, Ward, & Thun (2006) found that the youth in their study reported less sunburns and more sunscreen use over a 6 year period.

Natural sunlight, however, is not the only source of UV light. As the desire for a tanned appearance grew in the United States, individuals turned to using ‘manufactured sunlight’ to achieve a tan. Randle (1997) explains that “fluorescent sources that could deliver high intensity Ultraviolet A light...were developed in the 1970s” (p. 463). This marked the beginning of the tanning bed trend. Kaminester (1980) notes that “clients seek golden tans, the owners reap golden revenue, but the long-term effects for the skin of the patient-client are not nearly as bright” (p. 1258). He continues with the warning that “there is clear epidemiologic evidence implicating solar radiation [UV light], whether its source be sunlight bulbs or natural sunlight, as a factor in inducing human skin cancers” (p. 1259).

Despite Kaminester’s claim, there has been much debate about whether or not the UV light produced in tanning beds is as dangerous for the skin as the natural UV light of the sun. And, as one study points out, “users of tanning beds often sunbathe, making it difficult to separate the effects of artificial and natural ultraviolet irradiation” (Lever & Lawrence, 1995, p. 1451). However, several studies have found that the UV light produced in tanning beds is dangerous for skin and contributes to the rising annual number of skin cancer cases in the United States. Lever and Lawrence (1995) warn that “physicians should be aware of the use of tanning beds as a risk factor for non-melanoma skin cancer” (p. 1451). Karagas, Stannard, Mott, Slattery, Spencer, & Weinstock (2002) found that tanning bed use increases the risk for basal cell skin cancer and squamous cell skin cancer. In particular, their findings show that the risk for these cancers increases “with earl[ier] ages at first exposure to tanning devices” (p. 226). In addition, Autier et

al. (1994) found that for participants who reported 10 or more hours of tanning bed use, the risk for malignant melanoma was increased. The claim that tanning bed use increases the risk for malignant melanoma has been supported by other studies as well (Chen et al., 1998; Westerdahl et al., 1994; Westerdahl, Ingvar, Masback, Jonsson, & Olsson, 2000). Therefore, research suggests that tanning beds do pose a health risk and contribute to skin cancer risk.

Today, tanning bed use among Americans is high. With over 50,000 tanning salons across the nation, and an estimated 28 million users, the tanning industry is booming (Kwon, Mayer, Walker, Yu, Lewis, & Belch, 2002). To put this in perspective, the popular fast-food restaurant McDonald's only has approximately 31,000 restaurants worldwide ("McDonald's FAQ", 2007). In addition to general use of tanning beds to obtain and maintain a tanned appearance, Knight, Kirincich, Farmer, and Hood (2002) found that 61% of their respondents had used tanning beds for vacation preparation (also known as getting a "base tan") and 71% of their respondents had used tanning beds because they could not find the time to sunbathe.

Much like sunbathing, tanning bed use tends to be more popular among different demographics. Hoerster, Mayer, Woodruff, Malcarne, Roesch, and Clapp (2007) found that the non-Hispanic white participants in their study were significantly more likely than other racial groups to have used a tanning bed in the last year, while non-Hispanic blacks were the least likely. Mawn and Fleischer (1993) found that females were far more likely to be tanning bed users than males, with 45% of female respondents being regular users and only 14% of male respondents. Geller et al. (2002), in a survey of

more than 10,000 U.S. adolescents, found that girls were far more likely than boys to use tanning beds, and that as age increased (up to age 18 years old in the study), so did tanning bed use. Demko, Borawski, Debanne, Cooper, and Stange (2003) echoe this finding in their study, where the percentage of female adolescents who reported using tanning beds rose from 11.2% in girls aged 13- to 14-years-old to 47.0% in girls aged 18- to 19-years-old. Knight et al. (2002), in a study done on a university campus, found that the highest reported users of tanning beds were aged 17- to 22-years-old (compared to older groups), and that female students comprised 84% of current tanning bed users. More importantly, they found that the “young adult population freely engages in this high-risk tanning behavior despite adequate, and even exemplary, knowledge of the risks involved” (p. 1314-1315). Geller et al. (2002) concluded that, “in particular, the very high use of tanning beds among older teenage girls merits additional study” (p. 1012).

The current study is designed in part to answer Geller et al.’s call. There has been little research in the field of communication in addressing tanning bed use (a notable exception is Greene & Brinne, 2003) and relatively few campaigns addressed at persuading young people not to use tanning beds (a notable exception is the AAD, starting in 2006 with their PSA campaign). Therefore, this study is designed to assess the effectiveness of different types of persuasive messages that encourage college-aged students, which contains the high-risk group of older white teenage females, to stop using tanning beds. However, this study takes a slightly different approach to encouraging behavior change. Rather than focusing on just asking people to stop using

tanning beds, this study seeks to understand if offering an alternative behavior will provide a more persuasive argument.

The behavior of tanning, particularly using tanning beds, is intrinsically related to the end result of the behavior: a tanned appearance. Knight et al. (2002) found that the appeal of a tanned appearance is the principal reason for using a tanning bed. In addition, Geller et al (2002) found that those who have a preference for tanned skin are more likely to use tanning beds. One can see, then, that it is not necessarily the behavior but the end result - a tanned appearance - that is important to tanning bed users. Therefore, offering tanning bed users a safer alternative that will still allow them to obtain a tanned appearance could decrease the amount of tanning bed users. Let us now turn our attention to that alternative method for obtaining a tanned appearance.

Sunless Tanning Products

This alternative method is a sunless tanner. As Singer (2007) points out, “some doctors, magazines and beauty companies are promoting the idea of a ‘sunless’ tan begat by cosmetics as the safe alternative to UV radiation” (p. 1). The American Academy of Dermatology supports this claim and says that “self-tanning lotions and sprays are a safe alternative to tanning” (2008). The sunless tanning market is thriving, and annual sales are estimated at \$229 million (Information Resources Inc, as cited by Singer, 2007). One can purchase sunless tanning products over the counter in the forms of lotions or sprays. In addition, many tanning salons offer sunless tanning alternatives to their tanning beds (see Fu, Dusza & Halpern, 2004).

Persuading individuals to use this alternative method of achieving a tan is not a simple task. Interestingly, there is a strong link between tanning bed users and sunless tanning product users. Brooks et al. (2006) found that some tanning bed users supplement their tanning efforts with sunless tanning products and that sunless tanning product use is “not associated with decreased rates of sunburning or reduced use of tanning booths” (p. 1065). Furthermore, some people might be reluctant to use sunless tanning products because of past reports of their poor quality. In the early days of sunless tanners, many of these products gave the skin an orange glow, caused staining of the hands and feet, and left skin looking blotchy.

In addition, there is the somewhat false misconception that these products not only give the skin a more tanned appearance, but also naturally protect from UV light. In a study conducted at Boston University School of Medicine, Brooks (2006) found that one third of reported sunless tanning product users believed that sunless tanning lotions offered protection from sun exposure. While some sunless tanning products do contain an SPF, those that don't offer minimal protection from the sun's UV rays. According to the AAD (2005) the color gained from 'self-tanners' only provides an SPF of 4 and the strength reduces if the product is not reapplied every couple of days. The AAD (2007) says this is not enough protection, and that if a person is going to be outside, he or she needs to use a sunscreen with an SPF of at least 15.

So why offer sunless tanning products as an alternative method of achieving a tanned appearance? The answer is that these products are still safer than using tanning beds. Coupled with efforts at persuading people that using tanning beds are dangerous,

offering sunless tanners as an alternative way to still achieve the desired tanned appearance could increase the odds that people will make the switch. Sunless tanning products have drastically improved over the last twenty years, and today one can find a sunless tanner that is "...much different from the streaky looks from those tans in bottles of yore" (Harvey, 2006, p. M10). In other words, sunless tanning products on the market today enable users to obtain the natural-looking tan they desire.

Researchers continue to study and develop products which give customers even more natural looking tans. In their study of sunless tanning products with dihydroxyacetone (DHA), Muizzuddin, Marenus, and Maes (2000) found that the tanned appearance gained from using these products could appear more 'natural' by adding strong antioxidants into the DHA formulas. In addition, researchers at the University of Kentucky are working to develop a product that "uses a lotion that fools the skin into thinking it has been out in the sun (causing natural tanning to happen) without the bad side effects of UV light" (University of Kentucky, 2007, p. 2184). D'Orazio says that "what is exciting to us as scientists and physicians is the possibility of reducing skin cancer by making skin more impervious to UV damage...if this keeps one person from going to a tanning bed and increasing their risk for skin cancer, it will serve its purpose" (University of Kentucky, 2007, p. 2184).

CHAPTER II

THEORETICAL FRAMEWORK

Deviance Regulation Theory

Given the dangers of tanning, and the potential benefits that could be gained from persuading people to stop using tanning beds and instead obtain a tanned appearance by using a sunless tanning product, it is useful to consider what features of a message could be most effective at conveying this information. One theory that facilitates how such an effort might be devised is Deviance Regulation Theory (DRT).

This theory “predicts that people try to maintain positive public and private self-images by choosing desirable ways of deviating from social norms and by avoiding undesirable ways of deviating from social norms” (Blanton & Christie, 2003, p. 115). It is important to define what is meant by ‘deviation’, in that it does not mean that a person has committed an action that is inherently bad or undesirable. Instead, it is just meant to signify that an individual has “engaged in an action that is not typical of similar others” (Blanton & Christie, 2003, p. 117).

This theory is somewhat unique in that it gives preference to deviant rather than normative behaviors. This is because normative actions are not likely to distinguish an individual from others, but deviant actions would. In other words, “an action becomes more informative the more it causes a person to deviate from social norms” (Blanton & Burkley, 2008, p. 100). Therefore, individuals “should be more attentive to the consequences” of their deviant actions because they have the potential to make them

stand out (Blanton, Stuart, & VandenEijden, 2001, p. 849). This means people will adjust or regulate their behaviors, including risky health behaviors, to avoid the negative consequences associated with deviating from social norms. For example, an adolescent might think that smoking is bad for her health and want to stop. She might deviate a small amount by buying low nicotine cigarettes and reducing the number of cigarettes she smokes a day. However, according to DRT, she will continue the behavior merely to fit in with her peers because she perceives this behavior to be an important social norm. In other words, she is attuned to the potential negative consequences of deviating from the norm and this guides her behavior. It seems problematic that risky health behaviors are included in actions which people regulate, but it is not necessarily about the behavior. Rather, it is about identity, and people “simply act out of a desire to have [a] positive self-image” (Blanton & Burkley, 2008, p. 99).

People determine which actions they are going to take in what Blanton and Christie (2003) call the *action and identity decision process*. People seek to determine how future actions they take will “influence their identities, were they to engage in them” (Blanton & Christie, 2003, p. 116). Blanton and Christie (2003) state that “an identity can be considered desirable...either because it indicates the presence of positive attributes that facilitate acceptance and inclusion or because it indicates the absence of negative attributes that hinder acceptance and inclusion” (p. 116). For instance, in a study that focused on intention to get a flu shot, Blanton, Stuart, and VandenEijden (2001) found that two message conditions were successful. If participants thought their peers were receiving flu shots, messages which emphasized the *negative attribute* of

irresponsibility for people who did not receive a flu shot were effective at changing individuals' intentions to receive a flu shot. If, on the other hand, participants thought their peers were not receiving flu shots, messages which emphasized the *positive attribute* of responsibility for people who did receive a flu shot were effective at changing individuals' intentions to receive a flu shot. In both cases, the messages took into consideration the normative beliefs of the participants, targeted the message to activate a change in behavioral intentions, which in turn would facilitate a desirable identity. The message design implications, as noted by Blanton et al. (2001), are that "image appeals should be tailored so that they associate social images with behaviors that deviate from prevailing norms" (p. 851) in a positive way.

DRT provides an interesting framework by which to study the choices people make, especially choices related to health. For the current study, people will be asked to deviate from the norm of obtaining a tanned appearance through the use of tanning beds and alternatively obtain a tanned appearance by using a sunless tanning product. In other words, this study will examine two behaviors, the first in which participants will be asked to stop (using tanning beds) and the second in which the participants will be asked to start (using a sunless tanning product). Before further examining the ways in which DRT facilitates our understanding of and designing of persuasive messages for this topic, let us first take a closer look at how DRT contributes to our understanding of the complex nature of identities, attitudes, and norms surrounding a behavior like tanning.

Reference Groups, Attitudes, and Norms

Blanton and Christie (2003) argue that an important way to understand why people take certain actions is that “people are motivated to secure and maintain identities that help them gain social approval...and inclusion in meaningful groups” (p. 116). These meaningful groups, also called “reference groups” by Blanton and Christie (2003), are important components of the action and identity decision process because they “give individuals a sense of what they should do, and this reduces the number of desirable options before them” (p. 123).

Shibutani (1968) states that a reference group is merely some identifiable group that an individual relates to (official membership is not required), and this group shares the same norms and values. Shibutani (1968) identifies several ways of describing just what a reference group is but argues that “to increase its usefulness in research,” the concept should be restricted to the idea that these are “groups whose perspectives are assumed by the actor” (p. 563). In understanding the concept of reference groups in this way, he also notes that the concept is useful in understanding why an individual makes a choice among alternatives, especially when the choice seems to be contrary to the best interest of the individual.

Additionally, Kelley (1968) suggests that reference groups serve two major functions. Reference groups can be seen as “group[s] in which the individual is motivated to gain or maintain acceptance” or as “group[s] which the person uses as a reference point in making evaluations of himself or others” (p. 78-79). The concept of reference groups has been studied in many arenas, including the influence of reference

groups such as neighbors, students, peers, and family on an individual's purchasing decisions (Bearden & Etzel, 1982; Childers & Rao, 1992; Park & Lessig, 1977), tolerance of non-marital sexual relations among religious reference groups (Cochran, Chamlin, Beeghley, & Fenwick, 2004), and even how separate cultures might define a reference group differently (Heine, Lehman, Peng, & Greenholtz, 2002).

Exploring reference groups and their influences on young people is a worthy pursuit primarily because "adolescents have a greater investment [in the pursuit of identity] in general" compared to other populations (Blanton & Burkley, 2008, p. 98). Sherif and Sherif (1964) say that the process of changing from an adolescent to an adult is a social process that involves the "impact of appraisals meted by others in the social milieu" (p. 3), including influences from the mass media. In addition, they argue that "agemates in general and one's own associates in particular become major reference groups for the individual" and that "they are the ones whose opinions matter" (p. 164).

The concept of reference groups is intrinsically linked to the idea of the looking-glass self. Cooley (1922) argued that the looking-glass self is composed of "three principal elements: the imagination of our appearance to the other person; the imagination of his judgment of that appearance; and some sort of self-feeling, such as pride or mortification" (p. 184). Depending upon the feeling evoked ("such as pride or mortification") in response to these imagined judgments, we will adjust our behavior to reflect an identity that is positive to the imagined other. Cooley also reasons that the "character and weight of that other" determines to a large degree how much stock we put in the imagined judgment others have of us. In other words, Cooley (1992) argues that

“in the presence of one whom we feel to be of importance there is a tendency to enter into and adopt, by sympathy, his judgment of our self...” (p. 206). The magnitude of these imagined judgments is going to be different for any person, but Cooley argues that “directly or indirectly the imagination of how we appear to others is a controlling force in all normal minds” (p. 203). In other words, we are all susceptible to the opinions of others in the formation of our identity and in the formation of our attitudes about certain aspects of our lives.

Interestingly, Cooley makes some strong statements about young women, identity formation, and the looking-glass self. One must keep in mind that these are merely observations made by Cooley at a very different time in history. That being said, one could argue that some of his statements have transcended time and still ring somewhat true today, at least in observation. He says, quite simply, that “girls have, as a rule, a more impressible social sensibility” (p. 202). More so than boys, girls have “a stronger impulse to go over to the other person’s point of view and to stake joy and grief on the image in his mind” (p. 202). He even goes so far as to claim that a young woman needs to have someone in whom she can find “a stable and compelling image of herself by which to live” or else her “womanly character is something apt to become a derelict and drifting vessel” (p. 203). In summation, it seems that Cooley believed that young women were particularly susceptible to the opinions (imagined or not) of others, and that their identity and attitudes about certain aspects of their identity was formed through the eyes of others.

Recent research supports, to some extent, the claims made by Cooley. In a study of personal narratives on body image, Pelican et al. (2005) found that many of the comments made by women reflected a belief in the power of others to shape identity. One woman in their study said “your whole life, your self-image is primarily in how you think others view you...” (p. 57). Much research has been done on the ability of others to influence perceptions of the ideal weight in females, and many studies have looked at the role of teasing (which can be viewed as an overt judgment by others in the social environment) as an influence. Lunner et al. (2000) found that the more teasing that was directed at adolescent girls concerning their weight, the more they were likely to develop dissatisfaction with their body and subsequently develop an eating disorder. Neumark-Sztainer et al. (2002) also studied teasing and weight issues, and the adolescent girls in the study not only reported being teased more often than boys but also were more bothered by the teasing.

Cash (1995) studied college women, and 71% of participants who reported being teased about their body said that “their current body image has, to some extent, been affected by the experiences” (p. 125). Muth and Cash (1997) state that researchers and scholars “have maintained that cultural norms and expectations lead girls and women to be attentive to and psychologically invested in their physical aesthetics” (p. 1439). In their study of college men and women, they found that women were more likely to be dissatisfied with their body-image than men and had stronger investment in their looks. In addition, Muth and Cash (1997) found that women performed more “appearance-invested actions” which they indicate includes such actions as “appearance-regulating

grooming..., dieting and exercise for appearance management, and seeking cosmetic surgery” (p. 1446).

Regardless of gender, and consistent with Muth and Cash (1997), it is important to remember that influencing the attitudes we have about a certain aspect of our identity is not the only influence that reference groups have. Hogg, Terry, and White (1995) state that “identity is the pivotal concept linking social structure with individual action; thus the prediction of behavior requires an analysis of the relationship between self and social structure” (p. 257). Not only can reference groups influence our attitude or our perspectives about our appearance, but they can also affect how we go about obtaining that appearance. In other words, reference groups can affect not only how we think about something but also the behaviors that we engage in to have a certain identity. Tanning bed use, the behavior of concern in this study, is considered an “appearance-invested action,” and it is important to understand the motivations and reasons behind a behavior like this considering the risk of skin cancer associated with tanning.

Greene and Brinn (2003) recognized the need to investigate personality traits and appearance-based motivators, both of which are linked to identity and the need to present a positive image, in their study on tanning bed use among college women. They argued that “women who are especially willing to please others or insecure about their appearance may be more prone to tan” (p. 447). Their study revealed that personality traits (also called indicators) related to appearance, and a focus on others’ views accounted for some of the variance in tanning intentions and behaviors. The strongest predictors of tanning bed use were body image and eating disorders. Greene and Brinn

(2003) concluded that “tanning behavior clearly has roots in appearance and views of self” (p. 457) and called for more research in this area. The current study is designed in part to respond to Greene and Brinn’s call.

Several other studies have also examined the reasons why people might have a positive attitude about tanning and having a tanned appearance, and most importantly, why they engage in the behavior of using a tanning bed. Leary and Jones (1993) argued that “people differ in the importance they place on making desirable impressions on others...and such differences should predict sun-related behaviors” (p. 1392). Therefore, they conducted a study to look at the relationship between the desire to make an impression and behaviors that place individuals at an increased risk for skin cancer. These behaviors included using tanning beds, ‘laying out’ in the sun, using tan accelerators, and not using sunscreen. Their findings suggest that people who are particularly concerned with their personal appearance and believe that being tan can improve their appearance are more likely to engage in these behaviors that place them at a greater risk for skin cancer. In particular, they found that gender played an important role, in that women scored higher than men on the body self-consciousness measure and were more likely to engage in these risky behaviors. Given that young women engage in the behavior of tanning more often than men (Knight et al., 2002; Koh et al., 1997), these studies, and the observations made by Cooley, shed light on some of the reasons behind the behavior of tanning, the desire to have a tanned appearance, and how a positive attitude about a tanned appearance develops.

Reference groups are important to consider in any research involving health issues (e.g. the use of tanning beds to achieve a tanned appearance), since the choices made by the individual, which are influenced by reference groups, could have detrimental effects on his or her wellbeing (e.g. the risks associated with UV light exposure such as increased likelihood of skin cancer). One way to understand this concept more fully is to look at the role of norms in college students.

In their study on college students, Braxton and Caboni (2005) define norms as “configurations of belief about behavior expected in various situations or circumstances” (p. 2) and note that it is the “day-to-day interactions with the college environment [which] give rise to normative preferences espoused by student peer groups” (p. 2). In general, two types of norms are identified. The first is injunctive norms (also deemed evaluative norms) and involve to a large degree what people think they should be doing. The second is descriptive norms, which “represent typical behavior or what most people do regardless of its appropriateness” (Christensen et al., 2004, p 1296).

Much work has been done in studying the power of norms in college student populations. One example of a recent health campaign tactic is to use normative messages (messages containing the actual behavior statistics) to curb college student drinking rates (Baer, Stacy, & Larimer, 1991; Haines & Spear, 1996; and Wechsler et al., 2003). The rationale for this is two-fold: “(1) the majority of individuals overestimate the prevalence of many undesirable behaviors and (2) individuals use their perceptions of peer norms as a standard against which to compare their own behaviors” (Schultz 2007, p 429). DRT operates under the same assumption as the second point in

that people compare their behaviors to important others when they decide to take any action. Lapinski and Rimal (2005) agree, stating that “a casual observation of almost any exercise in social persuasion reveals that one of the factors people use in making behavioral decisions pertains to their assessment as to whether others also engage in the behavior” (p. 128). In other words, before an individual decides whether to perform a behavior, he or she will look to see if others are doing the same thing.

Christensen et al. (2004) argue that “of the many norms that can influence a person’s behavior, the norms of important reference groups should be especially powerful” (p. 1295). In addition, Blanton and Burkley (2008) argue that “focusing on one’s sense of obligation to important reference others should thus focus people more on conforming to the actions of others” (p. 106). And Blanton and Christie (2003) argue that “those who value the norm will typically conform to the norm” (p. 125). Like any population, college students will be influenced by reference groups which they deem important. And consistent with Christensen, these important reference groups will influence college students’ behaviors since they help to set the behavioral norms. These behavioral norms act as a “plan” to “achieve levels of performance or activity that reinforce, support, and confirm their identities” (Burke & Reitzes, 1981, p. 84). The behavior under study, tanning bed use, can be studied as a norm for this population. In fact, tanning is related to having a large percentage of friends who sunbathe (Keesling & Friedman, 1987) and can be considered a descriptive norm among some populations.

Keesling and Friedman (1987) found that many sunbathers are concerned with what other people are saying about their tan. For instance, they argue that people who

tan are “no doubt being influenced by comments about their suntans (or lack thereof)” (p. 489). They noted that positive comments received about one’s tan were correlated with how dark that individual’s tan was. It seems, then, that comments made by people, who may be in a reference group, make an individual have a more positive attitude about a tanned appearance and make them strive to have a darker tan. What was lacking in this study, however, was an indication of what type of people are saying these comments, and therefore what type of people are influencing the individual’s attitude about a tanned appearance. This is one area that this study addressed.

While there are many reference groups that could influence college students, this study explores the influences of three reference groups. The first two reference groups are peer-based and are ‘female college students’ and ‘male college students’. College students are particularly susceptible to peer-based reference group influences (Childers & Rao, 1992; Park & Lessig, 1977), and one study done on a college campus showed how normative perceptions of friends’ tanning bed use was a significant predictor in individual’s intention to use a tanning bed (Campo, Greene, Askelson, & Banerjee, 2007). Given that many college students move from home into a dorm on campus or an apartment on their own and spend much of their time in class, they are embedded in an environment where their main contacts are other college students. Peers, female and male, then should act as important reference groups.

The third reference group that is explored is ‘people in the media (e.g. people on television, people in magazines, and people in movies)’. Cafri, Thompson, and Jacobsen (2006) explored reasons why tanning is important for female college students. They

likened the “salient cultural ideal” of being tan with the pursuit of thinness. They found that “the media exerts its influence on UV exposure...indirectly through appearance reasons for tanning” and that “media influences cause greater valuation of a tan appearance, which in turn leads to more UV exposure” (p. 1068). Therefore, it is important and necessary to explore the role of ‘people in the media’ as a reference group that influences college students’ ideas and attitudes about tanning.

Consistent with Cooley’s second principle element for the looking-glass self, which is “the imagination of his judgment of that appearance” (p. 184), these reference groups (imagined or not) act as judges of college students’ appearance. One part of that appearance is being tan. Recall that Shibutani (1968) called for the concept of reference groups to be restricted to “groups whose perspectives are assumed by the actor” (p. 563). Given that reference groups have been shown to not only influence individual’s attitudes about certain aspects of their identity, but also play a role in establishing behavioral norms, the first two hypotheses for this study are identified as:

H1: Individuals who believe their reference groups have a positive attitude toward a tanned appearance will themselves have a positive attitude toward a tanned appearance.

H2: Individuals who believe their reference groups are using tanning beds to get a tanned appearance are also more likely to use a tanning bed to get a tanned appearance.

Health Risks vs. Benefits

Previous research explains that most people will conform to a behavioral norm, especially if they really value the norm. However, there is one aspect of tanning bed use that is inconsistent with previous research: why are people tanning when they know it is dangerous? Knight et al. (2002) found that college students used tanning beds *despite* their knowledge of the risks involved. In fact, they say that this population “freely engages in this high-risk tanning behavior despite adequate, and even exemplary, knowledge of the risks involved” (p. 1314-1315). This claim is inconsistent with research—and common sense—which points to knowledge of risks which should deter a behavior.

Consistent with Knight et al. (2002), The Health Belief Model posits that individuals will “take action to prevent...ill-health conditions if they regard themselves as susceptible to the condition, [and] if they believe it would have potentially serious consequences...” (Janz, Champion, & Strecher, 2002, p. 47). A threat, then, is composed of both severity (seriousness of the condition) and susceptibility (the risk of one contracting the condition). The HBM says that if an individual feels that the threat is a severe one and that they are susceptible to the threat, they will take action against it. An example of this is found in Witte, Stokols, Ituarte, and Schneider (1993), where individuals were presented with messages regarding bicycle helmet safety. They found that perceived threat (severity + susceptibility) “consistently predicted bicycle helmet attitudes, intentions, and behaviors” in a positive way (p. 577). Therefore, there is an

inconsistency with the behavior of tanning. Why are individuals continuing to use tanning beds *despite* knowledge of the risks involved?

DRT provides a potential framework for understanding this inconsistency. A possible explanation is that the known potential health risks associated with tanning, which would normally be a detrimental factor to one's identity, are outweighed by a stronger motivating factor: the perceived benefits of using a tanning bed. These benefits could include the satisfaction of being like important reference groups, the behavioral norm of using tanning beds, and/or the desire to be tan. Greene and Brinn (2003) point out, "women who tan may place a greater emphasis on the rewards of being tan than on the threat of possible future health risks" (p. 456). Therefore, the third hypothesis for this study is identified as:

H3: The perceived benefits of using a tanning bed on intent to tan in the future will be moderated by perceived health threats related to the use of a tanning bed. Specifically, there is an interaction effect between perceived benefits of using a tanning bed and perceived health threats. For an individual who believes the benefits of using a tanning bed are high, the level of threat will be perceived as low. For an individual who believes the benefits of using a tanning bed are low, the level of threat will be perceived as high.

Encouraging Deviation

However powerful norms might be, they do not always act as the deciding factor for what an individual will do. Lapinski and Rimal (2006) argue that “people may look to their referents to determine the prevailing norms surrounding a particular behavior, *but can also choose to defy the norms if they believe that their behaviors will not become known to referent others*” (p. 131, emphasis added). If we examine this claim in the context of tanning, we can see where sunless tanning products become relevant. Having a tanned appearance might be an important part of someone’s identity, and reference groups are telling an individual that having a tanned appearance is a good thing. The behavioral norm, or the normal way to obtain a tan, is by exposing one’s self to UV light by using a tanning bed. The question becomes: how do we move people who value a tanned appearance away from using a tanning bed?

Lapinski and Rimal (2005) introduce the idea of behavioral privacy when discussing normative behavioral influences. They argue that those behaviors performed or enacted in a public setting are observed by others in one’s environment. They provide the example of college students’ alcohol consumption, and how others can see whether or not a person is following the norm. However, the behavior of tanning (in tanning beds) is done in a private setting. Therefore, the behavior itself is not monitored, only the result. If the result can be obtained from another behavior enacted in a private setting (namely, by using a sunless tanning product), then individuals will still be able to fulfill the norm of having a tanned appearance. Keesling and Friedman (1987) found that people who tan are concerned with “maintaining an image of the self as an active,

healthy, and attractive person” even if they don’t necessarily practice healthy behaviors (p. 489). In other words, individuals were more concerned with fulfilling the norm of having a tanned appearance, which communicates a certain image, rather than actually practicing behaviors which are associated with that image. Therefore, as long as the tanned appearance can be maintained (which can be accomplished in a private setting), then the image can be maintained (which is seen in public).

Deviance Regulation Theory argues that “people try to maintain positive public and private-self images by choosing desirable ways of deviating from social norms and by avoiding undesirable ways of deviating from social norms” (Blanton & Christie, 2003, p. 115). The adoption of a sunless tanning product by people who subscribe to the norm of having a tanned appearance is, under the framework of DRT, successful in two ways. First, it allows the individual to deviate from the behavioral norm of obtaining a tan from a tanning bed in a desirable way because it still allows him or her to fulfill the larger social norm of having a tanned appearance. Second, it allows the individual to maintain (or perhaps supply) a positive private self-image by allowing him or her to adopt a healthier behavior. Therefore, with the adoption of a sunless tanning product by people who use tanning beds, these individuals are able to maintain both a positive public and private self image.

Traditional skin protection campaigns have asked individuals to take preventive measures (see Baum, 1998; Broadwater, 2004; Graffunder et al., 1999; Jorgensen et al., 2000), but they have always not provided an alternative way to obtain that desired tanned appearance. Consequently, many of these skin protection campaigns may not

have been persuasive for individuals who value a tanned appearance. As noted earlier, Greene and Brinn (2003) point out, “women who tan may place a greater emphasis on the rewards of being tan than on the threat of possible future health risks” (p. 456). Therefore, it appears that campaign message design is going to be different for a population of tanning bed users than for the general public in persuading individuals to protect their skin. DRT allows us to understand that difference by providing a way for individuals to deviate from the norm, but in a positive way.

In order to persuade individuals to deviate from a norm, DRT proposes that positive attributes should be associated with the deviance, rather than associating negative attributes with conformity (Blanton & Christie, 2003). According to Swann, Griffen, Predmore, and Gaines (1987), people’s ‘self-views’ tend to be positive, and therefore, people will engage in actions that associate them with positive images rather than negative ones. Therefore, if an individual believes that the majority of her peers are tanning, the wrong way to persuade her to stop tanning is to emphasize the negative aspects of continued exposure to UV light (i.e. tanning bed use). Instead, DRT suggests that a more effective way is to emphasize the positive attributes that a deviant behavior (i.e. sunless tanning product) has to offer.

Recall that Blanton and Christie (2003) argue that “those who value the norm will typically conform to the norm” (p. 125). The rationale behind DRT is that if a persuasive message is attempting to get individuals to deviate from the norm, then it has to be done in a way that people can “stick out from others in good ways, but not in bad ways” (Blanton & Christie, 2003, p.115) In this way, the individual will be able to

deviate from an important norm, but will rationalize the deviance because it is associated with a positive image.

Therefore, in using Deviance Regulation Theory as a framework for understanding tanning behavior and designing effective messages that persuade people to obtain a tan from a sunless tanning product, the fourth hypothesis is:

H4: A message encouraging a positive deviation (use of sunless tanning product) will be more effective than a message encouraging a negative deviation (stop use of tanning bed) on one's intent to use a tanning bed and on one's intent to use a sunless tanning product.

In addition, the following research question is posed:

RQ1: Will a message that encourages positive deviation only (use a sunless tanning product) be more effective than one that encourages both a positive deviation (use a sunless tanning product) and a negative deviation (stop using a tanning bed) on one's intent to use a tanning bed and on one's intent to use a sunless tanning product?

Source Factors

An important element to consider when designing persuasive messages is to examine the source of the message. Much research has been done on the source of persuasive messages, and often times different disciplines or even different researchers within the same field refer to this area of research in different ways. Most commonly understood as source credibility, or more importantly *perceived* source credibility,

O’Keefe (2002) defines this concept as the “judgments made by a perceiver...concerning the believability of a communicator” (p. 181). In this sense, one can see that source credibility does not lie in the communicator, although certain characteristics might help a communicator to achieve credibility. Instead, source credibility is found in the *judgments* made by the message recipient. Therefore, a communicator can be deemed highly credible by one person and not by another. In his extensive review of source credibility literature, Pornpitakpan (2004) explains that there are two dimensions of source credibility: “expertise,...the extent to which a speaker is perceived to be capable of making correct assertions” and “trustworthiness,...the degree to which an audience perceives the assertions made by a communicator to be ones that the speaker considers valid” (p. 244). Pornpitakpan (2004) also offers the observation, in his evaluation of many studies looking at source factors, that a source which is perceived highly credible usually leads to more behavioral compliance than a source which is perceived low in credibility.

Perloff (2003) identifies a third component important to consider when discussing the source of a persuasive message: social attractiveness. He says that communicators perceived as attractive “seem to achieve influence through...identification” (p. 152). In this sense, individuals come to value what the communicator is conveying because they either want to be like the communicator or want to develop a positive relationship with the communicator. Bandura (2002) notes that a model’s attractiveness can play an important role in identification between the model and the observer, and act as an indirect influence. Perloff (2003) explains that social attractiveness is composed of such

elements as likability, similarity, and physical attractiveness. This last one, physical attractiveness, is especially interesting. Chaiken (1981) points out that “heightened physical attractiveness generally enhances one’s effectiveness as a social influence agent” (p. 150).

Given the two dimensions of source credibility, expertise and trustworthiness, as well as the additional component of social attractiveness, one can see that source credibility is a rather complex feature to consider in the source of a persuasive message. While the categories set forth might seem simple, it must be remembered that a communicator can be perceived as possessing a combination of characteristics (e.g. a likable expert) and perceived in varying degrees of each characteristic (e.g. extremely attractive but not at all trustworthy).

Given all of this information, one must then decide which characteristics or factors of the communicator are most important to the behavior being advocated. As O’Keefe (2002) points out, the “particular judgments underlying credibility” are going to vary from situation to situation and some factors may be given more emphasis in one situation than in another (p. 184). Given the nature of this study, there are four source factors which provide an interesting lens through which to study the behavior of tanning: similarity, expertise, physical attractiveness, and liking. These factors will be discussed in detail below, paying particular attention to the interconnection between the factors.

Similarity and Expertise

Similarity between source and receiver is an important idea to consider in a persuasive message about tanning bed use. Similarity could work in two ways. First, congruent with the earlier discussion of reference groups, Perloff (2003) points out that “people compare themselves to similar others...[and] may infer that if someone who is similar to [them] endorses a position, it’s a good bet that the proposal will work for [them] as well” (p. 169). Rogers and Bhowmik (1971) explore the topic of similarity in depth with a look at the concept of homophily. They explain that homophily is “the degree to which pairs of individuals who interact are similar with respect to certain attributes, such as beliefs, values, education, social status, etc” (p. 526). They go on to argue that “for maximum communication effectiveness, a source and a receiver should be homophilous on certain variables and heterophilous [different] on some variables relevant to the situation” (p. 529).

To advocate a change in behavior such as stopping tanning bed use and adopting the use of a sunless tanning product, there are some areas where communicator and source should be homophilous and some areas where they should be heterophilous. For instance, it would be beneficial if the source perceived the communicator to be similar with respect to beliefs about a tanned appearance (e.g. having a tanned appearance makes me attractive), attitudes about tanning (e.g. having a tanned appearance is a good thing), and even similar in age and gender. On the other hand, some key differences might help to maximize communication effectiveness. These variables could include behavioral differences (e.g. the source has already adopted the advocated behavior and

can attest to its success) and even level of expertise (e.g. the source is a medical professional that has special knowledge about skin care).

Recall that Pornpitakpan (2004) explains that “expertise” can be understood as “the extent to which a speaker is perceived to be capable of making correct assertions” (p. 244). Many studies have attempted to manipulate level of expertise as a source factor in persuasion in such diverse areas as advocating certain health behaviors (Campbell, 1999), organizational change (Ellis, 1992), professional tax consulting (Magro, 2003), and advertising (Pornpitakpan, 2004b; Swartz, 1984). For instance, researchers might manipulate the receiver’s perception of level of education, experience, occupation, and more. Chaiken (1987) points out that “people may have learned (or been taught) that statements by experts are usually more veridical than statements by persons who lack expertise” and therefore people will use the expertise of a source as a cue to processing the message (p. 4).

For this study, in which the messages are aimed at college students, perceived expertise would be counter to similarity. While the participants are currently working on obtaining a bachelor’s degree, a person deemed an expert in the field of skin care (namely, a dermatologist with a medical degree or some other medical professional) would most likely be seen as dissimilar. Swartz (1984) examined the relationship between source expertise and source similarity and found no underlying relationship between the two. However, it still stands to reason that this is an important relationship to understand, as many times the manipulation of the expertise is done in a way that makes the less expert source more similar to the receiver (especially when the study

participants are college undergraduates). For instance, some studies will create the “high-expertise” condition as being a specialist or a doctor and “low-expertise” as being an inexperienced college student (Stephenson et al., in press).

Therefore, the fifth hypothesis is:

H5: There will be an interaction between perceived source similarity and perceived source expertise on behavioral intent. Specifically, it is hypothesized that the source in the low expertise condition will be perceived as high in similarity and will be most effective at reducing one’s intent to use a tanning bed and increasing one’s intent to use a sunless tanning product. Conversely, it is hypothesized that the source in the high expertise condition will be perceived as low in similarity and will be the least effective.

Similarity, Physical Attractiveness, and Liking

Another way in which similarity between source and receiver might function is through liking for the source. As mentioned above, perceived similarity in beliefs and attitudes about tanning can be an important source factor, as well as similarity in other areas. O’Keefe (2002) points out that “to the extent that message recipients perceive that the communicator has attitudes (on matters other than the topic of the influence attempt) that are similar to theirs...can enhance the audience’s liking of the source and so can potentially influence persuasive effectiveness” (p. 201). As Chaiken (1987) points out,

people may rely on a “liking-agreement heuristic’ such as ‘people agree with people they like’” (p. 4).

Physical attractiveness of the source might also influence the liking for the communicator, which could in turn influence persuasion. Horai, Naccari, and Fatoullah (1974) found in their study of several communicator characteristics that the source deemed physically attractive was the only factor to influence liking. Another reason that people will like and agree with physically attractive sources is the halo effect. In their study, Dion et al. (1972) found that people deemed physically attractive were also considered to be more successful and happier than less attractive people, and to have better personalities.

Previous research has shown that both source similarity and source physical attractiveness influence liking for the communicator. Therefore, the sixth hypothesis is:

H6: Perceived source similarity and perceived source physical attractiveness will predict liking for the source. In turn, liking for the source will be most effective at reducing one’s intent to use a tanning bed and increasing one’s intent to use a sunless tanning product.

Physical Attractiveness

Another way that physical attractiveness can work is that “attractiveness can be a deciding factor when the communicator’s physical appeal is relevant to the product” (Perloff, 2003, p. 171). In other words, if the behavior being advocated has to do with appearance and is a behavior which helps one to maintain or enhance their appearance,

then having an attractive source who endorses the product would make sense. In other words, this tactic is used to send the message that one should “use this product and you can look like this”. Having a tanned appearance is a characteristic which pertains to one’s appearance. Much like makeup commercials which feature attractive models to sell the product, an attractive model endorsing a sunless tanning product could affect the persuasive value of the message. Therefore, the second research question is

RQ2: What is the relationship between perceived source physical attractiveness, intent to use a tanning bed, and intent to use sunless tanning product?

Integrating Deviance Regulation Theory and Source Factors

Although DRT, reference groups, and the source variables have been reviewed separately, the design of this study allows for a test of both the independent and interactive effects of these concepts. Based on the reviewed literature, it has been shown that the DRT literature suggests that a message which encourages positive deviation will be most effective. In addition, a low expert source who is more similar to the participant (a college undergraduate) should be deemed more credible in this context because of the behaviors being advocated, which have to do with appearance and issues of identity.

Therefore, the final hypothesis is:

H7: Controlling for source physical attractiveness, there will be an interaction between source expertise and message condition on intent to use a tanning bed and intent to start using a sunless tanning product.

Specifically, it was hypothesized that a low expert source who encourages individuals to start using a sunless tanning product will be most effective and that a high expert source who encourages individuals to stop using a tanning bed will be least effective.

Additionally, Research Question 3 is posed:

RQ3: Will a message from a low expert source that encourages only positive deviation (to use a sunless tanning product) be more effective than a message from a low expert source that encourages both positive deviation (to use a sunless tanning product) and negative deviation (to stop using a tanning bed) on one's intent to use a tanning bed and on one's intent to use a sunless tanning product?

CHAPTER III

METHOD

Participants

One hundred and sixty-two participants completed the survey instrument, 49 males (30.2%) and 113 females (69.8%). The participants' ages ranged from 18 – 49, with a mean of 21.1 years. The majority of participants identified themselves as seniors (58.6%), followed by juniors (34%) and sophomores (7.4%). No freshman or graduate students participated in the study. The majority of respondents were White (83.3%), followed by African-American (5.6%), Hispanic (4.9%), Asian-Pacific Islander (4.9%), and one category marked "Other" (1.2%).

Procedures

Participants were recruited from several undergraduate courses offered in the Communication Department at Texas A&M University and received extra credit for their participation. Participants reported to the principal investigator's office at their preset time and signed in. They were then randomly assigned to one of the six video conditions. After a brief introduction to the study and instructions for how to proceed, participants were given a packet which contained the pretest questionnaire and the posttest questionnaire. Participants completed the pretest, and then were told to put their pencils down until everyone in the room had reached that point. The researcher then

showed the video, and participants completed the posttest. Upon completion, participants turned in their packets to researcher. Instructors were then emailed a list of students who completed the study.

Design

The design was a 3 (message) X 2 (expertise) quasi-experimental, pretest-posttest design. There was random assignment to one of six conditions, and there was not a control group. See Figure 1.

Figure 1
Factorial Design

		MESSAGE TYPE		
		Negative Conformity (Recommend Stop Using Tanning Beds)	Positive Deviance (Recommend Start Using Sunless Tanner)	Negative Conformity + Positive Deviance (Recommend Switch Tanning Bed Use with Sunless Tanner)
LEVEL OF EXPERTISE	High Expertise	X	X	X
	Low Expertise	X	X	X

Message Stimuli

Videos

Six videos were constructed for each of the six conditions outlined in Figure 1. Video 1 represented the high expertise source, negative conformity message condition and was 1:03 in length. Video 2 represented the low expertise source, negative

conformity message condition and was 0:59 in length. Video 3 represented the high expertise source, positive deviance message condition and was 1:05 in length. Video 4 represented the low expertise source, positive deviance message condition and was 1:03 in length. Video 5 represented the high expertise source, combined message condition and was 1:26 in length. Video 6 represented the low expertise source, combined message condition and was 1:27 in length. For each of the videos, the message was delivered by the same white college-aged woman inside an office-type setting. The separate components of the videos are discussed below.

Source expertise was either high or low. In the low expertise condition, the speaker wore a Texas A&M t-shirt and blue jeans and identified herself as a “Junior Communication Major at Texas A&M” at the very beginning. In the high expertise condition, the speaker wore the same Texas A&M t-shirt, but this time she was also wearing a white lab coat, white pants, a name tag, and had a stethoscope around her neck. She identified herself as a “3rd Year Medical Student at A&M’s Health Science Center” at the beginning. Source physical attractiveness is of interest in this study, however it was not a manipulated variable. Because the same individual was used in all conditions, physical attractiveness is held constant (although perceived physical attractiveness was measured).

The DRT framework was tested using three different messages: one which recommended that individuals stop using tanning beds, one which recommended that individuals start using sunless tanner, and one which recommended that individuals stop using tanning beds and start using sunless tanner. The text was developed with

information from the American Academy of Dermatology and the American Cancer Society. Moreover, the messages followed the framework of DRT. The first message, which recommends that individuals stop using tanning beds to obtain a tanned appearance, encouraged deviation by associating negative attributes with conformity. DRT suggests this is the less effective way to promote behavior change. The second message, which recommends that individuals start using sunless tanner to obtain a tanned appearance, encouraged deviation by associating positive attributes with the deviant behavior. DRT suggests this is the most effective way to promote behavior change. The third message, for which DRT provides no specific recommendation, is a combination of the first two message conditions in that it both recommends using sunless tanning products and stopping tanning bed use. In this way, it associates both negative attributes with conformity and positive attributes with deviance.

All three messages began by briefly mentioning skin cancer as a common form of cancer but that it can be prevented. The second and third paragraphs in each of the three messages contained the DRT manipulation (associating tanning beds with conformity and its negative attributes, sunless tanner with deviance and its positive attributes, or a combination of both conditions). The final paragraph provided a brief concluding statement and a recommendation. See Appendix 1 for the text of all six message conditions.

Manipulation Check

To validate these messages, a manipulation check was conducted with 163 participants prior to the use of these messages in the main study. Participants similar to those used in the main study responded to questions of source expertise. These individuals did not participate in the main study. The items used to assess perceived source expertise are contained in the Measures section. Exploratory factor analysis (principal axis, promax rotation) revealed that two items (expertise, training) did not fit into the unidimensional solution and were dropped. The other items were used to compile the *perceived source expertise* scale and it was reliable ($\alpha = 0.92$). There was a significant difference between the low expertise condition ($M=4.32$ $SD=1.20$) and the high expertise condition ($M=4.70$ $SD=1.18$). Therefore, the messages were used for the main study.

Measures

The main study contained a pretest and a posttest. Only the measures salient to the hypotheses and research questions are provided below. The pretest measures included past tanning bed use/sunless tanning product use, intention to use a tanning bed/sunless tanning product, beliefs about the benefits of tanning, attitudes about tanning, social norms perceptions, susceptibility, severity, and body consciousness. The posttest measures included intention to use a tanning bed/sunless tanning product, source expertise, source similarity, source physical attractiveness, liking for source, and demographic information.

Pretest

Past Tanning Behavior

Participants were asked, “Have you ever used a tanning bed to get a tanned appearance?” with the response options of “yes / no”. If the participant chose yes, s/he was instructed to answer follow-up questions which asked two open-ended questions: “Would you please estimate how many times have you used a tanning bed to get a tanned appearance in the last month?” and “Would you please estimate how many times have you used a tanning bed to get a tanned appearance in the last year?” To measure participant’s current behavior, a five-point, Likert-type scale where 1 = strongly disagree and 5 = strongly agree was used, and included the item: I currently use a tanning bed to obtain a tanned appearance. This measure was adapted from Stephenson and Witte (1998).

The next set of questions measured participants’ past sunless tanning product use. The first question was: “Have you ever used a sunless tanning product to get a tanned appearance?”, and the response options were “yes / no”. If the participant chose yes, s/he was instructed to answer follow-up questions which asked participants to fill in a blank with the number of times they have used a sunless tanning product: “Would you please estimate how many times have you used a sunless tanning product in the last month to get a tanned appearance?” and “Would you please estimate how many times have you used a sunless tanning product in the last year to get a tanned appearance?”. To measure participant’s current behavior, a five-point, Likert-type scale where 1 = strongly disagree and 5 = strongly agree was used, and included the item: I currently use

a sunless tanning product to obtain a tanned appearance. This measure was adapted from Stephenson and Witte (1998).

Intention to Use Tanning Beds/Sunless Tanning Product

Each participant's intent to use tanning beds in the future was measured using a five-point, Likert-type scale where 1 =strongly disagree and 5 = strongly agree (Greene & Brinn, 2003). The items included: (a) I am likely to use a tanning bed to obtain a tanned appearance in the next month and (b) I am likely to use a tanning bed to obtain a tanned appearance in the next year. In addition, for each question, a follow-up question was listed. These items included: (a) About how many times do you think you will use a tanning bed in the next month? and (b) About how many times do you think you will use a tanning bed in the next year?

Each participant's intent to use a sunless tanning product in the future was measured using a five-point, Likert-type scale where 1 =strongly disagree and 5 = strongly agree (Greene & Brinn, 2003). The items included: (a) I am likely to use a sunless tanning product to obtain a tanned appearance in the next month and (b) I am likely to use a sunless tanning product to obtain a tanned appearance in the next year. In addition, for each question, a follow-up question was listed. These items included: (a) About how many times do you think you will use a sunless tanning product in the next month? and (b) About how many times do you think you will use a sunless tanning product in the next year?

Beliefs About the Benefits of Tanning

Each participant's personal beliefs as well as his/her perception of public beliefs about the benefits of tanning was measured using a scale developed by Greene (n.d). The items were measured using a five-point, Likert-type scale where 1 = strongly disagree and 5 = strongly agree. For personal beliefs, items included: (a) I think I look healthier when tan, (b) I feel more confident when I'm tan, (c) Tanning doesn't affect how I feel about myself, (d) I'm concerned about my appearance, and (e) I'd prefer to date someone who is tan. Exploratory factor analysis (principal axis, promax rotation) revealed that two items (concern for appearance, preference to date someone who is tan) did not fit into the unidimensional solution and were dropped. The other items were used to compile the *individual beliefs about the benefits of tanning* scale and it was reliable ($\alpha = 0.81$). Scores were summed and averaged ($M = 3.49$, $SD = .97$), with a higher score indicating that participants more strongly believed in the benefits of tanning.

For perception of public beliefs, items included: (a) People think they look healthier when tan, (b) People feel more confident when tan, (c) Tanning doesn't affect how people feel about themselves, (d) People are generally concerned about their appearance, (e) People prefer to date someone who is tan, and (f) People with a tan look healthier. Exploratory factor analysis (principal axis, promax rotation) revealed that no combination of the items resulted in a reliable scale or subscale. Therefore, these items were not used in the data analysis.

Attitudes About Tanning

Each participant's personal attitude about a tanned appearance was measured using a five-point, semantic differential scale (Stephenson & Witte, 1998). To measure personal attitude, the stem "In general, a tanned appearance is:" was followed by: good/bad, undesirable/desirable, and favorable/unfavorable. Exploratory factor analysis (principal axis, promax rotation) revealed a unidimensional solution that was reliable ($\alpha = 0.90$). Scores were summed and averaged ($M = 5.65$, $SD = 1.25$) with a higher score indicating a more positive attitude about a tanned appearance. The item is labeled *attitude toward a tanned appearance*.

In addition, several items were included to measure participant's perceived reference group attitudes. To measure perceived male college students' attitude about a tanned appearance, the stem "In general, male college students think a tanned appearance is:" was followed by: good/bad, undesirable/desirable, and favorable/unfavorable. Exploratory factor analysis (principal axis, promax rotation) revealed a unidimensional solution that was reliable ($\alpha = 0.95$). Scores were summed and averaged ($M = 5.63$, $SD = 1.25$) with a higher score indicating that participants perceived male college students had a more positive attitude about a tanned appearance. The item is labeled *perceived tanned appearance attitude of male college students*.

To measure perceived female college students' attitude about a tanned appearance, the stem "In general, female college students think a tanned appearance is:" was followed by: good/bad, undesirable/desirable, and favorable/unfavorable. Exploratory factor analysis (principal axis, promax rotation) revealed a unidimensional

solution that was reliable ($\alpha = 0.82$). Scores were summed and averaged ($M = 6.53$, $SD = .64$) with a higher score indicating that participants perceived female college students had a more positive attitude about a tanned appearance. The item is labeled *perceived tanned appearance attitude of female college students*.

To measure perceived attitude of people in the media about a tanned appearance, the stem “In general, people in the media (e.g. people on television, people in magazines, and people in movies) think a tanned appearance is:” was followed by: good/bad, undesirable/desirable, and favorable/unfavorable. Exploratory factor analysis (principal axis, promax rotation) revealed a unidimensional solution that was reliable ($\alpha = 0.88$). Scores were summed and averaged ($M = 6.37$, $SD = .91$) with a higher score indicating participants perceived that people in the media had a more positive attitude about a tanned appearance. The item is labeled *perceived tanned appearance attitude of people in the media*.

Social Norms Perceptions

Each participant’s perceptions of tanning norms (Greene & Brinn, 2003) was measured by asking participants to fill in a percentage estimate for each of the following items: (a) In your best estimate, what percentage of male undergraduate students at Texas A&M use tanning beds to get a tanned appearance, (b) In your best estimate, what percentage of female undergraduate students at Texas A&M use tanning beds to get a tanned appearance, and (c) In your best estimate, what percentage of people in the media (e.g. people on television, people in magazines, and people in movies) use tanning beds

to get a tanned appearance. In the same order as above, the items are labeled:

individual's estimate of the percentage of male college students who use tanning beds,

individual's estimate of the percentage of female college students who use tanning beds,

and individual's estimate of the percentage of people in the media who use tanning beds.

Perceived Susceptibility

Perceived susceptibility to the dangers of tanning (Stephenson & Witte, 1998) was measured using a seven-point, Likert-type scale where 1 = strongly disagree and 7 = strongly agree and included: (a) I am at risk for skin cancer, (b) It is likely that I will develop skin cancer, (c) It is possible that I will develop skin cancer. Exploratory factor analysis (principal axis, promax rotation) revealed a unidimensional solution that was reliable ($\alpha = 0.82$). Scores were summed and averaged ($M = 3.11$, $SD = .93$) with a higher score indicating that participants more strongly believed they were susceptible to skin cancer risks. The item is labeled *personal susceptibility scale*.

Perceived severity. Perceived severity of the dangers of tanning (Stephenson & Witte, 1998) was measured using a seven-point, Likert-type scale where 1 = strongly disagree and 7 = strongly agree and included: (a) I believe that skin cancer is a severe health problem, (b) I believe that skin cancer is a serious threat to my health, (c) I believe that skin cancer is a significant disease. Exploratory factor analysis (principal axis, promax rotation) revealed a unidimensional solution that was reliable ($\alpha = 0.78$). Scores were summed and averaged ($M = 3.90$, $SD = .85$) with a higher score indicating

that participants more strongly believed in the severity of the threat of skin cancer. The item is labeled *personal severity scale*.

Threat

Personal threat was measured by combining both the personal susceptibility (*personal susceptibility scale*) score and the personal severity (*personal severity scale*) score (Stephenson & Witte, 1998). Exploratory factor analysis (principal axis, promax rotation) revealed a unidimensional solution that was reliable ($\alpha = 0.73$). Scores were summed and averaged ($M = 3.38$, $SD = .66$) with a higher score indicating that participants more strongly believed in the threat of skin cancer. The item is labeled *SW threat*.

Body Consciousness

Each participant's body consciousness, both private body consciousness and public body consciousness, was measured using a five-point, Likert-type scale where 1 = extremely uncharacteristic and 5 = extremely characteristic (Miller, Murphy, & Buss, 1981). The private body consciousness scale included: (a) I am sensitive to internal bodily tensions, (b) I know immediately when my mouth or throat gets dry, (c) I can often feel my heart beating, (d) I am quick to sense the hunger contractions of my stomach, and (e) I'm very aware of changes in my body temperature. Exploratory factor analysis (principal axis, promax rotation) revealed that no combination of the items

resulted in a reliable scale or subscale. Therefore, these items were not used in data analysis.

The public body consciousness scale included: (a) When with others, I want my hands to be clean and look nice, (b) It's important for me that my skin looks nice...for example, has no blemishes, (c) I am very aware of my best and worst facial features, (d) I like to make sure that my hair looks right, (e) I think a lot about my body build, and (f) I'm concerned about my posture. Exploratory factor analysis (principal axis, promax rotation) revealed that one item (posture) did not fit into the unidimensional solution and was dropped. The other items were used to compile the *public body consciousness* scale and it was reliable ($\alpha = 0.79$). Scores were summed and averaged ($M = 3.75$, $SD = 0.71$) with a higher score indicating that participants were more conscious of their body in a public sphere. The item is labeled *public body consciousness*.

Posttest

Source Expertise

Each participant's perception of the expertise of the source was measured. A seven-point, semantic differential scale was used representing polar opposites (McCroskey, 1966). The items include: (1) not knowledgeable/knowledgeable, (2) incompetent/competent, (3) inexpert/expert, (4) not trained/trained, (5) not experienced/experienced, (6) unintelligent/intelligent, (7) uninformed/informed, (8) stupid/bright. As with the manipulation check, exploratory factor analysis (principal axis, promax rotation) revealed that two items did not fit into the unidimensional

solution (expertise, training) and were dropped. The other items were used to compile the *perceived source expertise* scale and it was reliable ($\alpha = 0.90$). There was a small but significant difference between the low expertise condition ($M=5.20$, $SD=.96$) and the high expertise condition ($M=5.32$, $SD=1.24$). The item is labeled *perceived source expertise*.

Source Physical Attractiveness

Each participant's perception of the physical attractiveness of the source was measured (McCroskey & McCain, 1974). A five-point, Likert-type scale was used where 1= strongly disagree and 5 = strongly agree. The items included: (a) I think she is quite pretty, (b) She is sexy looking, (c) I find her very attractive physically, (d) I don't like the way she looks, (e) She is somewhat ugly, (f) She is not very good looking, (g) She wears nice clothes, (7) The clothes she wears are not becoming. exploratory factor analysis (principal axis, promax rotation) revealed that two items did not fit into the unidimensional solution (nice clothes, clothes not becoming) and were dropped. The other items were used to compile the *perceived source physical attractiveness* scale and it was reliable ($\alpha = 0.90$). Scores were summed and averaged ($M = 3.65$, $SD = .66$) with a higher score indicating that participants perceived the source to be more physically attractive. The item is labeled *perceived source physical attractiveness*.

Source Similarity

Each participant's perception of their similarity to the source was measured using a seven-point, semantic differential scale derived from McCroskey, Richmond, and Daly (1975). The scale includes four subscales. The first subscale is Attitude and included the items: Doesn't think like me/Thinks like me, Behaves like me/Doesn't behave like me, Similar to me/Different from me, Unlike me/Like me. Exploratory factor analysis (principal axis, promax rotation) revealed that one item (think) did not fit into the unidimensional solution and was dropped. The other items were used to compile the Attitude subscale and it was reliable ($\alpha = 0.85$). Scores were summed and averaged ($M = 4.29$, $SD = 1.37$) with a higher score indicating that participants perceived the source to be more similar in attitudes. The item is labeled *perceived source attitude similarity*.

The second subscale is Background and included the items: From social class similar to mine/From social class different from mine, Economic situation different from mine/Economic situation like mine, Status like mine/Status different from mine, Background different from mine/Background similar to mine. Exploratory factor analysis (principal axis, promax rotation) revealed that no combination of the items resulted in a reliable scale or subscale. Therefore, these items were not used in the data analysis.

The third subscale is Value and included the items: Morals unlike mine/Morals like mine, Sexual attitudes unlike mine/Sexual attitudes like mine, Shares my values/Doesn't share my values, Treats people like I do/Doesn't treat people like I do. Exploratory factor analysis (principal axis, promax rotation) revealed that two items

(morals, sexual attitudes) did not fit into the unidimensional solution and were dropped. The other items were used to compile the Values subscale and it was reliable ($\alpha = 0.78$). Scores were summed and averaged ($M = 4.34$, $SD = 1.10$) with a higher score indicating that participants perceived the source to be more similar in values. The item is labeled *perceived source values similarity*.

The fourth subscale is Appearance and included the items: Looks similar to me/Looks different from me, Different size than I am/Same size as I am, Appearance like mine/Appearance unlike mine, Doesn't resemble me/Resembles me. Exploratory factor analysis (principal axis, promax rotation) revealed that one item (size) did not fit into the unidimensional solution and was dropped. The other items were used to compile the Appearance subscale and it was reliable ($\alpha = 0.85$). Scores were summed and averaged ($M = 3.55$, $SD = 1.60$) with a higher score indicating that participants perceived the source to be more similar in appearance. The item is labeled *perceived source appearance similarity*.

Liking for Source

Each participant's liking for the source was measured using a five-point, Likert-type scale (Fisher, Ilgen & Hoyer, 1979) where 1 = strongly disagree and 5 = strongly agree. The items included: (a) This person seems like a very nice person, (b) I believe I would really like this person, (c) I really don't care to get to know this person any better. Exploratory factor analysis (principal axis, promax rotation) revealed that one item (don't care) did not fit into the unidimensional solution and was dropped. The other

items were used to compile the *liking for source* scale and it approached reliability ($\alpha = 0.68$). Scores were summed and averaged ($M = 3.66$, $SD = .56$) with a higher score indicating that participants liked the source more. The item is labeled *liking for source*.

Intention to Use Tanning Beds/Sunless Tanning Product

Each participant's intent to use tanning beds in the future was measured again in the post test using a five-point, Likert-type scale where 1 =strongly disagree and 5 = strongly agree (Greene & Brinn, 2003). The items included: (a) I am likely to use a tanning bed to obtain a tanned appearance in the next month and (b) I am likely to use a tanning bed to obtain a tanned appearance in the next year. In addition, for each question, a follow-up question was listed. These items included: (a) About how many times do you think you will use a tanning bed in the next month? and (b) About how many times do you think you will use a tanning bed in the next year?

Each participant's intent to use a sunless tanning product in the future was measured again in the post test using a five-point, Likert-type scale where 1 =strongly disagree and 5 = strongly agree (Greene & Brinn, 2003). The items included: (a) I am likely to use a sunless tanning product to obtain a tanned appearance in the next month and (b) I am likely to use a sunless tanning product to obtain a tanned appearance in the next year. In addition, for each question, a follow-up question was listed. These items included: (a) About how many times do you think you will use a sunless tanning product in the next month? and (b) About how many times do you think you will use a sunless tanning product in the next year

Demographic Information

Demographic information was gathered for each participant. The participants were asked to indicate their sex, college classification, ethnicity, and age.

CHAPTER IV

RESULTS

To give a better understanding of the behavioral tendencies of the sample population, the following is a brief summary of some of the key variables measured in this study. Of the 162 participants, 37 individuals (22.8%) had used a tanning bed at least once in the last month (males = 2 , females = 35). Excluding individuals who had not used a tanning bed in the last month, the average participant tanned 7.5 times ($SD = 5.9$) in the last month, with females tanning an average of 7.7 times ($SD = 5.9$) and males tanning an average of 4.5 times ($SD = 5.0$).

Eighty-one individuals (50%) had used a tanning bed at least once in the last year (males = 5, females = 76). Excluding individuals who had not used a tanning bed in the last year, the average participant tanned 32.5 times ($SD = 33.8$), with females tanning an average of 33.5 times ($SD = 34.4$) and males tanning an average of 17.6 times ($SD = 19.1$).

Twenty-five individuals (15.4%) had used a sunless tanning product at least once in the last month (males = 0, females = 25). Excluding individuals who had not used a sunless tanning product in the last month, the average participant – and consequently this composed only females - used a sunless tanning product 5.4 times ($SD = 5.4$).

Forty-eight individuals (29.6%) had used a sunless tanning product at least once in the last year (males = 1, females = 47). Excluding individuals who had not used a sunless tanning product in the last year, the average participant used a sunless tanning product 13.3 times ($SD = 27.0$), with females using a sunless tanning product an average

of 13.4 times ($SD = 27.3$) and the one male used a sunless tanning product 5 times in the last year.

For intent to tan in the future, 40 individuals (24.7%) planned on using a tanning bed at least once in the next month (males = 1, females = 39). Excluding individuals who did not intend to use a tanning bed at least once in the next month, the average participant planned on using a tanning bed 9.3 times ($SD = 5.4$), with females planning on using a tanning bed an average of 9.3 times ($SD = 5.5$) and the one male planning on using the tanning bed 10 times.

Seventy-three individuals (45.1%) planned on using a tanning bed at least once in the next year (males = 7, females = 66). Excluding individuals who did not intend to use a tanning bed at least once in the next year, the average participant planned on using a tanning bed 32.5 times ($SD = 32.4$), with females planning on using a tanning bed an average of 34.7 times ($SD = 32.9$) and males planning on using a tanning bed an average of 11.4 times ($SD = 17.3$).

Thirty-two individuals (19.8%) planned on using a sunless tanning product at least once in the next month (males = 2, females = 30). Excluding individuals who did not intend to use a sunless tanning product at least once in the next month, the average participant planned on using a sunless tanning product 4.8 times ($SD = 5.5$), with females planning on using a sunless tanning product an average of 5.0 times ($SD = 5.6$) and males planning on using a sunless tanning product an average of 1.5 times ($SD = .7$).

Forty-three individuals (26.5%) planned on using a sunless tanning product at least once in the next year (males = 4, females = 39). Excluding individuals who did not

intend to use a sunless tanning product at least once in the next year, the average participant planned on using a sunless tanning product 21.1 times ($SD = 35.8$), with females planning on using a sunless tanning product an average of 23.1 times ($SD = 37.0$) and males planning on using a sunless tanning product an average of 1.5 times ($SD = .6$).

Hypothesis 1

Hypothesis 1 predicted that individuals who believed their reference groups (in this study, male college students, female college students, and people in the media) had a positive attitude toward a tanned appearance would themselves have a positive attitude toward a tanned appearance. Hypotheses 1 was analyzed using zero-order correlation and multiple regression analysis.

As hypothesized, the *one's attitude toward a tanned appearance* was positively correlated to the *perceived tanned appearance attitude of male college students*, $r(161) = .421, p < .01$, the *perceived tanned appearance attitude of female college students*, $r(161) = .344, p < .01$, and the *perceived tanned appearance attitude of people in the media*, $r(161) = .205, p < .01$.

Because there exists gender differences in tanning attitudes (Mawn & Fleischer, 1993) and behaviors (Demko et al., 2003, Geller et al., 2002), Hypothesis 1 was also analyzed separately by gender. For females, *one's attitude toward a tanned appearance* was positively correlated to the *perceived tanned appearance attitude of male college students*, $r(113) = .315, p < .01$, and the *perceived tanned appearance attitude of*

female college students, $r(113) = .330, p < .01$. For males, the *one's attitude toward a tanned appearance* was positively correlated to the *perceived tanned appearance attitude of male college students*, $r(49) = .640, p < .01$, the *perceived tanned appearance attitude of female college students*, $r(49) = .431, p < .01$, and the *perceived tanned appearance attitude of people in the media*, $r(49) = .304, p < .05$.

However, because zero-order correlation coefficients only show results for two variables at a time, multiple regression was also used to analyze the data and account for overlap between the independent variables.

The first regression model used all participants. The model was statistically significant, $F(3, 157) = 18.12, p < .001, R^2 = .26$. However, only two of the three variables were significant predictors of *one's attitude toward a tanned appearance*: *perceived tanned appearance attitude of male college students* $\beta = .36, p < .001$, and *perceived tanned appearance attitude of female college students* $\beta = .25, p < .001$.

The second regression model used only males ($n = 48$). The model was statistically significant, $F(3, 45) = 14.31, p < .001, R^2 = .49$. However, only one of the three variables was a significant predictor of *one's attitude toward a tanned appearance*: *perceived tanned appearance attitude of male college students* $\beta = .57, p < .001$.

The final regression model used only females ($n = 111$). The model was statistically significant, $F(3, 108) = 8.28, P < .001, R^2 = .19$. However, only two of the three variables were significant predictors of *one's attitude toward a tanned appearance*: *perceived tanned appearance attitude of male college students* $\beta = .27, p < .005$, and *perceived tanned appearance attitude of female college students* $\beta = .28, p < .005$.

Overall, then, Hypothesis 1 received modest support in that the perceived attitudes of both male college students and female college students were significant predictors of one's attitude toward a tanned appearance. Although correlated, the influence of people in the media did not significantly predict one's attitude toward a tanned appearance.

Hypothesis 2

Hypothesis 2 predicted that individuals who believed their reference groups (in this study, male college students, female college students, and people in the media) used tanning beds to get a tanned appearance were more likely to use tanning beds to get a tanned appearance. Hypothesis 2 was analyzed using multiple regression analysis. Because there were four dependent variables that could be used to test this hypothesis, four multiple regression analyses were run. The four dependent variables are: *number of times one has used a tanning bed in the last month*, *number of times one has used a tanning bed in the last year*, *individual's estimate of the number of times he/she will use a tanning bed in the next month*, and *individual's estimate of the number of times he/she will use a tanning bed in the next year*.

First, a multiple regression analysis was performed on the dependent variable (*number of times one has used a tanning bed in the last month*) using three independent variables (*individual's estimate of the percentage of male college students who use tanning beds*, *individual's estimate of the percentage of female college students who use tanning beds*, *individual's estimate of the percentage of people in the media who use tanning beds*). The model was significant, $F(3, 158) = 3.76, p < .05, R^2 = .07$.

However, only one of the three independent variables was a significant predictor of *number of times one has used a tanning bed in the last month: individual's estimate of the percentage of people in the media who use tanning beds* $\beta = -.25, p < .01$. One variable approached significance as a predictor of *number of times one has used a tanning bed in the last month: individual's estimate of the percentage of female college students who use tanning beds* $\beta = .17, p = .08$.

Second, a multiple regression analysis was performed on the dependent variable (*number of times one has used a tanning bed in the last year*) using the same three independent variables in the last model (*individual's estimate of the percentage of male college students who use tanning beds, individual's estimate of the percentage of female college students who use tanning beds, individual's estimate of the percentage of people in the media who use tanning beds*). The model was statistically significant, $F(3, 158) = 4.77, p < .005, R^2 = .083$. However, only one of the three variables was a significant predictor of *number of times one has used a tanning bed in the last year: individual's estimate of the percentage of people in the media who use tanning beds* $\beta = -.23, p < .005$. One variable approached significance as a predictor of *number of times one has used a tanning bed in the last year: individual's estimate of the percentage of female college students who use tanning beds* $\beta = .16, p = .09$.

Third, a multiple regression analysis was performed on the dependent variable (*individual's estimate of the number of times he/she will use a tanning bed in the next month*) using the same three independent variables as in the previous models. The model was statistically significant, $F(3, 152) = 3.33, p < .05, R^2 = .06$. However, only one of

the three variables approached significance as a predictor of *individual's estimate of the number of times he/she will use a tanning bed in the next month: individual's estimate of the percentage of people in the media who use tanning beds* $\beta = -.16, p = .06$.

Fourth, a multiple regression analysis was performed on the dependent variable (*individual's estimate of the number of times he/she will use a tanning bed in the next year*) using the same three independent variables as in previous models. The model was not statistically significant, and there were no significant effects.

Because of the previously discussed gender differences in tanning attitudes and behaviors, Hypothesis 2 was also analyzed separately by gender.

First, a multiple regression analysis, analyzed separately by gender, was performed on the dependent variable (*number of times one has used a tanning bed in the last month*) and three independent variables (*individual's estimate of the percentage of male college students who use tanning beds, individual's estimate of the percentage of female college students who use tanning beds, individual's estimate of the percentage of people in the media who use tanning beds*). The first regression model used only males ($n = 48$). The model was statistically significant, $F(3, 45) = 2.85, p < .05, R^2 = .16$. However, only one of the three variables was a significant predictor of *number of times one has used a tanning bed in the last month* for males: *individual's estimate of the percentage of male college students who use tanning beds* $\beta = .45, p < .05$. Using the same dependent variable, a second regression model was performed but using only females ($n = 112$). This model approached significance, $F(3, 109) = 2.51, p = .06, R^2 = .07$. Only one of the three variables was a significant predictor of *number of times one*

has used a tanning bed in the last month for females: *individual's estimate of the percentage of people in the media who use tanning beds* $\beta = -.24, p < .05$. One variable approached significance as a predictor of *number of times one has used a tanning bed in the last month* for females: *individual's estimate of the percentage of female college students who use tanning beds* $\beta = .19, p = .09$.

Second, a multiple regression analysis, analyzed separately by gender, was performed on the dependent variable (*number of times one has used a tanning bed in the last year*) and using the three independent variables from the previous model. The first regression model used only males ($n = 48$). The model was statistically significant, $F(3, 45) = 3.66, p < .05, R^2 = .20$. However, only one of the three variables was a significant predictor of *number of times one has used a tanning bed in the last year* for males: *individual's estimate of the percentage of male college students who use tanning beds* $\beta = .51, p < .01$. Using the same dependent variable, a second regression model was performed but using only females ($n = 112$). This model was statistically significant, $F(3, 109) = 3.08, p < .05, R^2 = .08$. However, only one of the three variables was a significant predictor of *number of times one has used a tanning bed in the last year* for females: *individual's estimate of the percentage of people in the media who use tanning beds* $\beta = -.22, p < .05$. One variable approached significance as a predictor of *number of times one has used a tanning bed in the last year* for females: *individual's estimate of the percentage of female college students who use tanning beds* $\beta = .20, p = .07$.

Third, a multiple regression analysis, analyzed separately by gender, was performed on the dependent variable (*individual's estimate of the number of times he/she*

will use a tanning bed in the next month) and using the three independent variables from the previous model. The first regression model used only males ($n = 45$). The model approached significance, $F(3, 42) = 2.23, p = .099, R^2 = .14$. However, only one of the three variables was a significant predictor of *individual's estimate of the number of times he/she will use a tanning bed in the next month* for males: *individual's estimate of the percentage of male college students who use tanning beds* $\beta = .42, p < .05$. The second regression model used only females ($n = 109$). The model was not statistically significant, and there were no significant effects.

Fourth, a multiple regression analysis, analyzed separately by gender, was performed on the dependent variable (*individual's estimate of the number of times he/she will use a tanning bed in the next year*) and using the three independent variables from the previous model. The first regression model used only males ($n = 48$). The model was statistically significant, $F(3, 45) = 3.66, p = .05, R^2 = .16$. However, only one of the three variables was a significant predictor of *individual's estimate of the number of times he/she will use a tanning bed in the next year* for males: *individual's estimate of the percentage of male college students who use tanning beds* $\beta = .47, p < .05$. The second regression model used only females ($n = 108$). The model was not statistically significant, and there were no significant effects.

Overall, then, Hypothesis 2 was not supported. Moreover, people in the media negatively influenced tanning in three of the four outcome variables (*number of times one has used a tanning bed in the last month*, *number of times one has used a tanning bed in the last year*, and *individual's estimate of the number of times he/she will use a*

tanning bed in the next month). When examining outcomes separately by gender, Hypothesis 2 received modest support. For males, past tanning bed use (*last month* and *last year*) and future tanning bed use (*next month* and *next year*) were significantly positively predicted by one reference group: other male college students. For females, past tanning bed use (*last month* and *last year*) was significantly negatively predicted by the reference group people in the media. In addition, other female college students approached significance as a positive predictor of past tanning bed use (*last month* and *last year*). For future tanning bed use, no reference group acted as a predictor of the future tanning bed use for females.

Hypothesis 3

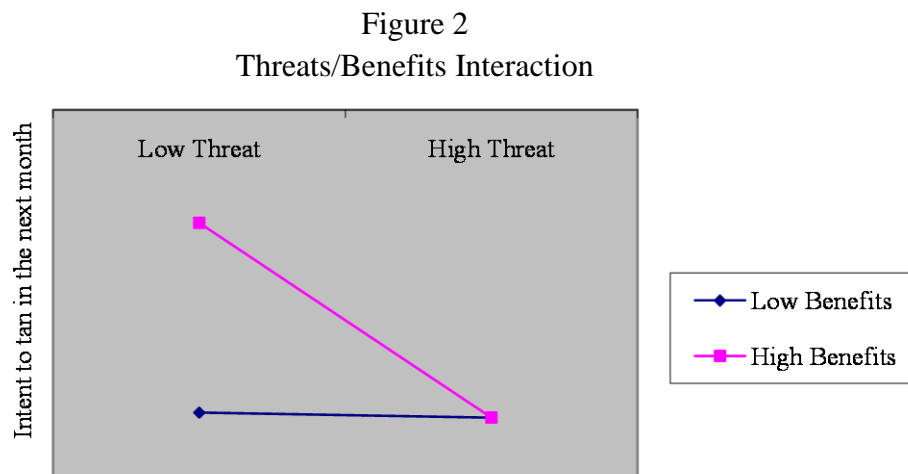
Hypothesis 3 predicted that the perceived benefits of using a tanning bed on intent to tan in the future will be moderated by perceived health threats related to the use of a tanning bed. Specifically, it was hypothesized that there will be an interaction effect between perceived benefits of using a tanning bed and perceived health threats, such that individuals who believe the benefits of using a tanning bed are high will perceive the threat as low and individuals who believe the benefits of using a tanning bed are low will perceive the threat as high.

Hierarchical multiple regression analyses were performed to test Hypothesis 3. The dependent variable for the analyses was *individual's estimate of the number of times s/he will use a tanning bed in the next month*. Participant gender, whether they currently use a tanning bed, and estimate of the number of times participant has used a tanning bed

in the last month were entered in the first block. The interaction term involving *threat* and benefits was entered in the second block. The results are reported below.

The regression examined the interaction between *threat* and *individual beliefs about the benefits of tanning*. The first block, containing the covariates, was statistically significant, $F(3, 152) = 103.34, p < .001, R^2 = .67$. The second block, containing the interaction term, approached significance, $\beta = -.08, F(4, 151) = 79.18, p = .09, R^2 = .01$. The interaction is plotted in Figure 2.

Overall, then, Hypothesis 3 received modest support. The interaction between benefits of tanning and the threats associated with tanning approached significance. Individuals who believed that the benefits of using a tanning bed were high and also believed that the threat of tanning was low were more likely to use a tanning bed. However, as threat increased, use of tanning beds decreased. Conversely, individuals who believed the benefits of using a tanning bed were low consistently showed low tanning bed use, regardless of level of perceived threat.



Hypotheses 4 and 7/Research Questions 1 and 3

Hypothesis 4, Research Question 1, and Hypothesis 7 were tested using an omnibus repeated-measures ANOVA. Specifically a time (pretest, posttest) by DRT (negative, positive, combined) by source (expert, non-expert) ANOVA was conducted separately for the two dependent variables, intent to tan in the next month and intent to use sunless tanner in the next month. Perceived source physical attractiveness, public body consciousness, and perceived source attitude similarity were covariates. In addition, whether the individual had ever used a tanning bed was a covariate in the first ANOVA which examined change in intent to use a tanning bed and whether the individual had ever used a sunless tanning product was a covariate in the second ANOVA which examined change in intent to use a sunless tanning product.

Hypothesis 4 predicted that a message encouraging positive deviation (use a sunless tanning product) would be more effective than a message encouraging a negative deviation (stop using a tanning bed) on decreasing one's intent to use a tanning bed and increasing one's intent to use a sunless tanning product. Support for this hypothesis would be indicated by a significant time by DRT message interaction. However, the two-way interaction term was not statistically significant for intent to use a tanning bed. Similarly, no significant interaction effect was detected for one's intent to use a sunless tanning product. Therefore, this hypothesis was not supported.

Research Question 1 asked whether a message that encourages positive deviation only (use a sunless tanning product) would be more effective than one that encourages both a positive deviation (use a sunless tanning product) and a negative deviation (stop

using a tanning bed) on decreasing one's intent to use a tanning bed and increasing one's intent to use a sunless tanning product. The same analysis for H4 applies to RQ1. No interaction effect was detected on either dependent variable.

Hypothesis 7 predicted an interaction between source expertise and message condition on intent to use a tanning bed and intent to start using a sunless tanning product. Specifically, it was hypothesized that a low expert source who encourages a positive deviation (start using a sunless tanning product) would be most effective and that a high expert source who encourages a negative deviation (stop using a tanning bed) will be least effective at decreasing one's intent to use a tanning bed and increasing one's intent to use a sunless tanning product. Additionally, Research Question 3 asked whether a message from a low expert source that encourages both positive deviation (use a sunless tanning product) and negative deviation (stop using a tanning bed) would be more effective than a message from a low expert source that encourages only positive deviation (use a sunless tanning product) on decreasing one's intent to use a tanning bed and on increasing one's intent to use a sunless tanning product.

For intent to use a tanning bed, the multivariate test for the time by DRT message by source expertise interaction was significant, Wilks' $\lambda = .96$, $F(2, 137) = 3.20$, $p < .05$, $R^2 = .045$. The results of this three-way interaction are displayed in Figures 3a and 3b. Intent to use a tanning bed decreased in the high expert – combined DRT message condition from pretest ($M = 3.61$, $SE = .96$) to posttest ($M = 2.50$, $SE = .93$). Additionally, the high expert – positive DRT message condition increased intent to use a tanning bed from pretest ($M = 1.87$, $SE = .97$) to posttest ($M = 2.24$, $SE = .94$) and the

high expert – negative DRT message condition increased intent to use a tanning bed from pretest ($M = .75$, $SE = .90$) to posttest ($M = 1.19$, $SE = .87$). Intent to use a tanning bed decreased from pretest to posttest in all conditions containing the low expert source: in the low expert - negative DRT message condition, pretest ($M = 2.95$, $SE = .91$) to posttest ($M = 2.29$, $SE = .88$), in the low expert – positive DRT message condition, pretest ($M = 3.87$, $SE = .91$) to posttest ($M = 2.96$, $SE = .88$), and in the low expert – combined DRT message condition, pretest ($M = 1.47$, $SE = .93$) to posttest ($M = 1.10$, $SE = .91$).

Figure 3A
Pretest Intent to Tan

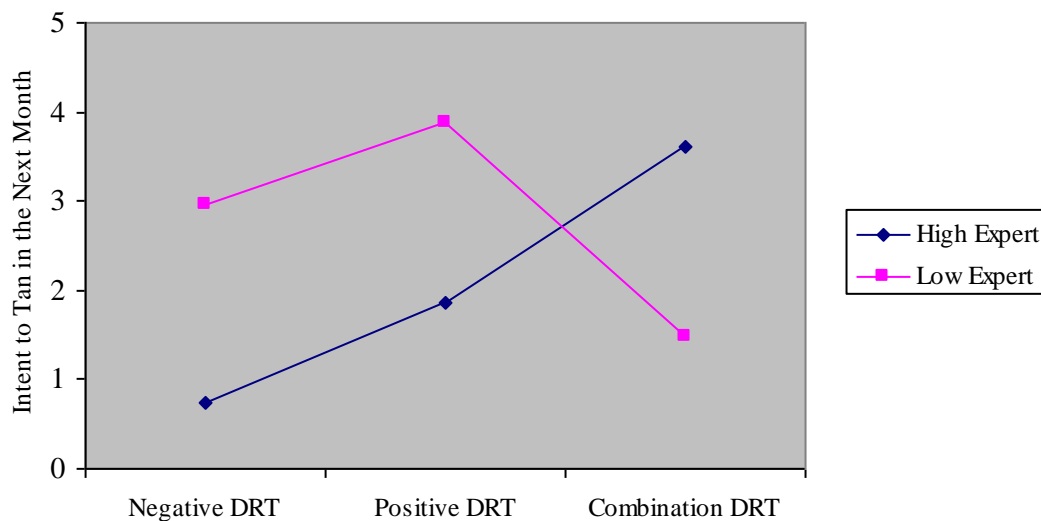
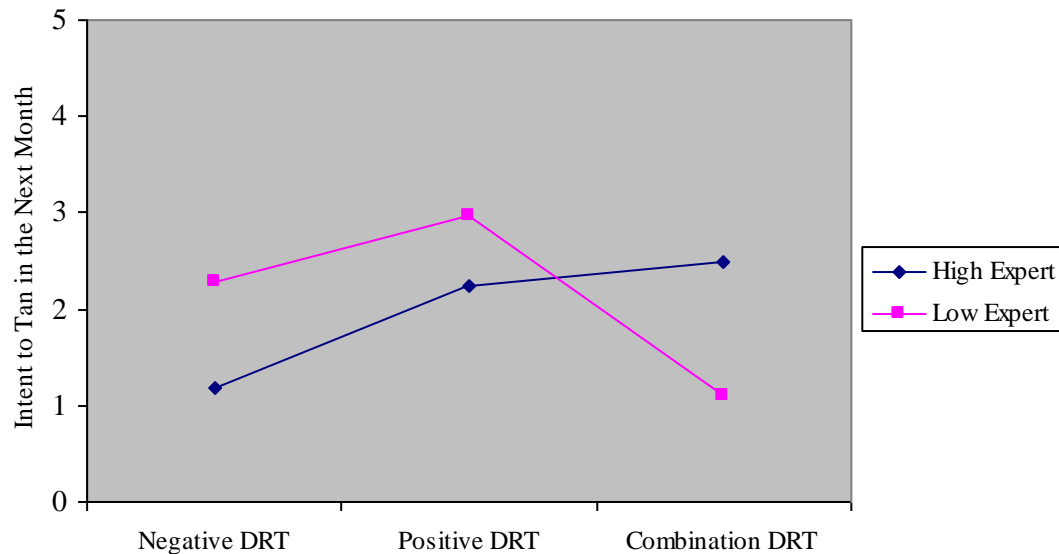


Figure 3B
Posttest Intent to Tan

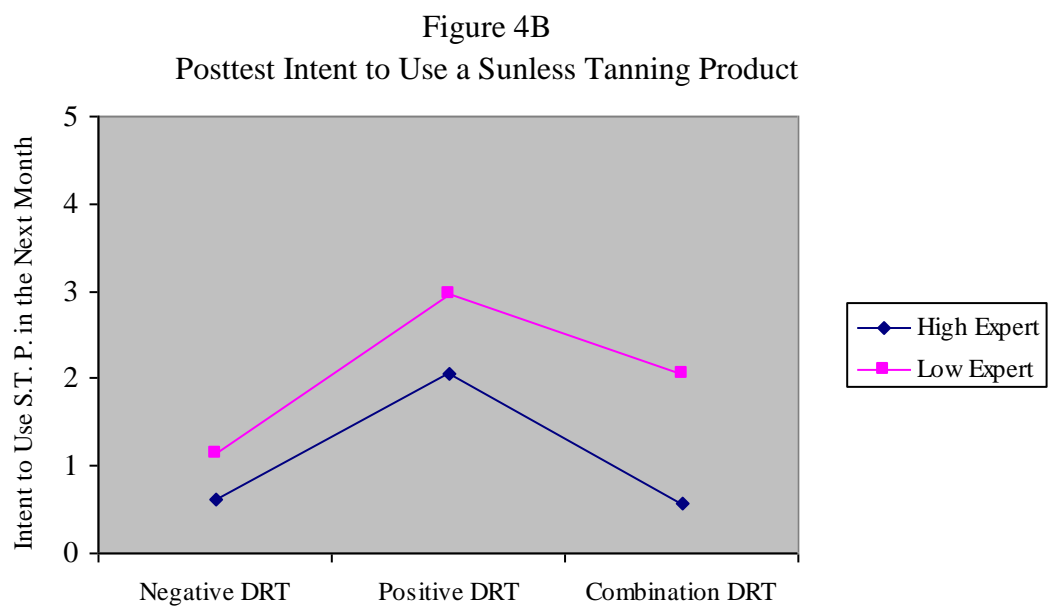
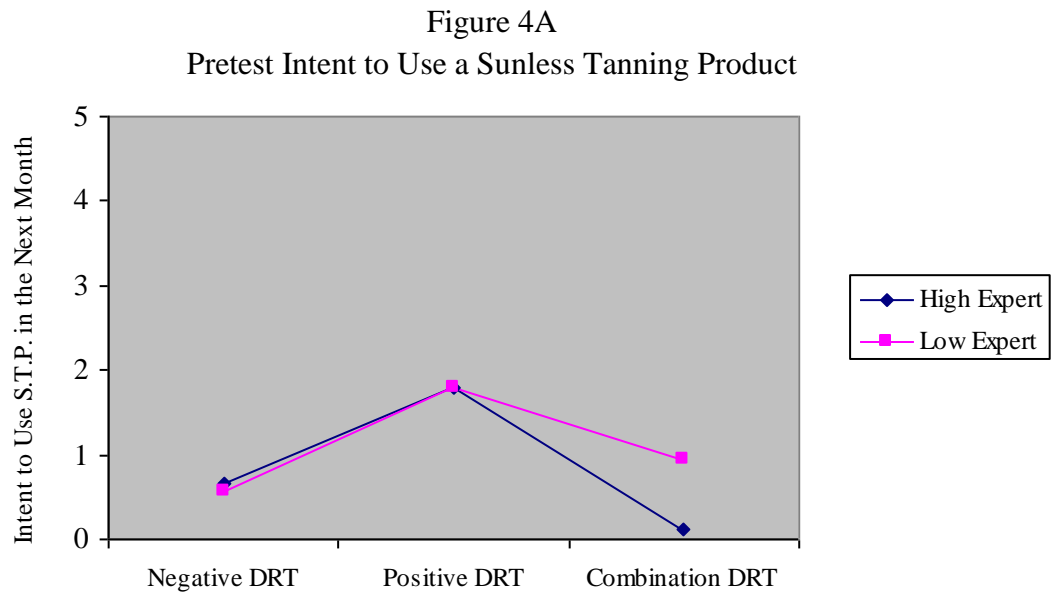


Therefore, for intent to use a tanning bed, Hypothesis 7 was partially supported.

The condition that showed the greatest reduction in intent to use a tanning bed from pretest to posttest was the high expert – combined DRT message condition. It was hypothesized that the greatest reduction would occur in the low-expert – positive DRT message condition, and this condition was the second most effective in reducing tanning bed intent. It was also hypothesized that the least effective condition would be the high expert – negative DRT message condition and this was the outcome.

Additionally, the answer to Research Question 3 is negative: a message from a low expert source that encourages both positive deviation (use a sunless tanning product) and negative deviation (stop using a tanning bed) is less effective than a message from a low expert source that encourages only positive deviation (use a sunless tanning product) on one's intent to use a tanning bed.

For intent to use a sunless tanning product, the multivariate test for the time by DRT message by source expertise interaction was not significant. However, the results of this three-way interaction are displayed in Figures 4a and 4b.



Intent to use a sunless tanning product increased in the high expert – positive DRT message condition from pretest ($M = 1.80, SE = .62$) to posttest ($M = 2.05, SE = .84$), the high expert – combined DRT message condition from pretest ($M = 0.12, SE = .64$) to posttest ($M = 0.58, SE = .87$), the low expert - negative DRT message condition from pretest ($M = 0.56, SE = .59$) to posttest ($M = 1.15, SE = .81$), the low expert – positive DRT message condition from pretest ($M = 1.79, SE = .60$) to posttest ($M = 2.97, SE = .83$), and the low expert – combined DRT message condition from pretest ($M = 0.95, SE = .61$) to posttest ($M = 2.05, SE = .84$). However, intent to use a sunless tanner decreased in the high expert – negative DRT message condition from pretest ($M = 0.66, SE = .57$) to posttest ($M = .62, SE = .80$).

Therefore, for intent to use a sunless tanning product, Hypothesis 7 was not supported because the interaction was not significant. The data does suggest, though, that the low expert – positive DRT message condition was the most effective in increasing intent to use a sunless tanning product, and that the high expert – negative DRT condition was the least effective. These differences, however, are not statistically significant. In addition, Research Question 3 was not supported because the interaction was not significant. Additionally, the data suggests that the low expert – positive DRT message condition was more effective than the low expert – combined DRT message condition on intent to use a sunless tanning product. Again, however, these differences are not statistically significant.

Hypotheses 5 and 6/Research Question 2

Hierarchical multiple regression analyses were performed to test Hypothesis 5, Hypothesis 6, and Research Question 2. Hypothesis 5 predicted an interaction between perceived source similarity and perceived source expertise on behavioral intent. Specifically, it was hypothesized that the source in the low expertise condition would be perceived as high in similarity and would be most effective at reducing one's intent to use a tanning bed and increasing one's intent to use a sunless tanning product. Conversely, it was hypothesized that the source in the high expertise condition would be perceived as low in similarity and would be the least effective. The dependent variable for the analyses was the change score in *individual's estimate of the number of times s/he will use a tanning bed in the next month* from pretest to posttest.

For the first set of regressions, participant age, whether they have ever used a tanning bed, score on the public body consciousness scale, and physical attractiveness rating of the source were entered in the first block. Source condition and source similarity ratings (denoted by three different subscales: similar attitudes, similar values, and similar physical appearance) were entered in the second block. The interaction term involving source and source similarity ratings was entered in the third block. The dependent variable for the analyses was the change score in *individual's estimate of the number of times s/he will use a tanning bed in the next month* from pretest to posttest. The results for each regression are reported below.

The first regression examined the interaction between source and perceived source attitude similarity. The first block, containing the covariates, was not statistically

significant. The second block, containing the independent variables, was not statistically significant. Likewise, the third block, containing the interaction term, was not statistically significant.

The second regression examined the interaction between source and perceived source values similarity. The first block, containing the covariates, was not statistically significant. The second block, containing the independent variables, was not statistically significant. The third block contained the interaction term and was also not statistically significant.

The third regression examined the interaction between source perceived source physical appearance similarity. The first block, containing the covariates, was not statistically significant. The second block, containing the independent variables, was not statistically significant. Likewise, the third block, containing the interaction term, was not statistically significant.

For the second set of regressions, participant age, whether they have ever used a sunless tanner, score on the public body consciousness scale, and physical attractiveness rating of the source were entered in the first block. Source condition and source similarity ratings (denoted by three different subscales: similar attitudes, similar values, and similar physical appearance) were entered in the second block. The interaction term involving source and source similarity ratings was entered in the third block. The dependent variable for the analyses was the change score in *individual's estimate of the number of times s/he will use a sunless tanning product in the next month* from pretest to posttest. The results for each regression are reported below.

The first regression examined the interaction between source and perceived source attitude similarity. The first block, containing the covariates, was not statistically significant. The second block, containing the independent variables, was not statistically significant. Likewise, the third block, containing the interaction term, was not statistically significant.

The second regression examined the interaction between source and perceived source values similarity. The first block, containing the covariates, was not statistically significant. The second block, containing the independent variables, was not statistically significant. The third block contained the interaction term and was also not statistically significant.

The third regression examined the interaction between source perceived source physical appearance similarity. The first block, containing the covariates, was not statistically significant. The second block, containing the independent variables, was not statistically significant. The third block, containing the interaction term, was also not statistically significant.

Therefore, Hypothesis 5 was not supported. The data do not suggest an interaction between perceived source similarity and perceived source expertise on behavioral intent for either tanning bed use or sunless tanning product use.

Hypothesis 6 stated that perceived source similarity and perceived source physical attractiveness would predict liking for the source. In turn, liking for the source will be most effective at decreasing one's intent to use a tanning bed and increasing one's intent to use a sunless tanning product.

First, a multiple regression analysis was performed on the dependent variable (*liking for source*) using four independent variables (perceived source physical attractiveness, perceived source attitude similarity, perceived source values similarity, perceived source appearance similarity). The model was significant, $F(4, 156) = 12.97, p < .001, R^2 = .25$. Perceived source physical attractiveness was a significant predictor of liking for source $\beta = .33, p < .001$. In addition, only one of the source similarity scales was a significant predictor of liking for source: perceived source attitude similarity $\beta = .29, p < .001$.

Next, a multiple regression analysis was performed on the dependent variable (*change in intent to use a tanning bed*) using the independent variable *liking for source*, controlling for participant current tanning bed use and ever tanning bed use. The model was not statistically significant.

The final multiple regression analysis was performed on the dependent variable (*change in intent to use a sunless tanning product*) using the independent variable *liking for source*, controlling for participant current sunless tanning product use and ever sunless tanning product use. The model was statistically significant, $F(2, 152) = 9.65, p < .001, R^2 = .11$. However, only current sunless tanning product use was a significant predictor of change in intent to use a sunless tanning product, $\beta = .34, p < .001$.

Therefore, Hypothesis 6 was partially supported. The first part of H6 was supported as perceived source similarity and perceived source physical attractiveness were significant predictors of liking for the source. The second part of the hypothesis, that liking for the source would be most effective at decreasing one's intent to use a

tanning bed and increasing one's intent to use a sunless tanning product, was not supported. Source liking had no effect on behavioral intent in this study.

Research Question 2 asked about the relationship between perceived source physical attractiveness, intent to use a tanning bed, and intent to use sunless tanning product. Multiple regression analyses were performed to answer this question.

The first multiple regression analysis was performed on the dependent variable (*change in intent to use a tanning bed*) using the independent variable *perceived source physical attractiveness*, controlling for participant current tanning bed use and ever tanning bed use. The model was not statistically significant.

The second multiple regression analysis was performed on the dependent variable (*change in intent to use a sunless tanning product*) using the independent variable *perceived source physical attractiveness*, controlling for participant current sunless tanning product use and ever sunless tanning product use. The model was statistically significant, $F(2, 152) = 9.65, p < .001, R^2 = .11$. However, only current sunless tanning product use was a significant predictor of change in intent to use a sunless tanning product, $\beta = .34, p < .001$.

Therefore, the answer to Research Question 2 is that there is no relationship between perceived source physical attractiveness, intent to use a tanning bed, and intent to use sunless tanning product.

CHAPTER V

DISCUSSION AND CONCLUSION

The purpose of this study was to examine the behavior of using a tanning bed to obtain a tanned appearance in the college age population, as well as attitudes and norms related to this behavior. Additionally, this study explored different persuasive messages related to this behavior, and whether they were effective at persuading individuals to stop using tanning beds and adopt the use of a sunless tanning product. While many studies have been done on reducing sunbathing and alerting the public on the dangers of skin cancer from too much sun exposure (Baum, 1998; Broadwater, 2004; Cokkinides, 2006; Graffunder et al., 1999; Jorgensen et al., 2000), relatively little research has been done on tanning bed use in the college age population (two notable exceptions are Greene & Brinne, 2003, and AAD, 2006). The theoretical framework for this study involved Deviance Regulation Theory and also examined source credibility factors.

Discussion of Results

Tanning Attitudes (Hyp1)

Results indicate that individuals look to their reference groups when forming their own attitudes about a tanned appearance. While other research suggests that the media might work more to help form the ideal skin color in our society in general (Cafri, Thompson, & Jacobson, 2006), in this study it was one's peers (other college students, both males and females) that were most influential on one's attitudes about a tanned

appearance. Sherif and Sherif (1964) argue that “agemates in general and one’s own associates in particular become major reference groups for the individual” and that “they are the ones whose opinions matter” (p. 164). Therefore, it makes sense that individuals who value a tanned appearance are more likely to believe that their peers (an important reference group) values a tanned appearance, too.

In the analyses on the entire sample, there was no evidence of influence by the media on attitudes toward tanning. It is possible that a more appropriate conceptualization of the media’s effect would be the two-step flow model in which the media influences important others who then influence individuals on an interpersonal level. For this study, important others could arguably be deemed influential college students within the participants’ social network. The famous *People’s Choice* study on the voting decisions for the 1940 presidential election laid the foundation for this theory (Lazarsfeld, Berelson, & Gaudet, 1948), and later research supported these findings (Katz, Lazarsfeld, & Roper, 1955; Katz, 1957). In addition, recent studies have looked at the flexibility of this model (Kayahara & Wellman, 2007) and have drawn attention to the need for semi-homogenous communication networks for the model to work (Frank, ICA 2007).

When attitudes were examined separately by gender, a more in-depth understanding of the influence of others becomes available. For females, both male and female college students are significant influences on their attitude about a tanned appearance. When forming their attitudes, females who value a tanned appearance are also more likely to believe that all of their peers (both male and female) value a tanned

appearance as well. Perhaps this is an important element in their desire to have a tanned appearance in believing that many of the people around them supposedly have a positive attitude about a tanned appearance. This finding is consistent with Cooley's (1922) argument that females are more susceptible to the influence of others, as well as more recent research which shows that females tend to be more sensitive to body image expectations (see Cash, 1995; Muth & Cash, 1997; Greene & Brinn, 2003).

For males, it was other male college students who influenced their attitude about a tanned appearance. While it is an important finding that males are influenced by a reference group, it is even more important that the only influential reference group found in this study was other male college students. One possible explanation is that while females are more susceptible to the influence of others, males are not. In other words, males' attitudes are consistent with what they believe other male college students' attitudes are concerning a tanned appearance (a group to which they belong). Carli (2001) argues that "it is men more than women who resist female influence" and in general, men are more influential than women (p. 735). Moreover, as Courtenay (2000) points out, males are concerned with power and masculinity, and believing that it is only other males who hold the same attitudes as them might be an explanation for this finding.

Tanning Norms (Hyp2)

Arguably more important than attitudes about tanning beds and a tanned appearance is the behavior itself: past tanning bed use and intent to use a tanning bed in

the future to obtain a tanned appearance. Hypothesis 2, which stated that individuals who believe their reference groups are using tanning beds to get a tanned appearance are also more likely to use a tanning bed to get a tanned appearance, received mixed support. Interestingly, *individual's estimate of the percentage of people in the media who use tanning beds* had the opposite effect than predicted, in that the more individuals believed people in the media used tanning beds, the less likely they were to have used tanning. In other words, if individuals believed that people in the media were using tanning beds to obtain a tanned appearance, they were more likely *not* to use a tanning bed. In addition, *individual's estimate of the percentage of people in the media who use tanning beds* was the only significant predictor for females tanning bed use, and was also negative. This finding appears inconsistent with previous literature. For instance, Cafri, Thompson, and Jacobsen (2006) found that “the media exerts its influence on UV exposure...indirectly through appearance reasons for tanning” and that “media influences cause greater valuation of a tan appearance, which in turn leads to more UV exposure” (p. 1068).

One possible explanation for this inconsistency was detected by plotting the data. A scatter plot, using *number of times one has used a tanning bed in the last month* on the y-axis and *individual's estimate of the percentage of people in the media who use tanning beds* on the x-axis, showed that the slope was negative. Upon further examination, individuals who reported heavier past tanning bed use also tended to report a lower perceived tanning bed use by people in the media. Individuals who reported moderate and lower past tanning bed use tended to report a higher perceived tanning bed

use by people in the media. Even when non-tanners were removed from the analysis, the slope remained negative. This explains the unexpected negative relationship between tanning bed use and perceived media use of tanning beds, although it does not account for why individuals who report heavier past tanning bed use believe that people in the media do not use tanning beds much. It might be that their unusually high use of tanning beds (compared to others) makes them feel that their behavior is unique, and therefore they assume that people in the media (a known influence in our society) do not mirror their own behavior.

Another possible explanation is that the measure of “people in the media” does not accurately measure perceptions of exactly *who* people in the media are. In the questionnaire, the item was listed as “people in the media (e.g. people on television, people in magazines, and people in movies).” Not only does “people in the media” encompass a large amount of people, but it also includes a large variety of people. A more delineated version of “people in the media” might include splitting media by type (people on television, people in magazines, people in movies, etc) or asking participants to list media sources to which they are commonly exposed (for instance, which magazines they subscribe to, which television shows they watch, etc). In this way, it might be possible to ascertain a deeper understanding of what type of people in the media are influencing individuals, and would provide individuals with a way to indicate what the phrase ‘people in the media’ actually means to them. Consequently, it would also be possible to examine the correlation between media exposure and tanning bed use.

Consistent with the findings in Hypothesis 1, for males, *individual's estimate of the percentage of male college students who use tanning beds* was also a significant predictor for both past and future tanning behaviors. With the limited sample size (see Limitations), other male college students appear to be the only reference group for males in this study.

Health Risks of Tanning (Hyp3)

As predicted, the results of this study indicated an interaction between perceived health threats to using a tanning bed and benefits of using a tanning bed on intent to tan in the future.. For an individual who believes the benefits of using a tanning bed are high, the level of threat was predicted to be perceived as low. For an individual who believes the benefits of using a tanning bed are low, the level of threat was predicted to be perceived as high. The hypothesis represents an X-shaped interaction. Although the hypothesis was supported, the results revealed a V-shaped interaction instead (see Figure 2). Nevertheless, the results remain consistent with the reviewed literature. Individuals who believed the benefits of tanning were low consistently reported low use, regardless of level of threat. However, individuals who believed the benefits of tanning were high also believed the threat was low. Consistent with the Health Belief Model, if a person perceives a threat as low, there is no reason for that person to take action against the threat. When low threat is coupled with the belief that there are many benefits of tanning, this high risk group is one that warrants attention. There are three possible ways to address this problem: increase the perceived threat of tanning, decrease the

perceived benefits of tanning, or like the current study, attempt to take into account both of those beliefs and provide an alternative safer way to obtain a tanned appearance.

It might also be that tanners, legitimately or not, believe that the threats are low. While some individuals might be justifying their behavior by saying the risks are low, others might actually believe that using tanning beds are not risky. For instance, the Indoor Tanning Association has recently launched a campaign to inform people that using tanning beds are not dangerous, they do not cause or contribute to melanoma, and that they can actually be good for you (Leamy & Levine, 2008). Misleading information such as this can help explain the low risks reported by tanners in this sample, and in general, the continued use of tanning beds by so many Americans.

Deviance Regulation Theory and Source Factors/Theoretical Implications

The theoretical framework guiding this study was Deviance Regulation Theory (DRT). While not a communication theory, it lends insight into how persuasive messages can be designed with behaviors like tanning. Hypothesis 4 stated that a message encouraging a positive deviation (use of sunless tanning product) would be more effective than a message encouraging a negative deviation (stop use of tanning bed) on one's intent to use a tanning bed and on one's intent to use a sunless tanning product. In addition, Research Question 1 asked whether a message that encouraged positive deviation only (use a sunless tanning product) would be more effective than one that encouraged both a positive deviation (use a sunless tanning product) and a negative deviation (stop using a tanning bed) on one's intent to use a tanning bed and on one's

intent to use a sunless tanning product. Hypothesis 4 was not supported, and the answer to Research Question 1 was no. The results suggest that DRT alone may not provide the most effective framework for the design of messages to stop tanning behaviors.

However, when the analysis also took into consideration the source of the message (source discussed separately later), the outcomes lend themselves to the design of effective health messages. Hypothesis 7 predicted that, controlling for source physical attractiveness, there would be an interaction between source expertise and DRT message condition on intent to use a tanning bed and intent to start using a sunless tanning product. Specifically, it was hypothesized that a low expert source who encouraged individuals to start using a sunless tanning product would be most effective and that a high expert source who encouraged individuals to stop using a tanning bed would be least effective. In addition, Research Question 3 asked whether a message from a low expert source that encouraged only positive deviation (to use a sunless tanning product) would be more effective than a message from a low expert source that encouraged both positive deviation (to use a sunless tanning product) and negative deviation (to stop using a tanning bed) on one's intent to use a tanning bed and on one's intent to use a sunless tanning product.

Hypothesis 7 was partially supported for intent to use a tanning bed. A low expert source who encouraged individuals to start using a sunless tanning product only was the second most effective message in reducing intent to use a tanning bed. The most effective condition was the high expert source who encouraged individuals to both stop using tanning beds and start using a sunless tanner. As hypothesized, the least effective

condition, which actually caused individuals to increase their intent to use a tanning bed in the future, was the high expert source who encouraged individuals to stop using a tanning bed.

The second most effective message condition (low expert – positive deviation) and the least effective message condition (high expert – negative deviation) are both consistent with DRT literature, which states that “to encourage deviation, a communicator should associate positive images with deviance [and] not negative attributes with conformity” (Blanton & Christie, 2003, p. 199). In addition, a contribution that this study makes to the DRT literature is that a combination of those two message conditions – associating positive attributes with deviance and negative attributes with conformity – was the most effective message condition for decreasing intent to use a tanning bed in this population. Another unique contribution this study makes is that for tanning behaviors, DRT message condition, without a source manipulation, is not an effective agent of change. The implication for message design is that the most effective way to decrease intent to use a tanning bed is to provide a high expert source who not only encourages individuals to stop using a tanning bed (by pointing out the negative aspects of using a tanning bed) but also encourages individuals to adopt the use of a sunless tanner (by pointing out the positive aspects of using a sunless tanner). A slightly less effective method is to provide a low expert source who only encourages the adoption of a sunless tanner. In addition, and arguably more important, the least effective way to decrease intent to use a tanning bed is to provide a high expert source who encourages individuals to stop using a tanning bed.

The implications for DRT here are important. DRT is a norm based theory (Blanton & Burkley, 2008), and tanning bed use and the desire for a tanned appearance was identified as a norm for certain groups in college age population. This study revealed new information about the relationship between DRT message condition and source expertise in changing behavioral intent for the behavior of tanning bed use in the college age population. The low expert – positive DRT condition asked individuals to start using a sunless tanning product. One possible explanation for the success of this condition is that individuals want someone who is attractive but who is also similar to them advocating a cosmetic product, rather than a medical professional (recall that the low expert source is identified as a college student). Perloff (2003) notes that “attractiveness can be a deciding factor when the communicator’s physical appeal is relevant to the product” (p. 171), and scores on the *perceived physical attractiveness of the source*, while not statistically different, were highest in the low expert-positive DRT condition. Therefore, having an attractive homophilous source advocating a cosmetic product that has to do with physical appearance is an effective way to increase behavioral intent. This is consistent with the advertising tactics that are used in young women’s magazines that, feature young, attractive models endorsing cosmetics.

However, the explanation for why the high expert – combination DRT condition was most effective is quite possibly a different story indeed. In this combination message condition, which not only advocates adoption of a sunless tanning product, but also discourages the use of tanning beds, the source was identified as a medical student. For the behavior of using tanning bed, which is arguably deemed a more health-related,

medical issue than using a sunless tanning product (given the warnings about the health dangers of tanning bed use), a message delivered by a medical professional is thought to be more credible than if it was delivered by another college student. The combination DRT message condition lays out a very rational argument, presenting both sides of the issue (the negative aspects of using tanning beds and the positive aspects of using a sunless tanning product). This rational message, delivered by an expert source, and containing information about the negative aspects of tanning bed use appeared to be the most influential condition in this study on decreasing intent to use a tanning bed, and the interaction between DRT message condition and source is an important interaction not yet studied before this current study.

Results indicated that there were no significant results for intent to use a sunless tanning product. It might be that the already low number of sunless tanning product users, combined with the low sample size, did not allow for any significant results to be detected.

Even though source factors played an important role in this study in conjunction with the DRT message condition, when examined outside of the context of the DRT message design, no significant results were detected. For instance, hypothesis 6 predicted that perceived source similarity and perceived source physical attractiveness would predict liking for the source. In turn, liking for the source was expected to be most effective at reducing one's intent to use a tanning bed and increasing one's intent to use a sunless tanning product. While similarity and physical attractiveness did predict liking (which is consistent with source factor literature), liking had no significant effect on

behavioral intent. It could be that, for this study, liking was not an important source factor in persuading individuals to change their behavior. O’Keefe (2002) makes the important argument that “particular judgments underlying credibility” are going to vary from situation to situation (p. 184), and it seems that in this case, source liking was not an important factor.

Additionally, perceived source physical attractiveness was not an important source factor in changing behavioral intent. Research Question 2 asked about the relationship between perceived source physical attractiveness, intent to use a tanning bed, and intent to use sunless tanning product. Results indicated no relationship between perceived source physical attractiveness and behavioral intent. Recall that scores on the *perceived physical attractiveness of the source*, while not statistically significant, were highest in the most effective condition (low expert-positive DRT condition). However, on its own, physical attractiveness was not a strong enough factor to influence change. In addition, source physical attractiveness was not a manipulated variable, and therefore it was not possible to see if a less attractive source or a more attractive source would have made a difference. However, considering that the behavior of tanning and the desire for a tanned appearance are related to physical appearance, this is still an important area to consider in any research involving tanning and messages that contain source factors.

Finally, source factors were examined in the relationship between source similarity and source expertise. Hypothesis 5 predicted an interaction between perceived source similarity and perceived source expertise on behavioral intent. Specifically, it

was hypothesized that the source in the low expertise condition would be perceived as high in similarity and would be most effective at reducing one's intent to use a tanning bed and increasing one's intent to use a sunless tanning product. Conversely, it was hypothesized that the source in the high expertise condition would be perceived as low in similarity and therefore would be the least effective. However, this hypothesis was not supported and the interaction between source expertise and perceived source similarity on behavioral intent did not materialize. While this is consistent with previous findings (Swartz, 1984), it is still an important interaction to consider in any research involving a manipulation of source expertise.

Therefore, when source factors were examined outside of the context of DRT message condition, results were not significant. While only one source factor was manipulated (source expertise), other source factors were measured and examined. It appears that source factors do not make a significant difference on behavioral intentions for tanning bed use and sunless tanning product use.

Limitations

As with any study done in an artificial setting, there were several limitations to this study. These limitations will be discussed in detail below. In addition, efforts at combating limitations and allowing for a better reporting of results will also be discussed.

This study used a convenience sample, therefore the results cannot be generalized to other members of the population. In addition, many of these students were

enrolled in at least one communication course at the time of the study, might have knowledge of media and communication studies, and could be aware of issues specific to message design and source credibility. The advantage of using this sample, however, is that the ages and gender of the participants reflect the intended target population.. In addition, random assignment to condition was used, which helps to control for individual differences in the participants.

Sample size is also a limitation of the study as only 162 individuals participated. While adequate, several of the analyses might have been significant had more participants been included in the study, particularly participants who are current tanning bed users. In other words, it is possible that for the hypothesis and research questions that failed to disprove the null may therefore reflect a Type II error.

A third concern was testing sensitization. Because of the large number of pretest questions about tanning, participants were likely sensitized just prior to viewing the stimulus (video) and subsequent answering of the post-test questions. Because of the length of the questionnaire, red herring items (i.e. drug use or dental hygiene) were not included to reduce possible sensitization. Moreover, the large number of items could have caused testing fatigue.

Regardless of the serious limitations to this study, many efforts were taken at combating other limitations. The videos were designed to be of equal length, preventing stimulus differences to affect posttest results. In addition, whenever possible, data were gathered at the interval and ratio level and established scales were used whenever

possible. The messages were pretested before the actual study to ensure that the message conditions reflected what the researcher was proposing.

Future Directions

Given the prevalence of tanning bed use by college students, future studies are warranted. Specifically, future research endeavors should strive to strengthen persuasive messages aimed at encouraging people who desire to have a tanned appearance to switch to using a sunless tanner, as this study has shown that positive results are possible. Particular attention should be paid to younger white females who not only tan more than others, but are also more easily influenced by others.

Given the promising results of combining DRT message condition with source expertise, other studies should strive to examine this relationship more in depth. In addition, it is important that future studies also manipulate other source factors in order to gain insight into which particular source factors prove to be the most effective at reducing intent to use a tanning bed. For instance, some of the factors measured in this study but were not manipulated included physical attractiveness, similarity, and liking.

Much like the ideal of thinness established in our society today, the ideal tanned skin color is a dangerous standard by which many people judge their own skin color. Any efforts at attempting to curb the behavior of tanning and increasing efforts to protect skin from the harmful effects of UV light are worthy pursuits. This study sought to fill a void in the literature and begin new discussions, as health communication researchers have barely begun to study the behavior of tanning bed use in the high risk college age

population. As this study has shown, taking into account the desire for that tanned appearance and providing a possible alternative method of obtaining that tanned appearance can be a possible avenue for reducing the risk for skin cancer in at risk populations.

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APPENDIX A

Message 1: High expert – Negative DRT condition

“Hi, I’m Jennifer, and I am a 3rd Year Medical Student at A&M’s Health Science Center.

Did you know that skin cancer is the most common form of cancer in the United States? The best way you can prevent it from happening to you is to stop tanning, especially stop using tanning beds.

There are many college students who use tanning beds. In fact, it seems like everyone has used one at some point or another. Are you one of the many people who are caught up in this trend?

Even though lots of people are using them, it just doesn’t make sense. It costs a large amount of money at around \$40 a month. It really increases your risk for skin cancer. It takes time out of your very busy schedule to go to the tanning salon, and you don’t have complete control over your tan. Plus, you smell awful when you come outta there.

So make the change, and stop tanning today. Believe me, your skin and your pocket book will thank you.”

Message 2: Low expert – Negative DRT condition

“Hi, I’m Jennifer, and I am a Junior Communications major here at A&M.

Did you know that skin cancer is the most common form of cancer in the United States? The best way you can prevent it from happening to you is to stop tanning, especially stop using tanning beds.

There are many college students who use tanning beds. In fact, it seems like everyone has used one at some point or another. Are you one of the many people who are caught up in this trend?

Even though lots of people are using them, it just doesn’t make sense. It costs a large amount of money at around \$40 a month. It really increases your risk for skin cancer. It takes time out of your very busy schedule to go to the tanning salon, and you don’t have complete control over your tan. Plus, you smell awful when you come outta there.

So make the change, and stop tanning today. Believe me, your skin and your pocket book will thank you.”

Message 3 High expert – Positive DRT condition

“Hi, I’m Jennifer, and I am a 3rd Year Medical Student at A&M’s Health Science Center.

Did you know that skin cancer is the most common form of cancer in the United States? The best way you can prevent it from happening to you is to stop tanning, especially stop using tanning beds.

There are not many college students who use a sunless tanner. In fact, it seems like barely anybody even uses them. Are you one of the few who have caught onto this trend?

Barely anyone is using sunless tanners, and it just doesn’t make sense. It costs a small amount of money at around \$10 a bottle. It can actually decrease your risk for skin cancer if you use one that contains an SPF. It takes very little time out of your day to apply it to your skin, and you have complete control over your tan. Plus, they even smell great!

So make the change, and start using a sunless tanner today. Believe me, your skin and your pocket book will thank you.”

Message 4 Low expert – Positive DRT condition

“Hi, I’m Jennifer, and I am a Junior Communications major here at A&M.

Did you know that skin cancer is the most common form of cancer in the United States? The best way you can prevent it from happening to you is to stop tanning, especially stop using tanning beds.

There are not many college students who use a sunless tanner. In fact, it seems like barely anybody even uses them. Are you one of the few who have caught onto this trend?

Barely anyone is using sunless tanners, and it just doesn’t make sense. It costs a small amount of money at around \$10 a bottle. It can actually decrease your risk for skin cancer if you use one that contains an SPF. It takes very little time out of your day to apply it to your skin, and you have complete control over your tan. Plus, they even smell great!

So make the change, and start using a sunless tanner today. Believe me, your skin and your pocket book will thank you.”

Message 5 High expert – Combination DRT condition

“Hi, I’m Jennifer, and I am a 3rd Year Medical Student at A&M’s Health Science Center.

Did you know that skin cancer is the most common form of cancer in the United States? The best way you can prevent it from happening to you is to stop tanning, especially stop using tanning beds.

There are many college students who use tanning beds. In fact, it seems like everyone has used one at some point or another. Yet far fewer college students have started using sunless tanners. Are you one of the few who have caught onto this trend?

It just doesn’t make sense that people would use a tanning bed instead of a sunless tanner. It costs \$40 a month for a tanning salon membership, and only \$10 a bottle for sunless tanner. While using a tanning bed really increases your risk for skin cancer, sunless tanners that contain an SPF actually can decrease your risk for skin cancer. Going to a tanning salon takes time out of your busy schedule, but it takes very little time out of your day to apply a sunless tanner. And unlike going to a tanning bed, with a sunless tanner, you have complete control over your tan. Plus, while you smell awful after you get out of a tanning bed, sunless tanners actually smell great!

So make the change. Stop using a tanning bed and start using a sunless tanning product today. Believe me, your skin and your pocket book will thank you.”

Message 6 Low expert – Combination DRT condition

“Hi, I’m Jennifer, and I am a Junior Communications major here at A&M.

Did you know that skin cancer is the most common form of cancer in the United States? The best way you can prevent it from happening to you is to stop tanning, especially stop using tanning beds.

There are many college students who use tanning beds. In fact, it seems like everyone has used one at some point or another. Yet far fewer college students have started using sunless tanners. Are you one of the few who have caught onto this trend?

It just doesn’t make sense that people would use a tanning bed instead of a sunless tanner. It costs \$40 a month for a tanning salon membership, and only \$10 a bottle for sunless tanner. While using a tanning bed really increases your risk for skin cancer, sunless tanners that contain an SPF actually can decrease your risk for skin cancer. Going to a tanning salon takes time out of your busy schedule, but it takes very little time out of your day to apply a sunless tanner. And unlike going to a tanning bed, with a sunless tanner, you have complete control over your tan. Plus, while you smell awful after you get out of a tanning bed, sunless tanners actually smell great!

So make the change. Stop using a tanning bed and start using a sunless tanning product today. Believe me, your skin and your pocket book will thank you.”

VITA

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