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To die for: attractiveness, fashion, and health risks

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Abstract

The purpose of this research was to investigate perceptions of risks and benefits associated with popular risky fashion practices (tanning and wearing stilettos) among young adult women. Objectives were to (a) determine if fashion interest predicted benefit perceptions among young women, (b) determine the role of antecedents (fashion interest, risk perceptions, benefit perceptions, consumption emotions) in predicting the behavioral frequency of risky fashion practices, and (c) explore the extent to which tanning and wearing stilettos are similar/different in underlying mechanisms. Undergraduate women were emailed a link to a Qualtrics online survey and a total of 671 provided usable responses; 328 were tanners and 343 wore stilettos. Benefits tapped the attractiveness and fashionability that is expected from engaging in tanning and wearing stilettos, while risks focused on health risks such as melanoma or joint damage associated with tanning or wearing stilettos. Path analyses and decomposition of effects found that fashion interest was positively related to frequency of wearing stilettos, but was not related directly to tanning frequency. Fashion interest was a significant driver of perceived benefits for both risky behaviors. Benefit perceptions increased positive emotion and risk perceptions increased negative emotion; only positive emotion influenced the frequency of risky fashion practices. For both tanning and wearing stilettos, perceived benefits increased risky fashion practice frequency both directly and indirectly through positive emotion. However, perceived risks decreased fashion practice frequency only directly. Thus, perceived benefits outweigh perceived risks among women who engage in these risky fashion practices.

Keywords: Attractiveness, Benefit, Fashion, Health, Risk

Introduction

Risks to health pervade modern life. Tanning is linked to skin cancer risk (Roberts et al., 2011), yet people still tan. In 2012 indoor tanning made the news when a deeply-tanned New Jersey mother was accused of taking her 6-year-old daughter into a tanning booth and charged with child endangerment (Martinez, 2012). Wearing high heels is linked to knee joint damage (Chhoeum et al., 2020) and osteoarthritis (Kerrigan et al., 1998), yet women still wear them. In fact, fashionable stiletto heels were at fault in 2008 when models wearing stilettos fell on the runway (“It’s a devil to wear Prada,” 2008).

Risk is an inherent part of consumer behavior and risk perceptions have been studied for over 50 years in marketing and consumer behavior (e.g., Roselius, 1971). Historically people have often engaged in risky behaviors seeking the benefits of culturally desirable appearance characteristics (Hagan et al., 2016). For example, Prokop and Švancarova (2020) argued that to increase their attractiveness women engage in various practices such as cosmetic surgery and wearing high-heeled shoes, even though such practices can be harmful. Hill and Durante (2011) found that attractiveness goals increased women's willingness to tan or take dangerous weight loss drugs. Similarly, Görig et al. (2020) found that attractiveness was a motive for tanning. Hence, consumers take many risks hoping to benefit from being perceived as more attractive (Rudd & Lennon, 1994). In this research we focus on tanning and wearing stilettos as popular fashion practices that potentially pose significant health risks.

A stiletto is a woman's shoe with a specific shape of heel like a champagne glass (Greenbaum & Rubenstein, 2012; "What are stilettos?," n.d.). Stilettos range in height from two inches to four inches or higher and are mostly above three inches. Most academic researchers use the term "high heels." In what follows, we use the terms (i.e., stiletto or high heels) that are used by researchers cited here.

Unfortunately, people tend to underestimate the risk associated with their actions (Weinstein, 1984), such as tanning and wearing high heels. Yet personal actions (Weinstein, 1984) are known to be related to objective risk. Studying risk perceptions is important because research shows that perceptions of risk are at least sometimes associated with preventive behaviors (Brewer et al., 2007; Huang et al., 2020). However, people continue to make risky choices. Hence, studying benefits of risky behaviors is also important to help explain why some people continue to pursue behaviors that are known to be risky.

The purpose of this research was to investigate perceptions of risks and benefits associated with popular risky fashion practices (tanning and wearing stilettos). Objectives were to (a) determine if fashion interest might predict benefit perceptions among young adults, (b) determine the role of antecedents (fashion interest, risk perceptions, benefit perceptions, emotions) in predicting the behavioral frequency of risky fashion practices, and (c) explore the extent to which tanning and wearing stilettos are similar/different in their underlying mechanisms.

We focus on tanning and wearing high heels; they are potentially risky behaviors, costly to society in general, and represent large industries. According to IBISWorld ("Tanning Salons Industry," 2021) in the U.S. there are 10,375 tanning salons that employ 59,580 people. The tanning salon market size in the U.S. is \$3.8 billion and was expected to grow 8.7% in 2021 ("Tanning Salons in the US," 2021). In addition to what is paid for indoor tanning, there are costs associated with related skin cancers. The Center for Disease Control and Prevention reported that UV exposure from sunlight or tanning beds is the most avoidable and important risk factor for skin cancer, the most common form of cancer in the U.S. (Cancer facts & figures, 2021). Over five million skin cancers in the U.S. are identified yearly and are mostly preventable by avoiding the use of indoor tanning (IT) devices and sun exposure. Annually, skin cancer in the U.S. costs an estimated \$8.1 billion to treat and results in \$4.5 billion in lost productivity (Surgeon General's Call, 2014). Researchers estimate that curbing indoor tanning use by U.S. youth under

18 (62.1 million) would prevent 61,839 cases of melanoma and avert 6735 deaths due to melanoma (Guy et al., 2017). Prevention of these cases and associated deaths are estimated to result in cost savings of \$342.9 million over the lifetimes of 62.1 million young people. Thus, tanning is both risky and comes at high cost to society and the individual tanner.

To document the incidence of indoor tanning some researchers have analyzed its prevalence in the U.S., Europe, and Australia (Rodriguez-Acevedo et al., 2020; Suppa et al., 2019; Wehner et al., 2014). For example, Rodriguez-Acevedo et al. performed a meta-analysis of studies published from 2009 to 2018 with a total of over 400,000 participants. In that analysis 14.4% of U.S. and Canadian adults had used indoor tanning in the last year, whereas the comparable figures for European adults and Australian adults were 11.1% and 2.5%, respectively. The figure for adolescents in the U.S. and Canada was 7.6%, whereas the comparable figures for European adolescents and Australian adolescents were 5.1% and unreported, respectively. Rodriguez-Acevedo et al. also report that Australia and Brazil now have banned indoor tanning nationally.

Future Market Insights (FMI) estimates that the women's footwear market will grow to over \$178 billion in 2022 and increase to over \$219 billion by 2070 (Women's Footwear Market Overview, n.d.). Globally, the value of the high heels market has been estimated at around \$39.2 billion ("Global high heels market growth 2022–2028," 2022). There are high economic costs associated with high heels. High heeled shoes are expensive because they are primarily a luxury product instead of a necessity ("1.35% CAGR in high heels footwear market," 2021). Additionally, celebrity endorsements and high disposable incomes are expected to fuel demand for various footwear brands in the future. Figures for the incidence of wearing high heels do not exist. However, the greatest regional market growth for high heels (46%) is expected in the Asia Pacific region ("Global high heels footwear," 2022).

The cost of treating problems caused by high fashion footwear adds to the cost of wearing high heels. A review of research on health effects of wearing high heels found evidence of hallux valgus (bunions), musculoskeletal pain, and osteoarthritis (Barnish et al., 2018). Moreover, Smith (1999) showed the costs of surgeries for problems caused by fashionable high heels and the indirect costs of missed work could amount to \$3 billion. For example, Health Partners reports that the cost of bunion surgery in the U.S. ranges between \$3500 and \$12,000 (Bunion removal surgery, n.d.).

In the next section we report empirical research about fashion and fashion interest. Then we discuss research about risks and benefits of tanning and wearing stilettos. We present theoretical frameworks to explain why people engage in risky fashion practices. We also develop research hypotheses.

Literature Review

Fashion and fashion interest

According to Sproles (1979) fashion is a way of behaving considered socially appropriate by a social group and is a form of collective behavior. Dressing or behaving in a fashionable way communicates lifestyle information and is a socially acceptable means of self-expression (Sproles, 1979); both of which can be seen as general benefits of fashion practices. Many scholars have studied fashion (Darden & Reynolds, 1974; Gutman

& Mills, 1982; Schrank et al., 1982), risks associated with fashion (Winakor et al., 1980), characteristics of fashion adoption groups (Workman & Lee, 2017), and fashion interest (Park & Burns, 2005). In a study of fashion consumer behavior Gutman and Mills (1982) developed an instrument to assess fashion orientation and found that one important factor of fashion orientation was fashion interest. Fashion interest has since been found to positively influence two potentially risky behaviors: compulsive buying and credit card use (Park & Burns, 2005). Other risks commonly associated with fashion are psychological risk (e.g., risk of humiliation) and sociological risk (e.g., peer disapproval). Thus, following fashion has both risks and benefits.

Although apparel is a classic example of a product that is subject to fashion, other products (e.g., automobiles, music, and food) and ideas in various disciplines (e.g., arts, literature, science, and education) all are subject to fashion (Sproles, 1981). Robinson (1976) even documented fashion influence in the practice of shaving and facial hair maintenance. Hence, a variety of consumer products, ideas, and practices including tanning and wearing high heels are subject to fashion.

Risks associated with fashion practices

Tanning

Ting et al. (2007) found a relationship between tanning bed exposure and melanoma in a survey of dermatology clinic patients. By 2009 the World Health Organization had declared that tanning beds are carcinogenic for humans (cited in Ratanapratatporn et al., 2011). Adolescents are at risk given their use of indoor tanning. Cokkinides et al. (2009) found that attitudes toward indoor tanning, parental permission to tan indoors, and parental use of indoor tanning predicted adolescents' use of indoor tanning. Both UV exposure from tanning beds and from sunlight are carcinogenic and, particularly among Caucasians, have contributed to observed increases in skin cancer (de Gruijl, 1999).

Wearing high heels

Barnish et al. (2018) found that wearing high heels was associated with development of bunions, musculoskeletal pain, osteoarthritis, and other injuries. Smith (1999) reviewed literature regarding women's high heels and found that scholars do not agree about specific effects of high heels on women's anatomy, but do agree that they contribute to muscle and skeleton related problems. According to a survey of women who wear high heels (Basha et al., 2018), wearing high heels caused back pain (60%) and calf pain (40%). Di Sipio et al. (2018) conducted experimental research and found that wearing high-heeled shoes caused negative effects on various walking parameters.

Benefits of fashion practices

While most products, services, and actions provide some utilitarian benefit, there is often symbolic meaning associated with them that enhances consumer benefits (Miller et al., 1993). Sometimes the symbolic meaning of a product, service, or action overrides

the lack of utilitarian benefit. Two such examples are the practice of tanning, with no proven medical benefits (as cited in Mawn & Fleischer, 1993), and wearing high heels.

Tanning

The benefits of tanning relate to the impressions conveyed by having a tan; having a tan is currently fashionable and tanned women are perceived to be fashionable and attractive. In a study of indoor tanners, tanned people were perceived to be healthy, sociable, fit, attractive, and affluent (Vannini & McCright, 2004); participants expressed that they tanned because they wanted to convey those images to others. Cafri et al. (2009) also identified attractiveness as a rationale for a tan. Cho et al. (2010) studied tanning attitudes of late adolescent women and found that those who believed tanned women were fashionable also had positive attitudes about tanning. In addition, researchers have found that tanning is mood-enhancing and may act on brain reward centers (Heckman et al., 2016; Petit et al., 2014). In summary, the benefits of tanning are mostly self-presentational, related to presenting oneself in a socially approved fashionable and attractive way, but tanning is also mood-enhancing.

Wearing high heels

Shoes convey information about the person wearing them (Gillath et al., 2012) such as sexiness, fashion, and seductive intent (Belk, 2003). In Kaiser et al. (1985) retailers rated a high-heeled shoe as the sexiest and most feminine of 20 pairs of shoes. As well, high heels are perceived as the ultimate female fashion symbol (Shawcross, 2005) and as the sexiest, most feminine shoes a woman can wear. Given this research about high heels, it is not surprising that when women wear high heels they are rated as having more positive social traits such as attractiveness (Barnish et al., 2018; Wade et al., 2022) and sexiness (Guéguen et al., 2016). Hence, the benefits of wearing high heels are self-presentational.

Health belief model

Researchers have attempted to explain risky health behaviors by examining attitudes and beliefs about them. Sociologists developed the health belief model or HBM (Janz & Becker, 1984; Rosenstock, 1974) to predict the likelihood of acting to prevent a disease. Three sets of important variables in the models were individual difference variables (e.g., demographics, socio-psychological variables), perceived disease threat (risks associated with the disease), and perceived benefits of acting to prevent the disease. The HBM has been applied to tanning (Hill & Durante, 2011) suggesting that if people are aware of risks associated with health-related behavior such as tanning and the severity of consequences of the tanning behavior, they will forego the behavior (be less likely to tan).

In our research we focus on risky fashion practices that affect health (tanning, stiletto wearing). We investigate fashion interest as a social psychological variable, the risks associated with tanning (stiletto wearing) and the benefits associated with tanning (stiletto wearing). In applying the HBM to our research, we studied risk

perceptions associated with risky fashion practices as analogous to perceived disease threat in the HBM. We also studied perceived benefits of the risky fashion practices as analogous to the perceived benefits of acting to prevent the disease as modeled in the HBM. We follow Hill and Durante and use behavioral frequency of tanning (stiletto wearing) to assess the extent to which participants forego or refrain from the target risky fashion practices.

HBM is cognitive and assume that people make rational decisions and fail to consider that people often make irrational decisions based on emotion. Hill and Durante (2011) note that HBMs fail to explain the fact that women, knowledgeable about the dangers of risky behaviors (i.e., tanning, wearing high heels), still practice them. Consequently, researchers have found that women engage in risky behaviors because the behaviors serve self-presentation goals, such as making them more attractive (Ginis & Leary, 2004; Leary & Jones, 1993) or more fashionable (Smith, 1999). Hence, to predict behaviors that compromise health, it is also important to assess perceived benefits of those behaviors, whereas the original HBM focused on the benefits of the preventative action. For example, Miller et al. (1990) found that self-rated highly tanned college students perceived the benefits of a tan to outweigh associated risks.

Fashionability, attractiveness, and risky behaviors

Women engage in risky appearance management behaviors when concerned with physical appearance and to increase attractiveness (Hillhouse et al., 1996; Saad & Peng, 2006). College students report that going to a tanning salon to appear darker is a strategy women use to look more desirable (Tooke & Camire, 1991). In a survey of women, 80% reported that they like wearing high-heeled shoes, and most wore them for aesthetic reasons (Basha et al., 2018). Hence, both tanning and wearing high heels are attractiveness associated self-presentational strategies. Hill and Durante (2011) found that when women are concerned with self-presentation, they are more willing to take health risks to increase attractiveness.

Another reason that young women may engage in risky behaviors is that such behaviors are associated with more fashionable assessments. For example, Miller et al. (1990) assessed college students' impressions of a woman. When described as tanned the woman was rated significantly more fashionable than when not described as tanned. In other studies participants have noted that they did not adopt sun protection because using sunscreen, clothing, sunglasses, and hats for protection is not fashionable (Calder & Aitken, 2008; Potente et al., 2011). There is also strong evidence linking wearing high heels and increased female attractiveness (Morris et al., 2013; Prokop, 2022) and fashion consciousness (Strehlau et al., 2013).

Another line of evidence supports the idea that being attractive is part of being fashionable. People tend to rate the attractiveness and fashionableness of people (or items) similarly. In Miller et al.'s (1990) factor analysis, scores from the ratings for "fashionable" loaded on a factor that also included "attractive" and several other positive social traits. In other research when measures have been developed to rate the fashionability of an item, those scales have also included the adjective "attractive" (e.g., Cox & Cox, 2002; Lennon & Clayton, 1992). In like manner Watkins and Leitch (2020) developed items to rate the attractiveness of shoes. In that research shoes rated as "attractive" were

also rated as “fashionable;” the two attributes were significantly correlated. Hence, it is possible that the risks people take to be attractive are actually due to the desire to be fashionable.

Fashionable products and practices also aid in self-presentation. For example, as compared to people wearing unfashionable clothing, people wearing fashionable clothing are perceived to be more sociable (Johnson et al., 1977) and competent (Workman, 1990). Young women tend to be concerned with self-presentation (Davis & Lennon, 1985) and being fashionable is desirable and judged attractive. Davis and Lennon found that college women with self-presentational goals were also concerned about wearing socially appropriate clothing to convey a desirable image. By adopting popular fashion practices women can strategically manage their appearances to convey a desired impression. Hence, adoption of fashion practices has self-presentational associated benefits and the following hypotheses were developed.

H1: Fashion interest is positively related to perceived benefits of risky fashion practices (a: tanning, b: wearing stilettos).

H2: Fashion interest is positively related to risky fashion practice frequency (a: tanning, b: wearing stilettos).

Cognition-Affect-Conation model

To more fully predict risky behavior, we augment the HBM with the Cognition-Affect-Conation (C-A-C) model as the basis for the introduction of emotion in our research model. Psychologists identified the trilogy of mind: cognition, affect, and conation to understand consumer behavior (e.g., Hilgard, 1980). Cognition refers to thoughts and beliefs. Affect refers to the emotional response. Conation refers to behavioral intention. The C-A-C model is the basis for the hierarchy of effects, which posits that cognition (beliefs), affect, and behavior occur in a sequence (Babin & Harris, 2010; Solomon & Rabolt, 2009). Applying the C-A-C model to the current research, consumers form beliefs (cognitions) about risks (e.g., tanning is unsafe) and benefits (e.g., tanning is fashionable). Then those beliefs are posited to lead to affect/feeling (emotion in our model). According to Chaudhuri (1997) consumption emotion can be either positive (e.g., tanning increases feelings of pleasure) or negative (e.g., tanning increases feelings of worry) and influences the relevant risky behavior (e.g., tanning frequency or frequency of wearing stilettos). Applying the C-A-C model and Chaudhuri's concept of consumption emotion to our research, positive emotion is expected to amplify the risky behavior and negative emotion is expected to lessen the risky behavior. Based on this reasoning, the following hypotheses were proposed.

H3: Perceived risk associated with risky fashion practices is positively related to negative emotion (a: tanning, b: wearing stilettos).

H4: Perceived benefits associated with risky fashion practices are positively related to positive emotion (a: tanning, b: wearing stilettos).

HBM's take the common-sense position that engaging in risky health practices is negatively related to perceptions of risk. Brewer et al. (2007) performed a

meta-analysis and found a significant relationship between perceptions of risk of disease and preventive behaviors (i.e., engaging in behaviors that protect against risk); they concluded that risk perceptions belong as core concepts in theories of health behavior. In support of this relationship, Jones et al. (2000) found that more perceived risk to appearance from sun-exposure was associated with more protective behavior. Also Cafri et al. (2009) found that knowing about appearance risks to sunbathing was negatively related to sunbathing intentions. Since significant risks are associated with tanning and wearing high heels, following hypothesis was developed.

H5: Perceived risk associated with fashion practices is negatively related to risky fashion practice frequency (a: tanning, b: wearing stilettos).

However, the HBMs do not completely explain risky choices, since people sometimes make risky choices even if knowledgeable about the risks (e.g., Hill & Durante, 2011). Hence there must be benefits to the risky choices and, therefore, perceived benefits are important to assess, as well as perceived risks (e.g., Miller et al., 1990). Based on these arguments the following hypothesis was proposed.

H6: Perceived benefits of fashion practices are positively related to risky fashion practice frequency (a: tanning, b: wearing stilettos).

Consistent with the C-A-C model, the influence of emotion on behavior is well established (Chen et al., 2022; Lennon et al., 2017; Moore et al., 2022). Moore et al. found that negative emotion lowered the likelihood of engaging in unhealthy behaviors, whereas positive emotion increased the likelihood of engaging in unhealthy behaviors among Latinos. Thus, the following hypotheses were proposed. See Fig. 1 for the conceptual model.

H7: Negative emotion associated with fashion practices is negatively related to risky fashion practice frequency (a: tanning, b: wearing stilettos).

H8: Positive emotion associated with risky fashion practices is positively related to risky fashion practice frequency (a: tanning, b: wearing stilettos).

To date, little is known about how various risky fashion practices are similar/different in the way fashion interest and beliefs influence people's decision to engage in risky behaviors. Thus, we developed a research question to explore the similarity/

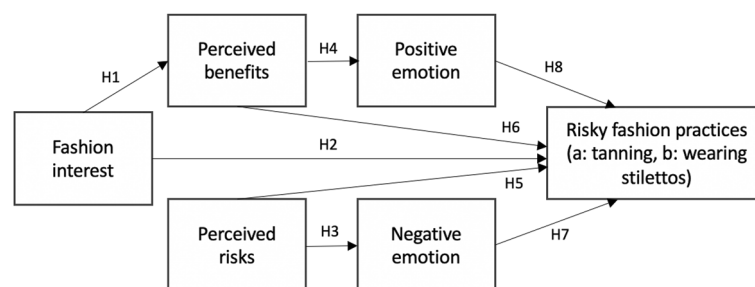


Fig. 1 Conceptual model of risky fashion practices

difference in the underlying mechanism of risky fashion practices of tanning vs. wearing stilettos.

RQ: How similar/different are the underlying psychological mechanisms of tanning and wearing stilettos?

Methods

Instrument development

Fashion interest was measured using 5 items from Guttman and Mills (1982). Perceived benefits and perceived risks were measured using items adapted from the literature as well as self-developed. Two parallel sets (tanning and wearing stilettos) of 8 perceived benefit items and 15 perceived risk items were developed. Participants were either instructed to consider the practice of tanning or of wearing very high heels called stilettos. For those responding to risks and benefits of stilettos, a definition was provided (i.e., “a stiletto heel is a long, thin, high heel found on some boots and shoes for women”). Positive and negative emotions were measured using 9 consumption emotion items adopted from Chaudhuri (1997). Risky behavior frequency was assessed with a single item of self-reported behavioral frequency. All items used a 7-point rating scale format. Age, ethnicity, and academic standing were assessed.

Procedure

Two randomly selected lists of college women were obtained from the Registrar at a large public university. Young adults are important to study in this regard because sun exposure at a young age is related to later risk of cancer (Jones & Leary, 1994). In addition, young adults are young enough to be able to change their behaviors, improve their health status, and yet are likely to engage in fashion practices (Behling, 1992).

The women were emailed a link to a Qualtrics online survey about tanning ($N = 1500$) or wearing stilettos ($N = 1500$) and were invited to participate; one week later a reminder email was sent. The incentive for participation was entrance into several drawings for \$25 gift cards. By clicking on the link participants were taken to the appropriate survey. The opening page of the survey explained the research purpose, assured confidentiality, and explained the incentive; the dependent measures were presented on the following pages. When finished with the items, participants were thanked for participation, and offered the opportunity to enter their email addresses to participate in the drawings.

Results and Discussion

Demographics

After deleting responses from participants who did not engage in the risky fashion practices, there were 328 usable responses for tanning and 343 usable responses for wearing stilettos. As shown in Table 1, participants for both surveys showed similar demographic characteristics; participants were predominantly white, and their academic standings were evenly distributed.

Table 1 Demographic characteristics

	Tanning (n = 328)		Wearing stilettos (n = 343)	
	21.5 ± 5.7 y in age		20.8 ± 3.0 y in age	
	Frequency (n)	%	Frequency (n)	%
Ethnicity				
White	280	85.4	277	80.8
Black	8	2.4	14	4.1
Hispanic	9	2.7	8	2.3
Asian	5	1.5	12	3.5
Native Hawaiian	1	0.3	0.0	0.0
Other	1	0.3	15	4.4
Academic standing				
Freshman	61	18.6	73	21.3
Sophomore	75	22.9	75	21.9
Junior	80	24.4	76	22.2
Senior	72	22.2	78	22.7
Graduate/other	34	10.4	34	9.9

Preliminary analyses

Exploratory Factor Analysis (EFA) was conducted on multi-item measures to confirm dimensionality of the original scales. EFA on 23 belief items yielded 2 factors (benefits and risks). EFA on 7 consumption emotion items also yielded 2 factors (positive and negative), confirming dimensionality of the original scales. Cronbach's α was used to assess the reliability of multi-item scales. All had adequate reliabilities. Composite scores were used for further analysis. See Table 2.

Hypothesis testing

To test hypotheses, three steps of path analysis were performed. First a single group path analysis was conducted to examine how antecedents (fashion interest, risk perceptions, benefit perceptions, consumption emotions) predict the behavioral frequency of risky fashion practices. Model fit was adequate ($\chi^2 = 60.42$, $df = 6$, $p < 0.001$; NFI = 0.94; IFI = 0.95 CFI = 0.95). The single group analysis revealed that all hypothesized paths except H7 (Negative emotion \rightarrow Risky fashion practices, $p = 0.34$) were significant at $p < 0.001$. See Table 3.

Based on the results of the first step, a multi-group analysis was conducted to examine whether two risky fashion practices of tanning and wearing stilettos are similar/different in their underlying psychological mechanisms. For a multi-group analysis with types of risky fashion practices (tanning vs. wearing stilettos) as a grouping variable, a base model with no constraints was tested, yielding an acceptable fit ($\chi^2 = 64.58$, $df = 12$, $p < 0.001$; NFI = 0.94; IFI = 0.95; CFI = 0.95; RMSEA = 0.08). This unconstrained model was compared to the fully constrained model imposing equalities on all path coefficients and tested for the moderating effect of different risky fashion practices using the Chi-square difference test. The results showed that there was

Table 2 Measurements and reliabilities

Variable	Measured items	Tanning	Wearing stilettos
Fashion interest	Because of my active lifestyle, I need a wide variety of clothes and appearance-related products I always buy at least one outfit of the latest fashion I spend a lot of money on clothing and accessories I spend a lot of time on fashion-related activities	.77	.81
Perceived benefits (tanning)	I think a tan makes me more attractive I love the look of a glowing tan I tan because it is fashionable Tans are fashionable Tans are sexy I like the way my skin looks when I am tan If I knew there would be no negative side effects, I would tan	.92	
Perceived risks (tanning)	I am afraid that I will develop skin cancer if I tan I think tanning is unsafe I worry about the consequences of tanning I think I may develop skin cancer if I tan It is easy to develop skin cancer when tanning I worry that tanning will age my skin Tanning is harmful to my health I think tanning is dangerous	.91	
Perceived benefits (wearing stilettos)	I think stilettos make me more attractive I love the look of stilettos I wear stilettos because they are fashionable Stilettos are feminine Stilettos are fashionable Stilettos are sexy I like the way my legs look when I wear stilettos		.92
Perceived risks (wearing stilettos)	I am afraid that I will fall if I wear stilettos I think stilettos are unsafe I worry about the consequences of wearing stilettos I think I may slip if I wear stilettos It is easy to slip when wearing stilettos It is easy to fall when wearing stilettos		.90
Positive emotion	Joy Pleasure Delight Amusement	.93	.93
Negative emotion	Fear Worry Anxiety Nervousness Guilt	.94	.90

Table 3 Multi-group analysis for the moderating effects of risky behaviors (tanning and wearing stilettos)

Equality constraints	χ^2	df	$\Delta\chi^2$	Δdf	Sig
Unconstrained model	64.581	12	–	–	
Fully constrained	83.280	20	18.699	8	$p < .05$
Path coefficients					
H1: Fashion interest → perceived benefits	65.678	13	1.097	1	ns
H2: Fashion interest → risky fashion practice	68.358	13	3.777	1	$< .05$
H3: Perceived risks → negative emotion	66.024	13	1.443	1	ns
H4: Perceived benefits → positive emotion	67.632	13	3.051	1	ns
H5: Perceived risks → risky fashion practice	66.809	13	2.228	1	ns
H6: Perceived benefits → risky fashion practice	72.054	13	7.473	1	$< .001$
H7: Negative emotion → risky fashion practice	67.927	13	3.346	1	ns
H8: Positive emotion → risky fashion practice	64.966	13	0.385	1	ns

Table 4 A summary of hypotheses testing

Hypotheses	Single group	Multi-group		Overall result
		Tanning	Wearing stilettos	
H1: Fashion interest → perceived benefits	.39***	.32***	.48***	Fully supported
H2: Fashion interest → risky fashion practice	.15***	.06	.22***	Partially supported
H3: Perceived risks → negative emotion	.46***	.40***	.56***	Fully supported
H4: Perceived benefits → positive emotion	.64***	.59***	.66***	Fully supported
H5: Perceived risks → risky fashion practice	–.21***	–.30***	–.23***	Fully supported
H6: Perceived benefits → risky fashion practice	.23***	.34***	.13*	Fully supported
H7: Negative emotion → risky fashion practice	–.04	.05	–.08	Not supported
H8: Positive emotion → risky fashion practice	.29***	.27***	.35***	Fully supported

* $p < .05$, ** $p < .01$, *** $p < .001$

a significant difference between tanning and wearing stilettos in their underlying psychological processes ($\Delta df = 8$, $\Delta\chi^2 = 18.699$, $p < 0.05$).

The third step of a multi-group analysis was performed to examine the extent to which tanning and wearing stilettos are similar/different (RQ1). A series of Chi-square difference tests were performed by imposing equality constraints on each path coefficient. The Chi-square difference tests found two paths that significantly differed between tanning and wearing stilettos; H2 (Fashion interest → Risky fashion practice) and H6 (Perceived benefits → Risky fashion practice). See Table 3.

Table 4 and Fig. 2 show the results of hypothesis testing. As predicted, fashion interest was positively associated with perceived benefits of tanning and wearing stilettos, respectively, supporting H1a and H1b. However, the relationship between fashion interest and risky behavior frequency significantly differed across types of risky fashion practices. Fashion interest was not significantly related to tanning frequency ($\beta = 0.06$), whereas fashion interest was positively associated with the frequency of wearing stilettos ($\beta = 0.22$), supporting H2b only. Standardized path coefficient β s are presented.

The relationships between perceived risks (benefits) and negative (positive) emotion were supported for both tanning and wearing stilettos, supporting H3a, H3b, H4a, and

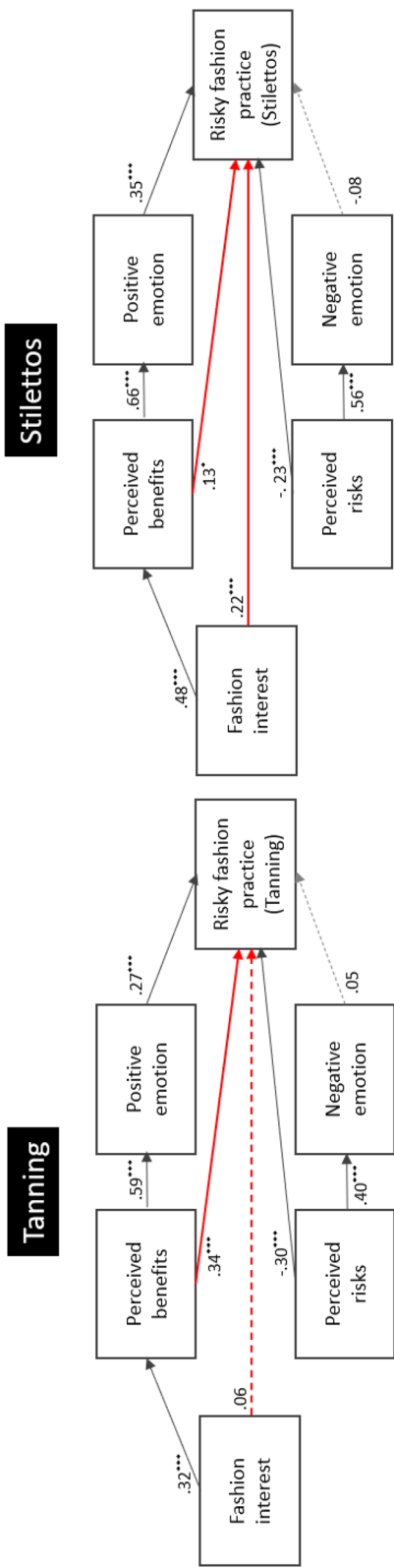


Fig. 2 Model comparisons. The red arrow line indicates the relationship that significantly differed between tanning vs. wearing stilettos. A solid line indicates a significant path, whereas a dotted line indicates an insignificant path. * $p < .05$, ** $p < .01$ *** $p < .001$

H4b. The negative (positive) relationship between perceived risks (benefits) and risky fashion practices were further supported for both tanning and wearing stilettos, supporting H5a, H5b, H6a, and H6b. However, the magnitude of the relationship between perceived benefits and risky fashion practices significantly differed. The relationship between perceived benefits of tanning and tanning frequency ($\beta=0.34$) was substantially stronger than the relationship between perceived benefits of wearing stilettos and stilettos frequency ($\beta=0.13$). Refer to Table 3.

As seen in Fig. 2, the relationship between emotion and risky fashion practices was consistent between tanning and wearing stilettos. The hypothesis predicting a negative relationship between negative emotion and risky fashion practices was not supported for either fashion practice, failing to support H7a or H7b. Positive emotion was positively related to risky fashion practices for both tanning and stiletto wearing, supporting H8a and H8b. See Table 4 for a summary of hypothesis testing.

Decomposition of effects further demonstrated how the relationship between fashion interest and risky fashion practices differed between tanning and wearing stilettos. As shown in Table 5, for tanning, fashion interest increased tanning frequency only through influencing perceived benefits of tanning and resulting positive emotion ($\beta=0.16$, 95% CI [0.122, 0.280]). Conversely, for wearing stilettos, fashion interest not only directly influenced the frequency of wearing stilettos ($\beta=0.22$, 95% CI [0.126, 0.322]), but also indirectly influenced the frequency of wearing stilettos through perceived benefits and positive emotion ($\beta=0.17$, 95% CI [0.125, 0.229]). Standardized path coefficient β s are presented.

Other than fashion interest, the underlying psychological mechanism influencing risky fashion practices was consistent across tanning and wearing stilettos. Perceived benefits influenced risky fashion practices both directly ($\beta=0.34$, 95% CI [0.240, 0.428] for tanning; $\beta=0.13$, 95% CI [0.016, 0.227] for wearing stilettos) and indirectly through positive emotion ($\beta=0.16$, 95% CI [0.085, 0.244] for tanning; $\beta=0.23$, 95% CI [0.158, 0.309] for wearing stilettos). On the other hand, perceived risks only influenced risky fashion practices directly ($\beta=-0.30$, 95% CI [-0.385, -0.209] for tanning; $\beta=-0.23$, 95% CI [-0.382, -0.155] for wearing stilettos). Perceived risks increased negative emotion ($\beta=0.40$, 95% CI [0.304, 0.486] for tanning; $\beta=0.56$, 95% CI [0.550, 0.770] for wearing stilettos), but negative emotion did not suppress risky fashion practices ($\beta=0.05$, 95% CI [-0.042, 0.146] for tanning; $\beta=-0.08$, 95% CI [-0.176, 0.015] for wearing stilettos).

Table 5 Decomposition of effects

Predictor variable	Tanning			Wearing stilettos		
	Direct	Indirect	Total	Direct	Indirect	Total
Risky fashion practice						
Fashion interest	.06	.16**	.22***	.22***	.17**	.39***
Perceived benefits	.34***	.16**	.50***	.13*	.23**	.36***
Perceived risks	-.30***	.02	-.28***	-.23***	-.05	-.28***
Positive emotion	.27***	—	.27***	.35***	—	.35***
Negative emotion	.05	—	.05	-.08	—	-.08

* $p < .05$, ** $p < .01$, *** $p < .001$

Conclusions

Despite objective risk, risky fashion practices are commonplace (Prokop & Švancarova, 2020). The current study investigated perceptions of risks and benefits associated with two popular risky fashion practices, tanning and wearing stilettos, and examined psychological factors that contributed to risky fashion practices. The empirical findings of this study offer new insights into similarities and differences in the psychological processes underlying people's decision to engage in risky fashion practices of tanning and wearing stilettos despite the known risk (Barnish et al., 2018; Di Sipio et al., 2018; Roberts et al., 2011; Ting et al., 2007).

All research participants actually engaged in the respective risky fashion practices. Consistent with prior work linking fashion interest, attractiveness, and risky behaviors (Prokop, 2022; Watkins & Leitch, 2020), fashion interest was a significant driver of perceived benefits for both risky fashion practices, further influencing the frequency of risky fashion practices directly and indirectly via positive emotion. Perceived benefits were mostly related to attractiveness and fashionability that are expected from engaging in risky fashion practices. Perceived risks were related to known health risks of each risky practice. For both tanning and wearing stilettos, while perceived benefits influenced the risky practices both directly and indirectly through positive emotion, perceived risks influenced the risky practices only directly. Negative emotion was not related to the frequency of either risky practice. Thus, the C-A-C model is only partially supported in the context of fashion and health risk. These findings suggest that perceived benefits outweigh perceived risks in the decision to engage in risky fashion practices.

The relationship between fashion interest and the frequency of risky behavior significantly differed between the two risky fashion practices. Whereas fashion interest increased stiletto wearing frequency both directly and indirectly, fashion interest increased tanning frequency only indirectly via perceived benefits and positive emotion. Stilettos are common fashion items that one can easily put on and remove, perhaps without having to think about their benefits. However, tanning is a somewhat more invasive procedure with visible effects that may prompt more deliberate decisions than wearing stilettos. In other words, people cannot immediately change their tanned skin in the way they can immediately change their stilettos. As well, tanning is practiced by a small percentage of the mostly female young adult population of non-Hispanic Caucasians, whereas wearing high heels is commonly practiced by many women of all ages and ethnicities. Hence, as a group behavior wearing high heels or stilettos may be more broadly associated with being fashionable or in fashion than being tanned. Such differences may help explain the non-significant relationship between fashion interest and tanning frequency.

Another noteworthy finding is the relative difference in magnitude of influence. The relationship between perceived benefits and risky fashion practices was substantially stronger for tanning than wearing stilettos. This may reflect the sustained popularity of tanning compared to the popularity of stiletto wearing which is subject to volatile fashion trends. People consider both benefits and risks of a choice. For a decision to tan, perhaps immediate gratifications of tanning (perceived benefits) may be more salient than an objective, but temporally distant risk (e.g., skin cancer). Conversely, perceived risks of wearing stilettos (e.g., fall, slip) are temporally more close consequences. As a result,

when making a choice, both perceived benefits (e.g., looking attractive) and risks (e.g., falling) may have been more comparably salient for wearing stilettos.

The findings of the current study demonstrate that perceived risks were negatively related to risky fashion practices for both tanning and wearing stilettos, supporting the HBM. Unlike the relationships among perceived benefits, positive emotion, and risky fashion practices, perceived risks influenced negative emotion and risky fashion practices only directly. While perceived risks increased negative emotion, negative emotion did not discourage people from engaging in risky fashion practices. Often health-related campaigns (e.g., tobacco campaigns) have used negative emotion such as fear or disgust to discourage people from engaging in unhealthy behaviors (Reis et al. 2019). Our study suggests that a more reasoned approach of education about risks associated with tanning may be more persuasive in discouraging tanning than an emotion-laden campaign approach instilling negative emotion. Future research can further explore personal characteristics that affect risk-taking tendencies.

For both tanning and stiletto-wearing perceived risks increased negative emotion and depressed risky behavior, which is inconsistent with some tanning research. This finding suggests that educational programs targeting the risks of those behaviors might be effective, if the message comes from credible (e.g., dermatologist) or attractive sources (e.g., young person who has stopped tanning).

Both tanners and wearers of stilettos perceived both benefits and risks of their risky fashion practices and reported experiencing relevant emotion (i.e., perceived benefits related to positive emotion; perceived risks related to negative emotion). Positive emotion also enhanced risky behavior for both tanning and stiletto wearing suggesting that reducing positive emotion is a strategy to reduce risky behavior. Educational programs focusing on the perceived benefits might be effective in changing attitudes regarding those benefits (e.g., there are other ways to be fashionable and sexy than wearing stilettos). Some perceived benefits could be achieved differently with less risk (e.g., using spray tans or vitamin E supplementation). Furthermore, in the case of tanning, perhaps those benefits focused on physical appearance could be challenged through body positivity or body acceptance programs.

Limitation and suggestions for future research

The current study focused on two popular risky fashion practices among college women, namely tanning and wearing stilettos. The findings of the current study are not generalizable to other risky fashion practices which encompass various behaviors including dieting to lose weight, tattooing, and cosmetic surgeries. Future research is needed to include other forms of risky fashion practices and further examine how fashion interest and psychological processes work in decisions to engage in various risky fashion practices.

Another limitation of the current study is the cross-sectional nature of the data collected for the study. Given that risky fashion practices pose not only short-term risks, but also long-term risks, a longitudinal approach could bring meaningful insights into understanding people's cognitive, emotional, and behavioral responses to risky fashion practices.

Given that fashion interest affected perceived benefits for both risky fashion practices, it is reasonable to expect that other sociopsychological or cultural variables associated with fashion could affect benefits and, thus, should be examined by future researchers. For example, peer approval and media influence are known to affect fashion behaviors and could be assessed.

Men also engage in risky fashion practices such as extreme bodybuilding and may differ from women regarding how they approach a decision to engage in risky fashion practices. Future research needs to include men and also consider individual difference variables that are known to affect risky behaviors (e.g., personality). Such research could further expand the understanding of risky fashion practices and guide development of effective mitigation strategies to educate those who may be swayed to engage in risky behaviors without fully understanding their objective personal risk.

Abbreviations

C-A-C	Cognition-Affect-Conation
EFA	Exploratory Factor Analysis
H	Hypothesis
HBM	Health Belief Model
NFI	Normed Fit Index
IFI	Incremental Fit Index
CFI	Comparative Fit Index
RMSEA	Root Mean Square Error of Approximation
RQ	Research Question

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Authors' contributions

Both authors (SL and MK) made substantial contributions to the conception/design of the work, contributed to writing the manuscript, and substantively revised the manuscript. SL wrote the first draft of the manuscript, while MK planned and performed data analysis and drafted the interpretation of results. Both authors read and approved the final manuscript.

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Availability of data and materials

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This research was conducted under the approval and supervision of University of Delaware Institutional Review Board (IRB Approval No. 313663) regarding ethical issues including consent to participate.

Competing interests

The authors declare that they have no competing interests.

Authors' information

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